Institutions of higher education are leveraging analytics to do everything from measuring and improving their own effectiveness to providing more engaging and individualized learning experiences.

**Analytics Meets Academia**

The past few years have seen an explosion in business use of analytics. Analytical tools, including business intelligence (BI), dashboards and data mining, can greatly increase the quality of data an organization uses for decision-making. Businesses are using analytics not only to gain a better understanding of their present customers but to predict who will next become customers, and what they want. These capabilities can drive insights that lead to breakthrough innovations for all types of organizations.

Institutions of higher education stand to benefit from the expanded use of analytics, as much if not more than other types of organizations. Many educational institutions are accustomed to using analytical tools to help determine who will enroll among a pool of accepted applicants, or even more basic, for reporting purposes. However, the use of analytics in other areas is lagging.

“Academic analytics” describes the intersection of technology, information, culture and information to manage the academic enterprise. The term applies to all aspects of managing the business of an academic institution, from enrollment management to finance and budgeting as well as everything associated with the student experience of learning. Learning analytics, on the other hand, can pinpoint individual learning styles and peg content that better matches the learner’s learning style, abilities and interests.

With a wealth of new tools that leverage analytics for specific purposes and independent standards developing rapidly, institutions of higher learning can leverage analytics to drive a host of business objectives, from better decision-making to streamlined operations to improved alumni relations. In fact, advanced and predictive analytics will transform virtually every university activity, including enrollment, student support, alumni engagement and everything in between, spanning both learning and operational functions.

**Transforming Student Experience Using Analytics**

With all the change afoot, the business of higher education is being disrupted on a mass scale. But there are vast opportunities arising for institutions that are adept at leveraging analytics. Figure 1 illustrates how institutions of higher education can use analytics to transform the student experience.
Academic (or operationally focused) analytics can help institutions answer a wide range of burning questions, on topics relating to operational efficiency, institutional effectiveness and performance against mission:

- How do students make their decisions of what school to attend?
- How can we optimize acceptance of enrollment?
- What resources do our students use?
- How can we maximize student retention by identifying students who would benefit from interventions?
- How effective are the resources that we provide? Which resources should we consider adding?
- How effective is our alumni network in fostering a community after graduation?
- How effective are we in engaging alumni in the near- and long term?

**Benefits of Analytics**

An EDUCAUSE survey confirms institutions of higher education are aware of the potential of analytics. In more than two-thirds of responding institutions (69%), analytics was viewed as a major priority for at least some departments, units, or programs; 28% reported that analytics is a major priority for the entire institution. Only 6% reported that analytics is not a priority or an interest.

There are many benefits to using analytics, including but not limited to:

- Complete view of students, faculty, curriculum, programs, operations and budgets.
- Ability to manage and reduce risk.
- Ability to improve efficiency by streamlining operations.
- Ensure transparency for all parties to the education value chain.
• Drive the best possible outcomes for the institution.
• Ability to track institutional performance against its mission.

Analytics: At the Core of our Solutions

We are leveraging business intelligence and analytics as the backbone for our education-industry solutions, which include three software solutions:

• **Student Success**, which leverages predictive analytics to determine which students need support or additional resources in order to stay in school.
• **Data Insight**, an analytics solution that helps gauge institutional performance against mission and goals.
• **Next-Generation Learning Environment**, currently in development, which will leverage learner and instructor Code Halos to determine points of intersection where opportunities for richer learning lie. This environment will also include adaptive learning capabilities and gamification for greater engagement.

Student Success

The Cognizant Student Success Solution enables institutions to:

• Get insight into students’ progress.
• Run predictive analysis to pinpoint students who are at an increased risk of failure.
• Enable closed-loop student interaction with suggested intervention actions, communications and tracking.
• Provide personalized interventions for students when needed to enable success.

Data Insight

The Data Insight solution to increase institutional effectiveness offers:

• The ability to analyze and measure the mission performance, academic performance, financial performance and operational performance of an institution.
• A single source of information, which helps create an integrated view across business functions.
• The ability to produce dynamic reports with hierarchical drilling capability from summary to detail, such as the profitability of a single class.
• The ability to perform “what-if” modeling and scenario analyses to compare alternatives.
• The ability to reduce costs through deeper insight into spend and funding information.
• An easy-to-use and consolidated view of operational requirements across the enterprise for greater efficiency.
• The ability to work with existing IT infrastructure within a university or college.
• The solution is built on cloud-based platform.

