Library Integration in Institutional Learning Analytics (LIILA)
Abstract

LIILA is a one-year National Forum grant designed to increase academic library involvement in institutional learning analytics and develop a detailed plan to prepare academic libraries to engage in this emerging and important use of data to support student learning and success. The lead applicant, Syracuse University, is joined by Advisory Group members from EDUCAUSE Learning Initiative, ACRL, CNI, OCLC, IMS Global, DePaul University, and the University of California, Berkeley.

Because higher education exists to educate students, academic librarians have engaged in learning assessment efforts for many years. Now, as institutions of higher education commence and commit to learning analytics initiatives, librarians need to explore and embrace emergent institutional learning analytics tools, systems, and strategies as well. 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." Essentially, learning analytics employ data to improve learning contexts and help learners succeed. Learning analytics help educators discover, diagnose, and predict challenges to learning and learner success and point the way to successful and active interventions to benefit students. The LIILA project will spearhead the creation of the vision, strategies, and concrete plans required to ensure that librarians initiate involvement in institutional learning analytics and continue to serve as anchors of higher education communities focused on ensuring student learning and success.

LIILA seeks to achieve four goals: 1) increase librarian awareness of and engagement in learning analytics; 2) craft a detailed plan for integrating academic libraries into learning analytics initiatives that support student learning and success; 3) develop sustaining learning analytics partnerships and collaborations among academic librarians, educational technology lynchpins, institutional and library IT professionals, and library vendor communities; and, 4) explore, design, and develop library use cases and data profiles based on learning analytics standards that can be used to integrate library data with institutional data stores.

Project activities: 1) A literature and environmental scan will increase understanding of the role of academic library data in institutional higher education learning analytics initiatives. 2) A National Forum will be convened over three meetings. Participants of the first meeting will discuss, envision, spearhead, and articulate the role of learning analytics in discovering, describing, analyzing, predicting, and ensuring student success and the value that academic libraries can demonstrate by integrating library data in learning analytics. Participants at the second meeting will discuss, investigate, and plan the underlying technology and data structures necessary for integrating library data into institutional learning analytics initiatives and articulate issues related to library data ownership and methods for sharing vendor data with libraries and institutions. At the third meeting, participants will discuss and find solutions for implementing and integrating existing educational technology interoperability standards into library systems. 3) Findings and conclusions from the meetings will be disseminated to the academic library and higher education community via rapid informal means, a formal white paper, and conference presentation proposals; feedback on each will be solicited.

The LIILA project coalesces academic library and higher education leaders and experts around common goals: articulating a vision for library inclusion in institutional learning analytics, devising strategies for bringing the vision to fruition, developing use cases that lead to increased library value and impact on student learning and success, and creating the technical plans necessary to initiate action. Through these actions, LIILA will:

- advance the role of libraries as anchors within their higher education communities,
- enable libraries to provide indispensable data to augment institutional understanding of student learning in higher education, and ultimately,
- facilitate student learning and success by contributing to the identification, development, and assessment of the curricular and instructional improvements resulting from learning analytics initiatives.

Library Integration in Institutional Learning Analytics (LIILA)

Syracuse University requests $99,876 to prepare for and convene a 3-part National Forum on Library Integration in Institutional Learning Analytics (LIILA) to increase academic library involvement in higher education learning analytics and prepare academic librarians to engage in this emerging and important use of data to support student learning and success.

National Need – Because the foremost purpose of higher education is to educate students, academic librarians have addressed the challenge of learning assessment for many years. Early on, librarians used surveys to gauge students' satisfaction, confidence, and self-efficacy. More than a decade ago, librarians invested heavily in a variety of homegrown, vendor-supplied, and IMLS-funded information literacy tests including Project SAILS and TRAILS (Blixrud, 2003; Morriston, 2007). In the last ten years, many librarians have embraced the use of rubrics to assess artifacts of students' information literacy learning, due in large part to the IMLS-funded RAILS project (Belanger, et. al., 2015; Holmes, 2013; Oakleaf, 2011). And since the 2010 publication of the ACRL *Value of Academic Libraries* report and subsequent IMLS-funded library value studies, library research correlating student library interactions with student learning surrogates has proliferated (ACRL, 2012; ACRL, 2015; ACRL, 2016; Soria, Fransen, & Nackerud, 2013; Soria, Fransen, & Nackerud, 2014; Odeh, 2012; Bowles-Terry, 2012; Cox & Jantti, 2012; Emmons & Wilkinson, 2011; Jantti & Cox 2013; Stone & Ramsden, 2013; Vance, Kirk, & Gardner, 2013; Oakleaf, 2014).

A New Opportunity – Now, as institutions of higher education commence and commit to learning analytics initiatives, it is time for librarians to embrace the opportunity to engage with emergent institutional learning analytics tools, systems, and strategies as well. In many ways, the trajectory from librarian engagement 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 (Oakleaf, 2016; Oakleaf & Kryillidou; 2016).

