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METRICS

Getting Ready & Getting Started: Academic Librarian Involvement in Institutional Learning Analytics Initiatives

Megan Oakleaf

Syracuse University, United States

INTRODUCTION

Librarians have invested in the assessment of student learning for many years. In the early years, librarians used surveys to gauge students' satisfaction, confidence, and self-efficacy at the close of library instruction sessions. More than a decade ago, librarians invested heavily in a variety of information literacy tests—some were local and homegrown, some were national and vendor-supplied. In the last ten years, many librarians have embraced the use of rubrics to assess artifacts of students' information literacy learning. And over the last five years, library studies correlating student library interactions with student learning surrogates have proliferated. Now, as their institutions of higher education commit to learning analytics initiatives, it is time for librarians to prepare for and engage with institutional learning analytics tools, systems, and strategies.

In many ways, the trajectory from librarian investment in learning assessment to involvement in learning analytics is a natural one. Learning assessment and learning analytics share a number of common values that librarians espouse. Both approaches demonstrate the importance librarians place on students' opinions, positive affect, confidence, self-efficacy, attainment of learning outcomes, commitment to growth and improvement, and ultimate success—whether that success is represented by retention in a program, minimized time to degree, GPA or similar achievement measures, speedy and appropriate employment, lifelong learning, or some other long range goal. Given these shared values, librarians will likely find learning analytics an intriguing and worthwhile next step of engagement in the development and assessment of student learning.

WHAT IS LEARNING ANALYTICS?

Learning analytics has been explained in a number of ways, but perhaps the clearest definition is this: "learning analytics is the measurement, collection, analysis, and reporting of data about learners and their contexts, for the purposes of understanding and optimizing learning and the environments in which it occurs" (Conole, Gasevic, Long, & Siemens, 2011, para. 3). Essentially, learning analytics employ data to improve learning contexts and help learners succeed.

To achieve that goal, learning analytics systems input data from a variety of sources and output descriptive information about student populations and cohorts which is used to discover behaviors, characteristics, or other attributes that appear to lead to student difficulties or successes. Many learning analytics systems attempt to predict, based on known attributes, which students are "at risk" so that educators can intervene quickly. Interventions emanating from learning analytics systems include notifications to students, advisors, or faculty; requirements for students to meet with support services, changes to institutional processes or policies; or other actions intended to support improved student outcomes (ECAR-ANALYTICS Working Group, 2015).

Within the larger sphere of learning analytics, there are several levels. The most basic level of learning analytics describes what is happening in the learning environment and what learners are doing. This level is aptly termed "descriptive." The next level, called "diagnostic," refers to learning analytics that determine what is facilitating or hindering student success; the goal of this level of learning analytics is to diagnose obstacles and facilitators of student success. The third level, "predictive," refers to the use of data to predict likely student success or failure. This predictive level is the focus of current development in higher education learning analytics and has been defined as, "the ability to accurately predict future outcomes using learning data…[which] empowers stakeholders in the learning process (e.g., students, faculty, administrators, et al.) with intelligence on which they can act as means to achieve more desirable final outcomes" (ECAR-ANALYTICS Working Group, 2015, 2). The most advanced level—the "prescriptive" level of learning analytics—is not yet a reality, but it is conceptualized as the use of predictive analytics to suggest specific interventions and actions known to aid learners (Phillips, 2015).

Learning analytics systems come in a variety of forms and draw from a wide range of data sources. Many are "home grown" by individual higher education institutions, and even more are offered by vendors either as single offerings or suites of learning analytics "solutions." The learning analytics landscape is growing and fast changing; it's difficult to obtain a census of all the options. In general, learning analytics tools tend to be clustered into or across the following system categories: enrollment management, relationship management, business intelligence/reporting, learning management system activity/achievement monitoring, integrated planning and advising, early-alert warning, and degree mapping. Typically, the data used by learning analytics systems comes from student information systems, learning management systems, clickers, publishers, video-streaming and web-conference tools, surveys, and co-curricular and extracurricular involvement systems (ECAR-ANALYTICS Working Group, 2015). At this time, library data is generally not included in learning analytics systems.

E-mail address: moakleaf@syr.edu.

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WHAT ARE THE GOALS OF LEARNING ANALYTICS INITIATIVES?

Learning analytics initiatives seek to increase student success and improve institutional business models. Institutional leaders are cognizant of the national dialog about higher education value (or the lack thereof). They are mindful of stakeholder expectations that students will be retained from one academic period to another; complete courses, programs and degrees in a timely fashion; achieve learning outcomes; and graduate ready to gain appropriate employment and contribute to their communities. They are aware that their institutions are increasingly asked to demonstrate that they are delivering valuable learning experiences for students, assessing those learning experiences effectively, and intervening to assist struggling students when necessary. Institutional leaders know they are expected to be responsible stewards of the tuition dollars they accept, and that they need to reduce the costs of education while maintaining high standards (ECAR-ANALYTICS Working Group, 2015). To achieve these goals, they need to streamline business processes, demonstrate accountability, make data-driven financial decisions (EDUCAUSE, 2011), increase organizational productivity, and respond rapidly to challenges (Long & Siemens, 2011). Learning analytics initiatives are intended to address and support the achievement of all these goals.

