

This is the second in a three-article *EDUCAUSE Review* series exploring analytics.

By Diana G. Oblinger

ANALYTICS

What We're Hearing

Over the last few months, EDUCAUSE has been focusing on analytics. As we hear from experts, meet with association members, and watch the marketplace evolve, a number of common themes are emerging. Conversations have shifted from “What is analytics?”¹ to “How do we get started, and how do we use analytics well?” What we are hearing from experienced implementers can benefit those who are getting started.

“Analytics requires a culture of inquiry, and inquiry creates an analytics culture.”

Analytics is a matter of culture—a culture of inquiry: asking questions, looking for supporting data, being honest about strengths and weaknesses that the data reveals, creating solutions, and then adapting as the results of those efforts come to fruition. Analytics not only relies on a culture of inquiry but can promote such a culture. Analytics, used well, is more like a flashlight than a hammer, illuminating where progress has been made and where

improvements are needed. There's a synergy between investing in analytics and developing a culture that embraces analytics.

“Ask good questions; use good data.”

Analytics is a problem-solving process: asking strategic questions, identifying relevant data, conducting analyses, exploring options, communicating results, and taking action. The more clarity there is around the problem statement, the higher will be the probability of success. The questions that analytics seeks to address are complex, the assets dispersed. Asking

good questions requires understanding the context, which means that leaders must gather inputs from all sides to obtain the perspective needed to address strategic questions. Questions must drive analytics, not the data at hand. Analytics requires collaboration among different campus divisions such as academic affairs, student affairs, institutional research, information technology, and finance. Analytics, as a discovery and decision-making process, requires stakeholders to think strategically about the role of data: inventorying what is available, assessing what is needed, and considering how it will be used.

“Analytics is a journey from ownership to stewardship.”

“Data hawks” will advocate for control of their data, whereas “data doves” believe that “data just wants to be free.” Both approaches create difficulties. Shifting the conversation toward stewardship helps overcome polarization. Campus leaders should consider reframing ownership

with the concept of “campus data custodians” whose role is protecting the longevity, quality, and relevance of data. Data governance can challenge political, technical, and organizational assumptions. Establishing data governance is a complex but necessary undertaking. It is likely to be multiyear project, whether at a large or small institution.

“Communication is essential to any analytics effort.”

Experts are clear that analytics demands “culture change.” Culture change requires communication and a shift of beliefs. Even so, few institutions have a comprehensive communication and training program in place to help their campus community understand analytics. Ongoing training, engagement, and communication are also essential aspects of rolling out new dashboards and other visualization tools.

“Analytics requires new skill sets.”

One of the biggest barriers to analytics can be the shortage of necessary skills. Recent research suggests that by 2018, the United States could lack 140,000 to 190,000 workers with “deep analytical” expertise. Additionally, the U.S. talent gap will require retooling or hiring 1.5 million data-literate managers.² A new field may be in the process of being defined—data science—which reflects the centrality of data as a resource. Data science blends multiple fields such as statistics, applied mathematics, and computer science. It blends not only disciplines but also other skill areas such as technical skill, teamwork skills, communication skills, and tool mastery.³ Other segments will compete for these skills—not just higher education.

“Risks are inherent in any decision—even in no decision.”

Risks are inherent in making any decision. Not adopting analytics does not avoid risk—it risks missed opportunities. When decisions are made with insufficient information, risks increase. Analytics adopters must accept the risk of exposing institutional weaknesses, perhaps obligating action based on new knowledge. Carefully

selected questions, quality data, sound practices, and prudent processes mitigate risks. Thoughtful analytics yields better processes and decisions. Risk management is important; risk avoidance is not a solution.

“The IT organization should neither drive nor own analytics.”

Analytics must be a shared responsibility across all parts of the higher education institution, with high-level executive ownership of the analytics agenda. The CIO is the executive most directly charged with developing infrastructure and increasing capacity for analytics. CIOs are most likely to have knowledge of where data resides and how business practices work across the institution. CIOs are accountable for data security and integrity. Although the IT organization has an important role, strong partnerships across the institution are critical, especially for information technology and institutional research as they negotiate data governance and ownership. Finance, admissions, student services, and academic affairs must become effective partners in adoption as well. Even within the technical support realm, the responsibility for analytics should not lie with the IT organization alone.

“Analytics is an investment.”

Analytics is an investment for the future. The ultimate goal of analytics is to make more-intelligent decisions. Those decisions provide the ROI. For example, analytics efforts to improve student outcomes often begin by identifying barriers. Approaches are tested; results are compiled; improvements are made. Improving pass rates and reducing course re-takes save resources—for students and the institution. Plus, the documented benefits of such analysis and decisions help convince others. When it becomes clear that the resulting redesigns are leading to success, the investment rationale is clear. Dashboards track progress toward strategic objectives. From a financial perspective, building and using a data warehouse may be a much better investment than designing custom reports and transactional reporting. Ana-

lytics can be an investment in building the quality and effectiveness of the institution.

Finally, in getting started with analytics, IT and institutional leaders may want to heed the following words of wisdom:

- Transitioning an institution from a culture of anecdote to a culture of evidence is a proactive process. Leaders must build structures—both technical and governance—and develop data sources, data flows, and data accessibility to support the initiatives.
- When people are in control, have ownership of quality data, and can trust the data, everything changes.
- Technology makes education more personal, not less. Systems don't replace people; they empower people—both advisors and students—to make better decisions.

Analytics is a powerful tool, one that we are just beginning to understand. ■

Notes

1. Diana G. Oblinger, “Let's Talk ... Analytics,” *EDUCAUSE Review*, vol. 47, no. 4 (July/August 2012), <http://www.educause.edu/library/ERM1240P>.
2. James Manyika et al., “Big Data: The Next Frontier for Innovation, Competition, and Productivity,” McKinsey Global Institute, May 2011, http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Big_data_The_next_frontier_for_innovation; Steve Lohr, “The Age of Big Data,” *New York Times*, February 11, 2012, <http://www.nytimes.com/2012/02/12/sunday-review/big-datas-impact-in-the-world.html>.
3. See, for example, Dan Woods, “What Is a Data Scientist? Michael Rappa, Institute for Advanced Analytics,” *Forbes*, March 5, 2012, <http://www.forbes.com/sites/danwoods/2012/03/05/what-is-a-data-scientist-michael-rappa-north-carolina-state-university/>.

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Diana G. Oblinger
(dblingle@educause.edu)
is President and CEO of
EDUCAUSE.