## Further Reading

#### The Learning Analytics team - NPULS

#### Een Multidisciplinaire Aanpak voor de Implementatie van Learning Analytics

De succesvolle implementatie van Leeranalyse is een bewijs van de samenwerkingsinspanning van diverse rollen en expertise. Naarmate we dieper ingaan op het proces, convergeren de rollen naar een meer technische en nauwgezette aard.

Het landschap van implementaties van Leeranalyse is uitgestrekt en gevarieerd, maar de uniciteit van de specifieke behoeften van een organisatie wordt vaak overdreven. Een grondige evaluatie van bestaande literatuur kan het proces stroomlijnen, waardoor de onnodige complexiteit van het beginnen vanaf nul wordt vermeden. Dit document fungeert als een zeef, waarbij een overvloed aan onderzoek wordt gedistilleerd tot samenhangende thema's die obstakels en facilitators aanwijzen. Door deze nauwgezette filtratie hebben we de literatuur met 90% gereduceerd, waardoor een dichtere, inzichtelijkere verzameling overblijft voor een versnelde ontdekking.

De geëvalueerde thema's zijn:

- Juridische en ethische kwesties
- Culturele verandering
- Technische details
- Leertheorie en de relatie tot Leeranalyse
- Geletterdheid/Training
- Raamwerken die de implementatie van Leeranalyse ondersteunen

#### A Multidisciplinary Approach to Implementing Learning Analytics

The successful deployment of Learning Analytics is a testament to the collaborative effort of diverse roles and expertise. As we delve deeper into the process, the roles converge towards a more technical and meticulous nature.

The landscape of Learning Analytics deployments is vast and varied, yet the uniqueness of an organization's specific needs is often overstated. A thorough review of existing literature can streamline the process, circumventing the needless complexity of starting from scratch. This document serves as a sieve, distilling a plethora of research into coherent themes that pinpoint obstacles and enablers. Through this meticulous filtration, we've distilled the literature by 90%, curating a denser, more insightful collection for expedited discovery.

The themes evaluated are:

- Legal & Ethical issues
- Cultural change
- Technical details
- Learning Theory and it's relationship to Learning Analytics
- Literacy/Training
- Frameworks that support deploying Learning Analytics

# Legal & Ethical

Title	Link
Student privacy self-management: implications for learning analytics	https://doi.org/10.1145/2723576.2723585
Developing a Code of Practice for Using Data in Wellbeing Support	https://doi.org/10.18608/jla.2022.7533
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303797
Empowering learners with personalised learning approaches? Agency equity and transparency in the context of learning analytics"	https://doi.org/10.1080/02602938.2019.1676396
The privacy paradox and its implications for learning analytics	https://doi.org/10.1145/3375462.3375536
An exploratory latent class analysis of student expectations towards learning analytics services	https://doi.org/10.1016/j.iheduc.2021.100818
Post-GDPR Usage of Students' Big-Data at UK Universities	https://doi.org/10.1007/978-3-030-71292-1_15
Working together in learning analytics towards the co-creation of value	https://doi.org/10.18608/jla.2019.62.2
Ethical issues and learning analytics: Are academic library practitioners prepared?	https://doi.org/10.1016/j.acalib.2022.102621
Educational triage in open distance learning: Walking a moral tightrope	https://doi.org/10.19173/irrodl.v15i4.1881
Data privacy on the African continent: Opportunities challenges and implications for learning analytics"	https://doi.org/10.1111/bjet.13226
Disparities in Students' Propensity to Consent to Learning Analytics	https://doi.org/10.1007/s40593-021-00254-2
Affordances and limitations of learning analytics for computer-assisted language learning: a case study of the VITAL project	https://doi.org/10.1080/09588221.2017.1418382
Big data analytics model for the education sector	https://doi.org/10.35940/ijitee.L2834.1081219
Learning analytics and higher education: a proposed model for establishing informed consent mechanisms to promote student privacy and autonomy	https://doi.org/10.1186/s41239-019-0155-0
A review of learning analytics intervention in higher education (2011 - 2018)	https://doi.org/10.1007/s40692-019-00143-7