Next-Generation Learning Environment

By analyzing and gaining insight from the coded data surrounding each learner and educator—called “Code Halos”—institutions of higher education can unearth opportunities for richer, more efficient learning specifically tailored to student and employer needs (see Figure 2). The Next-Generation Learning Environment will take inputs from a learner’s social, institutional, learning style and third-party datasets to derive a Student Persona upon which Adaptive Learning can be applied.
Leveraging the Learner’s Code Halo

**Figure 2**

**Decoding Student Code Halo**

**Joanna’s Activities Tracked by Institution**

- **PERSONAL**
  - 15 year old, in First Year college pursuing undergrad degree – major undecided
  - Listens to Busted, McFly, JLo, Xtina tracks
  - Likes to travel and blog her experiences

- **EDUCATIONAL**
  - Completed Grade 9 and 10 with AP in Mathematics and English
  - Completed high school with 3.6 GPA; SAT 1680
  - Scholarship awarded

**CODE HALO**

- **LMS**
  - Last Logged In & Time spent on course content
  - Course progress and time spent on course modules
  - Intra student communications
  - Teacher Scores/Feedback
  - Enrolment status

- **SIS**
  - Student Data/Demographics
  - Grades and Transcripts
  - Behavior Records
  - School/Attendance
  - Health and Medical Records
  - Special Education needs
  - Fee Records/Calculation
  - Students Lifecycle details

- **CRM**
  - Personalized Marketing Content
  - Billing/Information
  - Behavior Records
  - Events attended by prospective students
  - Packages and other pricing options

- **Solutions Overview**

**LIBRARIES & ONLINE LEARNING**

- **Roku**
  - Follows opinions, articles on various areas of mathematics like algebra, calculus and trigonometry.

- **Tesla**
  - Search for books on various topics of Mathematics

- **MOOC**
  - Login to CLMS and follow the learning plan for the chapter on Trigonometry

- **The Math Forum sparknotes**
  - Helps solves others students queries as well as puts her doubts
  - Applied for Math Scholarship from University of Oxford

- **MOOC**
  - Searches and views courses/books on Pythagoras theorems and probability

**CODE HALO ANALYTICS**

**Insights Generated**

- Learning Style through LMS history, Library track history, assessment scores, queries posted, scholarships applied
- Financial Aid, Demographic data and Purchase pattern
- Understand social patterns through blogs, discussion forums, tweets, FB posts, online book purchases
- Deriving entertainment patterns (like Joanna’s interest around probability and trigonometry through online movies, games which she interacts with)
- Increase learner engagement through gamification patterns

**Outcome / Ideas Delivered**

- Potential hypothesis that Joanna is 70% likely to pursue a career in Applied Mathematics
- Providing suggestions and generating personalized course plan
- Connecting to external resources like journals, academic groups of interest, industry experts
Beyond the inclusion of unstructured social data to develop learner personas, the Next-Generation Learning Environment will have two more important capabilities: adaptive learning techniques that are personalized for each learner and gamification of learning.

Looking Ahead

Leveraging analytics to improve operations and enrich learner experiences will unlock a world of opportunity for institutions of higher learning. Analytics improves operational decision-making while helping to measure institutional performance against goals. Perhaps most exciting, analytics can help institutions craft learning experiences according to ability, learning style and personal preference, increasing student success. Teaching and learning will become agile and deeper when the learning platform adapts to and engages with students as individuals.

Cognizant’s Analytics Practice has proven capabilities for helping universities and other institutions develop insights to increase every aspect of effectiveness, both operational and academic.

Our Differentiators

We provide domain consultants and expertise in a broad range of educational segments, including educational publishing, K-12, universities, colleges, professional associations and testing/assessment providers.

Our proven track record in delivering capabilities makes a difference to educational institutions. We offer:

- Consulting & Advisory Services.
- Primary and Secondary Market research services.
- Implement Analytical tools and applications.
- Custom Analytics application development.
- Predictive modeling and statistical analysis of data.

We work with our clients and partners to plan, build and operate end-to-end business processes in targeted areas. In addition, we help clients integrate their analytics stack to maximize their return on data and analytics investments.

To maximize our clients’ agility, we offer multiple engagement models, including working with clients on virtual teams and assisting with the implementation of SaaS or BPaaS to improve efficiency and effectiveness.

Get Started Today

We work with you to provide a proof of concept for analytics, a targeted, efficient program that generally takes between four and six weeks. Our team of domain experts, analysts and technologists will answer your institution’s burning questions. We can also customize and deploy our analytics solutions to ensure your institution engages learners in a customized, personalized way while driving performance against its mission.

About Cognizant Education

Cognizant Education provides end to end IT (enabled) services across the phases of planning, building and operating to address the challenges facing higher education institutions. Our solutions are fully integrated, from strategic business consulting, enterprise architecture, design, development, implementation, maintenance and support, IT infrastructure and business process outsourcing. Our Business Consulting practice offers solutions to support the transformation of higher education institutions including business and technology strategy and operations, data warehousing and business intelligence and next generation learning solutions to improve student success, institutional effectiveness and adaptive learning. For more information, visit: www.cognizant.com/education or write to: EducationInquiry@cognizant.com.
About Cognizant

Cognizant (NASDAQ: CTSH) is a leading provider of information technology, consulting, and business process outsourcing services, dedicated to helping the world’s leading companies build stronger businesses. Headquartered in Teaneck, New Jersey (U.S.), Cognizant combines a passion for client satisfaction, technology innovation, deep industry and business process expertise, and a global, collaborative workforce that embodies the future of work. With over 75 development and delivery centers worldwide and approximately 187,400 employees as of June 30, 2014, Cognizant is a member of the NASDAQ-100, the S&P 500, the Forbes Global 2000, and the Fortune 500 and is ranked among the top performing and fastest growing companies in the world. Visit us online at www.cognizant.com or follow us on Twitter: Cognizant.