Preparing to Make Data-Driven Decisions About Digital Learning

Higher education institutions looking to adopt digital learning initiatives are using copious and disparate data to conduct analyses and evaluate their decisions. To prepare your institution to make data-driven decisions related to digital learning, this brief includes recommendations for two foundational steps: establishing a team and organizing your data.

Establishing a Team

Thinking in advance about who will be part of your institution's digital learning implementation team will help you identify the primary users and sources of the data you will need for measuring results and making decisions about the initiative. Mapping your team will help you plan for effectively sharing and using that data.

To help in your thinking, the following chart provides examples of the kinds of different project roles that generate, collect, use and share data in a digital learning initiative.

Role	Description	Data Role	People / Teams Who Might Fill Role
Implementation Project Lead	The individual charged with leading an institution's digital learning implementation from start to finish	**Use** historical and current data to make decisions about digital learning planning and execution and to track progress toward goals. **Share** data with institutional leadership and project stakeholders.	Principal Investigator, Project Director, Program Director
Executive Sponsor	Highest-level institutional advocate for the implementation	**Use** data to make executive-level decisions about implementation.	Provost, Vice-Provost, Student Success Leader
Academic Leads	Individuals or groups with decision-making power with respect to resource allocation and academic curricula	**Use** data to make decisions about where and how to implement digital learning at the program and course levels.	Academic Affairs, College Deans, Academic Chairs
Instructors	Faculty and instructors teaching the courses where digital learning is being implemented	**Generate** data through the decisions they make about course curriculum and activities. **Use** data to inform day-to-day instruction and course redesign.	Faculty, Instructors
Students	Students enrolled in the courses or programs where digital learning is being implemented	**Generate** data through their interactions with the digital learning solution and instructor. **Use** data to track their own progress and inform their studies.	Students

Role	Description	Data Role	People / Teams Who Might Fill Role
Information Technology	High-level IT manager or CIO who manages the data warehouse or central repository	**Ensure** that data is managed and maintained in a data warehouse or central repository and that users of data can access reports from the central repository as needed.	CIO, Assistant Vice President of Data Systems
Teaching and Learning Support	Individuals with expertise in instructional design or in teaching and learning who can provide a wide range of support services related to course design, development, delivery and evaluation	**Use** data on student performance to help academic leaders and instructors make decisions about course design and instructional practices.	Instructional System Designers, Instructional Designers, Subject Matter Experts, Project Managers
Research and Analytics	Individuals, units and service providers who can pull and analyze implementation data	**Collect** data from across systems, clean data and complete analysis to **share** with the stakeholders above.	Institutional Research, Institutional Effectiveness