Title	Link
Factors Affecting the Deployment of Learning Analytics in Developing Countries: Case of Egypt	https://doi.org/10.3991/ijet.v17i03.24405
Student Privacy and Learning Analytics: Investigating the Application of Privacy Within a Student Success Information System in Higher Education	https://doi.org/10.18608/jla.2023.7975
Learning analytics in support of inclusiveness and disabled students: a systematic review	https://doi.org/10.1007/s12528-023-09363-4
Learning analytics in higher education: a preponderance of analytics but very little learning?	https://doi.org/10.1186/s41239-021-00258-x
Learning Analytics and Fairness: Do Existing Algorithms Serve Everyone Equally?	https://doi.org/10.1007/978-3-030-78270-2_12

### Cultural

Title	Link
Students' expectations of Learning Analytics across Europe	https://doi.org/10.1111/jcal.12802
Advising the whole student: eAdvising analytics and the contextual suppression of advisor values	https://doi.org/10.1007/s10639-018-9781-8
Learning Analytics: Pathways to Impact	https://doi.org/10.14742/AJET.6853
Using LMS Log Data to Explore Student Engagement with Coursework Videos	https://doi.org/10.24059/olj.v26i4.2998
Amplifying Student and Administrator Perspectives on Equity and Bias in Learning Analytics: Alone Together in Higher Education	https://doi.org/10.18608/jla.2023.7775
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303793
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303799
Prerequisites for artificial intelligence in further education: identification of drivers barriers and business models of educational technology companies"	https://doi.org/10.1186/s41239-020-00193-3
Empowering learners with personalised learning approaches? Agency equity and transparency in the context of learning analytics"	https://doi.org/10.1080/02602938.2019.1676396
The privacy paradox and its implications for learning analytics	https://doi.org/10.1145/3375462.3375536
An exploratory latent class analysis of student expectations towards learning analytics services	https://doi.org/10.1016/j.iheduc.2021.100818
Post-GDPR Usage of Students' Big-Data at UK Universities	https://doi.org/10.1007/978-3-030-71292-1_15
Working together in learning analytics towards the co-creation of value	https://doi.org/10.18608/jla.2019.62.2
Educator perspectives on learning analytics in classroom practice	https://doi.org/10.1016/j.iheduc.2020.100730
Data privacy on the African continent: Opportunities challenges and implications for learning analytics"	https://doi.org/10.1111/bjet.13226
Learning analytics in higher education: an analysis of case studies	https://doi.org/10.1108/AAOUJ-01-2017-0009

Title	Link
Learning analytics should not promote one size fits all: The effects of instructional conditions in predicting academic success	https://doi.org/10.1016/j.iheduc.2015.10.002
Affordances and limitations of learning analytics for computer-assisted language learning: a case study of the VITAL project	https://doi.org/10.1080/09588221.2017.1418382
Big data analytics model for the education sector	https://doi.org/10.35940/ijitee.L2834.1081219
A review of learning analytics intervention in higher education (2011 - 2018)	https://doi.org/10.1007/s40692-019-00143-7
Rethinking learning analytics adoption through complexity leadership theory	https://doi.org/10.1145/3170358.3170375
Factors Affecting the Deployment of Learning Analytics in Developing Countries: Case of Egypt	https://doi.org/10.3991/ijet.v17i03.24405
Student Privacy and Learning Analytics: Investigating the Application of Privacy Within a Student Success Information System in Higher Education	https://doi.org/10.18608/jla.2023.7975
Learning analytics in support of inclusiveness and disabled students: a systematic review	https://doi.org/10.1007/s12528-023-09363-4
Learning analytics in higher education: a preponderance of analytics but very little learning?	https://doi.org/10.1186/s41239-021-00258-x
Being more human: rooting learning analytics through resistance and reconnection with the values of higher education	https://doi.org/10.1080/07294360.2019.1677569
Learning analytics as data ecology: a tentative proposal	https://doi.org/10.1007/s12528-023-09355-4

