Tools and Technologies that Enable Learning Analytics

Learning analytics is a rapidly evolving field. Explore the table below to learn more about the tools and technologies that are making evidence-based insight into student learning a reality.

Category	Description	Role	Examples
Online Learning Systems and Environments	Digital tools that deliver instructional materials to students and collect student performance data. The systems can be adaptive, meaning they present different activities to students based on prior responses and individual learning needs.	Collection, Analysis, Insight, and Action	**Khan Academy**, **IXL**, **Quill**
Learning Management Systems (LMS)	Classroom-level systems that teachers use to assign, collect, and assess student work. As data from a variety of online learning systems can be ingested, LMSs can be a powerful source of aggregated data for teachers.	Collection, Analysis, Insight	**Google Classroom**, **Canvas**, **Schoology**
Student Information Systems (SIS)	School-level systems for collecting information about students including attendance, grades, and parent communication records. SIS data can be helpful for identifying high level trends in larger populations.	Collection, Analysis, Insight	**Synergy**, **Powerschool**

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Category	Description	Role	Examples
Assessment Systems	Formative and interim assessment tools collecting data about what students know and using models to make predictions about what they are ready to learn next. Adaptive test environments vary the difficulty of items based on student performance to reduce the number of assessment items and improve accuracy.	Collection, Analysis, Insight, and Action	**NWEA MAP Assessments**, **Illuminate Education**, **Edulastic**
Cloud Infrastructure	Cloud services allowing schools to move data offsite into scalable, accessible environments. Many cloud services offer analytics and AI tools to help educators derive insights into student learning.	Analysis, Insight	**Amazon Web Services**, **Microsoft Azure**, **Google Cloud**
Analytics Platforms and Services	Platforms and services assisting schools by ingesting raw data from existing school systems. Proprietary algorithms and models turn raw data into visual dashboards with actionable insights.	Analysis, Insight	**BrightBytes**, **Hapara**, **Amplified IT**

The Role of Artificial Intelligence and Machine Learning in Learning Analytics

"Learning analytics depends upon artificial intelligence to sift through, organize, and make sense of the wealth of data generated by students on digital tools. As processing power and artificial intelligence technologies evolve, so too does the potential of learning analytics to transform teaching and learning. Modern learning analytics solutions frequently depend on machine learning, or the use of systems that can learn and adapt independent of human intervention or manipulation. With machine learning, computer systems can find patterns in data and then develop and refine algorithms to present meaningful information and make predictions."

View Additional Resources

Check out the rest of the Learning Analytics tools and resources on the **K-12 Blueprint.**