If you choose to work with vendors that offer digital learning products or services, they will also need to be part of the team that shares data. Data-sharing agreements are included in your contracts with vendors and should be carefully reviewed to make sure that the data sharing and security policies are in line with federal, state and institutional standards and meet institutional needs for the implementation. Additionally, you should explore whether your vendors and institution have adopted standards like IMS Caliper Analytics or IMS Learning Tools Interoperability, which make it easier to collect, transfer and analyze data across systems.
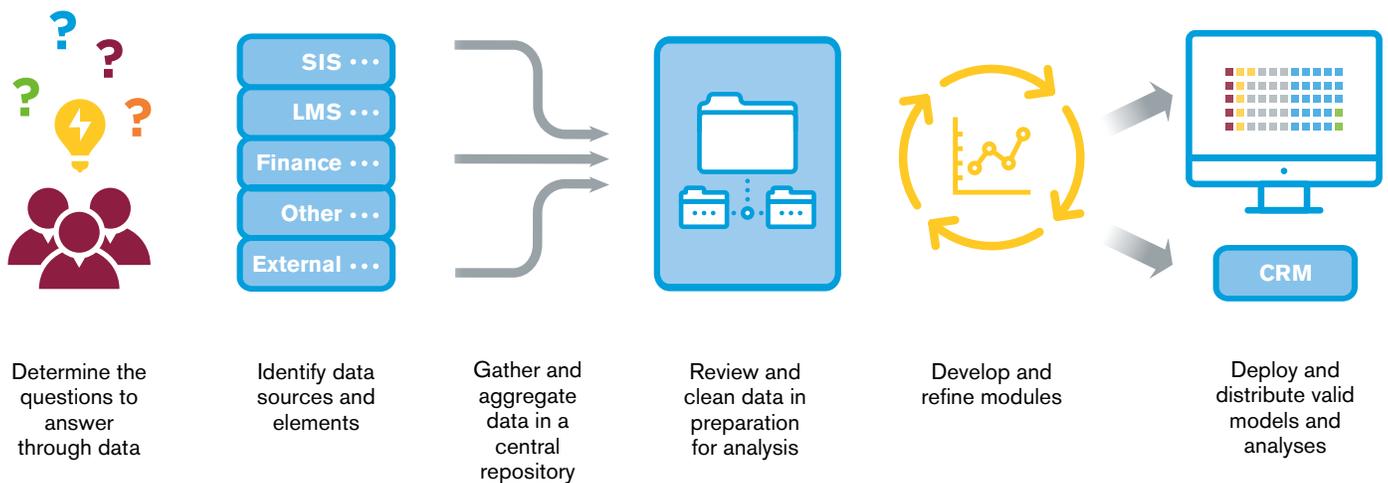
Organizing Your Data

Gathering data alone will not lead to change. Goals must be established to guide the collection of data, and the data must be translated into information that can inspire action. For this to happen, your digital learning data initiative should follow these steps:

1. **Determine which questions you hope to answer through data.** This depends on your goals for the digital learning initiative, which should be established in coordination with the team that is implementing digital learning and should be in alignment with the institution's mission and strategy. For example, if your institution is working to improve graduation rates by 5 percent over the next five years, it may look to data to understand which students are dropping out and if there are trends among those students in terms of courses or programs of study, student demographics, etc.

2. **Understand the data resources available to you and identify which data is needed to help answer your questions.** This data may come from a range of systems, such as your learning management system, student information system, enrollment management system, financial aid system and others. Talk with individuals at your institution to learn what data and data systems are currently in use. You may also learn from colleagues at peer institutions or your vendor about how other institutions make use of the data available to them.

3. **Aggregate data from different sources into a single repository.** A data repository is a place where data is organized and stored for analysis. This single data repository will be the "ground truth" or the sole source of official information for everyone involved in the initiative. This step shifts the discussion from "which data is correct?" and "where do we find the data?" to "what do we do with this data?" The data in the system should be correct and should be jointly maintained by IT and Research and Analytics.

4. **Review data and prepare it for analysis.** A key step in preparation is to clean the data by identifying inaccuracies. A process can be developed to work with data stewards to correct inaccurate data in the source systems. Routine checks of the data, followed by corrections by the data stewards and reloading of the data repository, should occur on a regular basis.

5. **Develop analytical models for data analysis.** Analytical models are algorithms that use data inputs to help explain, simulate or predict complex relationships. For example, predictive analytics models have been used in higher education to predict which students are more likely to drop out of a course, based on data like previous educational experience, academic performance and study habits.

6. **Deploy the analytical models with a continuous improvement mindset.** Analytical models should be evaluated and revised as needed to reflect changes in the environment. New data points can be used to help "train" the models to make them more effective.

Steps to Organize Data for Data-Based Decision-Making

| Determine the questions to answer through data | Identify data sources and elements | Gather and aggregate data in a central repository | Review and clean data in preparation for analysis | Develop and refine modules | Deploy and distribute valid models and analyses |

Additional Resources to Explore

"Putting Data to Work," eLearning Guild

"Vision for Learning Analytics at MSU," Michigan State University

"A National Model for Student Success," Georgia State University

"How Higher-Education Institutions Can Transform Themselves Using Advanced Analytics," McKinsey & Company