#### Technical

Title	Link
Examining Techniques to Solving Imbalanced Datasets in Educational Data Mining Systems	https://doi.org/10.47839/ijc.21.2.2589
ADA: A System for Automating the Learning Data Analytics Processing Life Cycle	https://doi.org/10.1007/978-3-030-29736-7_73
Learning analytics dashboards are increasingly becoming about learning and not just analytics - A systematic review	https://doi.org/10.1007/s10639-023-12401-4
Visualizations of user data in a social media enhanced web-based environment in higher education	https://doi.org/10.3991/ijet.v8iS2.2740
A Study on the Application of Big Data to the Korean College Education System	https://doi.org/10.1016/j.procs.2016.07.096
Google BigQuery for education: Framework for parsing and analyzing edX MOOC data	https://doi.org/10.1145/3051457.3053980
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303794
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303798
Four design principles for learner dashboards that support student agency and empowerment	https://doi.org/10.1108/JARHE-11-2018-0251
Bringing Synchrony and Clarity to Complex Multi-Channel Data: A Learning Analytics Study in Programming Education	https://doi.org/10.1109/ACCESS.2021.3134844
Post-GDPR Usage of Students' Big-Data at UK Universities	https://doi.org/10.1007/978-3-030-71292-1_15
Working together in learning analytics towards the co-creation of value	https://doi.org/10.18608/jla.2019.62.2
Data privacy on the African continent: Opportunities challenges and implications for learning analytics"	https://doi.org/10.1111/bjet.13226
Affordances and limitations of learning analytics for computer-assisted language learning: a case study of the VITAL project	https://doi.org/10.1080/09588221.2017.1418382
Integrating multiple data sources for learning analytics - a review of literature	https://doi.org/10.1186/s41039-019-0105-4
Big data analytics model for the education sector	https://doi.org/10.35940/ijitee.L2834.1081219

Title	Link
Using learning analytics in clinical competency committees: Increasing the impact of competency-based medical education	https://doi.org/10.1080/10872981.2023.2178913
A review of learning analytics intervention in higher education (2011 - 2018)	https://doi.org/10.1007/s40692-019-00143-7
Big Data Platform for Educational Analytics	https://doi.org/10.1109/ACCESS.2021.3070737
Factors Affecting the Deployment of Learning Analytics in Developing Countries: Case of Egypt	https://doi.org/10.3991/ijet.v17i03.24405
Learning analytics in higher education: a preponderance of analytics but very little learning?	https://doi.org/10.1186/s41239-021-00258-x

# Learning Theory

Title	Link
Opportunities and challenges in using learning analytics in learning design	https://doi.org/10.1007/978-3-319-66610-5_16
Learning Analytics in Supporting Student Agency: A Systematic Review	https://doi.org/10.3390/su151813662
Awareness is not enough: Pitfalls of learning analytics dashboards in the educational practice	https://doi.org/10.1007/978-3-319-66610-5_7
Social learning analytics: Five approaches	https://doi.org/10.1145/2330601.2330616
Unravelling the dynamics of instructional practice: A longitudinal study on learning design and vle activities	https://doi.org/10.1145/3027385.3027409
A mixed-method study of how instructors design for learning in online and distance education	https://doi.org/10.18608/JLA.2020.73.6
Measures of engagement in the first three weeks of higher education predict subsequent activity and attainment in first year undergraduate students: a UK case study	https://doi.org/10.1080/02602938.2020.1822282
Using virtual learning environment data for the development of institutional educational policies	https://doi.org/10.3390/app11156811
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303796
Four design principles for learner dashboards that support student agency and empowerment	https://doi.org/10.1108/JARHE-11-2018-0254
Prerequisites for artificial intelligence in further education: identification of drivers barriers and business models of educational technology companies"	https://doi.org/10.1186/s41239-020-00193-3
Empowering learners with personalised learning approaches? Agency equity and transparency in the context of learning analytics"	https://doi.org/10.1080/02602938.2019.1676396
Working together in learning analytics towards the co-creation of value	https://doi.org/10.18608/jla.2019.62.2
Educator perspectives on learning analytics in classroom practice	https://doi.org/10.1016/j.iheduc.2020.100730
Learning analytics in higher education: an analysis of case studies	https://doi.org/10.1108/AAOUJ-01-2017-0009