WHAT ARE THE CHALLENGES CONFRONTING LEARNING ANALYTICS INITIATIVES?

Most librarians list data privacy and security as top challenges confronting any systematic use of student data in higher education, and certainly, the importance of protecting student privacy and maintaining secure institutional data warehouses cannot be overstated. Institutions seeking to move forward with learning analytics efforts can address privacy and security concerns through rigorous data policies and processes, including the de-identification of student data prior to analysis and the replacement of personally identifiable information with unique identifiers and encrypted "master keys" (ECAR-ANALYTICS Working Group, 2015, 15). Interestingly, librarian concerns about these areas notwithstanding, data privacy and security are not typically the most difficult obstacles that learning analytics projects need to surmount.

Other, more difficult challenges stand in the way of learning analytics efforts. Perhaps greatest among them are issues of organizational culture and preparation. Higher education institutions frequently strive to be data-driven, but often the expectation that decisions will be based on evidence outstrips the reality. In order to be successful, institutions launching learning analytics systems need to develop a culture that prioritizes data-driven decision making and possesses the appropriate policies, procedures, and skills to underpin data-centric action-taking (ECAR-ANALYTICS Working Group, 2015).

Additional learning analytics challenges evolve from the data itself. Data quality is central to the value of any learning analytics effort, and the attributes of student data that could be problematic are many (Pipino, Lee, & Wang, 2002). Furthermore, many data quality issues can be exacerbated when institutions study small student cohorts, a likely occurrence as institutions attempt to pinpoint groups of students requiring assistance. In addition, the predictive models that form the basis of most vendor-supplied learning analytics products are proprietary and closed. This leads to the inability of institutions to explain, tailor, or correct the results of student analysis or classifications. Misunderstandings may occur if stakeholders believe the relationship between successful student behaviors and successful student outcomes are causative, rather than simply correlational. For example, students, parents, and other stakeholders might wonder why complying with interventions suggested by learning analytics systems doesn't guarantee a better grade or other desirable result (ECAR-ANALYTICS Working Group, 2015).

A final challenge is that learning analytics initiatives pose a myriad of ethical questions. For example, are institutions who possess learning data required to act on it? Might learning data be used to "profile" students? Will students flagged by a learning analytics system be treated differently? Could labels such as "at-risk" unintentionally become self-fulfilling (EDUCAUSE, 2011)? These ethical questions, data quality unknowns, organization culture issues, and data privacy and security concerns must all be addressed by institutions striving to overcome the challenges of learning analytics initiatives.

WHAT CAN LIBRARIANS DO TO PREPARE FOR INSTITUTIONAL LEARNING ANALYTICS INITIATIVES?

In order to achieve the goals and mitigate the challenges of learning analytics, librarians should anticipate the adoption of learning analytics initiatives at their institution. Librarians can prepare themselves by connecting with institutional colleagues, asking questions, recognizing and developing relevant skills, and cultivating a culture conducive to learning analytics progress.

Connect with influential leaders and partners

Librarians interested in pursuing learning analytics should identify the individuals and units that are leading their institutional involvement in learning analytics culture development, system selection, and intervention planning. Leaders responsible for championing learning analytics include a range of positions: chief academic officer, chief information officer, chief learning officer, chief data officer, director of institutional research, chief financial officers, or even the institutional provost, president, or chancellor (Lonn, Nixon, Morgan, Blink, & Dahlstrom, 2015). Librarians also need to identify key units that are influential in the learning analytics conversation on campus. On most campuses, learning analytics services are housed either in institutional research units, information technology units, or a combination of the two (Lonn et al., 2015). While these positions and units provide a place to start, librarians on individual campuses will have to investigate their local situation, perhaps beginning with institutional leaders and units focused on student success, learning assessment, information technology, and institutional research or effectiveness.

Ask questions

Once librarians have identified campus leaders and units focused on learning analytics issues, they can move forward by asking a number of questions about the institutional environment and readiness for learning analytics ventures, the data that may be appropriate to include in learning analytics systems, and the library's potential role in learning analytics.

Librarians can begin an environmental scan of campus learning analytics readiness by asking these important questions:

- Is the campus culture supportive of data-driven decision making and continuous improvement (Norris & Baer, 2013)?
- Is the campus currently considering a learning analytics system? Has one been selected? Is one in use?
- Are institutional systems and tools ready and sufficient for learning analytics projects?
- Are institutional policies and procedures ready and sufficient (Sclater & Bailey, 2015)?
- What do stakeholders (students, parents, faculty, administrators, or others) need to know or learn to "buy in" to learning analytics?

Librarians at institutions that are beginning to engage with learning analytics might have additional data-focused questions, such as:

- How long is data from each relevant learning analytics system retained? What about the data feeder systems that contribute to the learning analytics system? What happens to historical data?