Title	Link
Learning analytics should not promote one size fits all: The effects of instructional conditions in predicting academic success	https://doi.org/10.1016/j.iheduc.2015.10.002
Making a #Stepchange? Investigating the Alignment of Learning Analytics and Student Wellbeing in United Kingdom Higher Education Institutions	https://doi.org/10.3389/feduc.2020.531424
Affordances and limitations of learning analytics for computer-assisted language learning: a case study of the VITAL project	https://doi.org/10.1080/09588221.2017.1418382
Big data analytics model for the education sector	https://doi.org/10.35940/ijitee.L2834.1081219
Learning analytics and higher education: a proposed model for establishing informed consent mechanisms to promote student privacy and autonomy	https://doi.org/10.1186/s41239-019-0155-0
Using learning analytics in clinical competency committees: Increasing the impact of competency-based medical education	https://doi.org/10.1080/10872981.2023.2178913
A review of learning analytics intervention in higher education (2011 - 2018)	https://doi.org/10.1007/s40692-019-00143-7
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Student Privacy and Learning Analytics: Investigating the Application of Privacy Within a Student Success Information System in Higher Education	https://doi.org/10.18608/jla.2023.7975
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Learning analytics in higher education: a preponderance of analytics but very little learning?	https://doi.org/10.1186/s41239-021-00258-x
Being more human: rooting learning analytics through resistance and reconnection with the values of higher education	https://doi.org/10.1080/07294360.2019.1677569

# Literacy/Training

Title	Link
Learning analytics: state of the art	https://doi.org/10.1007/s12008-022-00930-0
Student centred design of a learning analytics system	https://doi.org/10.1145/3303772.3303795
Four design principles for learner dashboards that support student agency and empowerment	https://doi.org/10.1108/JARHE-11-2018-0252
Four design principles for learner dashboards that support student agency and empowerment	https://doi.org/10.1108/JARHE-11-2018-0253
Prerequisites for artificial intelligence in further education: identification of drivers barriers and business models of educational technology companies"	https://doi.org/10.1186/s41239-020-00193-3
The privacy paradox and its implications for learning analytics	https://doi.org/10.1145/3375462.3375536
An exploratory latent class analysis of student expectations towards learning analytics services	https://doi.org/10.1016/j.iheduc.2021.100818
Post-GDPR Usage of Students' Big-Data at UK Universities	https://doi.org/10.1007/978-3-030-71292-1_15
Educator perspectives on learning analytics in classroom practice	https://doi.org/10.1016/j.iheduc.2020.100730
Ethical issues and learning analytics: Are academic library practitioners prepared?	https://doi.org/10.1016/j.acalib.2022.102621
Learning analytics in higher education: an analysis of case studies	https://doi.org/10.1108/AAOUJ-01-2017-0009
Transparency and Trustworthiness in User Intentions to Follow Career Recommendations from a Learning Analytics Tool	https://doi.org/10.18608/jla.2023.7791
Using learning analytics in clinical competency committees: Increasing the impact of competency-based medical education	https://doi.org/10.1080/10872981.2023.2178913
A review of learning analytics intervention in higher education (2011 - 2018)	https://doi.org/10.1007/s40692-019-00143-7
Factors Affecting the Deployment of Learning Analytics in Developing Countries: Case of Egypt	https://doi.org/10.3991/ijet.v17i03.24405

### Framework

Title	Link
A checklist to guide the planning designing implementation and evaluation of learning analytics dashboards"	https://doi.org/10.1186/s41239-023-00394-6
Adopting Learning Analytics to Inform Postgraduate Curriculum Design: Recommendations and Research Agenda	https://doi.org/10.1007/s10796-021-10183-z
Features students really expect from learning analytics	https://doi.org/10.1016/j.chb.2017.06.030
DISCOVERING INSIGHTS IN LEARNING ANALYTICS THROUGH A MIXED-METHODS FRAMEWORK: APPLICATION TO COMPUTER PROGRAMMING EDUCATION	https://doi.org/10.28945/5182
The privacy paradox and its implications for learning analytics	https://doi.org/10.1145/3375462.3375536
An exploratory latent class analysis of student expectations towards learning analytics services	https://doi.org/10.1016/j.iheduc.2021.100818
Supporting Learning Analytics Adoption: Evaluating the Learning Analytics Capability Model in a Real-World Setting	https://doi.org/10.3390/app13053236
Policy Matters: Expert Recommendations for Learning Analytics Policy	https://doi.org/10.1007/978-3-030-29736-7_38
Buried treasure or III-gotten spoils: the ethics of data mining and learning analytics in online instruction	https://doi.org/10.1007/s11423-020-09841-x
Critical success factors for implementing learning analytics in higher education: A mixed-method inquiry	https://doi.org/10.14742/AJET.6164
Factors Affecting the Deployment of Learning Analytics in Developing Countries: Case of Egypt	https://doi.org/10.3991/ijet.v17i03.24405
Learning analytics as data ecology: a tentative proposal	https://doi.org/10.1007/s12528-023-09355-4