Learning Analytics in a Nutshell – 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 employs data to improve learning contexts and help learners succeed. Learning analytics helps educators discover, diagnose, and predict challenges to learning and learner success and points the way to successful and active interventions that benefit all students, but especially those who are less familiar with the unwritten rules of higher education, including first-generation students, community college students, students of diverse backgrounds, students with disabilities, and veterans.

In general, learning analytics initiatives seek to 1) increase student learning and 2) improve institutional business models associated with student success. Institutional leaders are cognizant of the national dialogue 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.

To achieve the goals of improved learning and increased student success at both the individual and institutional level, learning analytics systems input data from a variety of sources and output descriptive information about student populations and cohorts which is then 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 that 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 the type of learning analytics that determines what is facilitating or hindering student success; the goal of this level of learning analytics is to diagnose obstacles to 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 omitted from learning analytics systems.

Impetus to Act – While academic librarians have increasingly monitored student success issues in higher education and engaged in the use of library data to study student success, they have not yet pursued institutional learning analytics initiatives. In order to facilitate learning, improve assessment, partner with other educational organizations, help higher education institutions respond to the challenges of improving student learning and increasing student success, and develop as contributing and valued partners in the lives of their institutions, librarians can embrace the ethical and responsible use of learning analytics to improve student success outcomes. In this way, this project answers the IMLS call for academic libraries to become higher education Community Anchors. Libraries are essential in the life of higher education institutions and are dedicated to the improvement of student learning—in short, they serve as anchors in the academic community. At the same time, they represent the only major sector of higher education institutions not currently engaged in learning analytics initiatives.

Now, while learning analytics systems are being developed at a rapid pace and have captured the attention of higher education administrators and researchers nationwide, librarians can join the rest of the academy in the pursuit of improved student learning and success. The LIILA project will spearhead the creation of the vision, strategies, and concrete plans required to ensure that librarians seize the opportunity to initiate involvement in institutional learning analytics and continue to serve as anchors of the higher education community focused on ensuring student learning and success.

Project Description, Plan, & Design – LIILA seeks to achieve four **goals**:

1. To increase librarian awareness and engagement in learning analytics,
2. To craft a detailed plan for integrating academic libraries into learning analytics initiatives that support student learning and success,
3. To develop sustaining partnerships and collaborations among academic librarians and learning analytics lynchpins, institutional and library systems professionals, and library vendor communities; and
4. To explore, design, and develop library use cases and data profiles that can be used with learning analytics standards to integrate library data with institutional data stores.

Three **phases** comprise LIILA's activities:

1. A literature and environmental scan will be performed by the PI to better understand the role of academic library data in institutional higher education learning analytics initiatives in preparation for three meetings.

2. A National Forum consisting of three meetings will be convened (described below).

3. Findings and conclusions from the meetings will be disseminated to the academic library and higher education community via rapid informal means, a formal white paper, and the development of conference presentation proposals.

Phase 1 – Literature and Environmental Scan – The PI, with support from her graduate assistant, will conduct a "formal analytical" review of the library and higher education assessment and analytics literature using a diverse range of resources including published literature databases, past conference proceedings, and conference schedules for the coming year. Potential conferences for mining include the EDUCAUSE Annual Conference, the Learning Analytics and Knowledge Conference, the ACRL National Conference, and the Library Assessment Conference. Recognizing that the learning analytics field moves more quickly than presentations and publications and acknowledging the need to consider emerging projects, actions, or trends in the learning analytics environment, the PI will also conduct a "social intuitive" scan of associations, projects, and individuals working on learning analytics projects, leveraging the Advisory Group's (see below) connections as well as listservs and user groups. Questions serving as focus areas for the scan include:

- What are the key categories of learning analytics at the forefront of higher education student success efforts that would benefit from inclusion of library data?
- What unmet student success needs might be fulfilled by the inclusion of library data in learning analytics initiatives?
- To what degree are academic libraries integrated in their campus learning analytics initiatives? What cutting edge cases exist? What (if any) library data is being included in institutional learning analytics initiatives? What challenges and opportunities have been encountered by early adopter cases?
- What ethical, data quality, privacy, or related issues are most relevant to the inclusion of library data in learning analytics initiatives, and what best practices or codes have been implemented in this space?
- Other than the inclusion of library data into learning analytics initiatives, in what other ways might libraries become integrated into the learning analytics efforts of their overarching institutions?

The literature and environmental scan will used to underpin dissemination efforts, prepare meeting participants, and design meeting materials.

Phase 2 – National Forum Meetings – Three full-day facilitated working meetings will be held at existing conference venues to take advantage of participants' travel schedules. Participant invitations will be based on 1) relevant experience and expertise, 2) potential contributions and collaborations and 3) a diversity of perspectives, including institution types. Diversity is an important factor in inclusion in the participant pool, therefore the PI has arranged to work with Martin Garnar, a past co-chair of the ALA Task Force on Equity, Diversity, and Inclusion (EDI) and current chair of the EDI Implementation Task Force, as well as the ALA Office of Diversity, Literacy, and Outreach Services to share a call for participation with groups representing historically marginalized people in the library field.

Meetings will be designed as roundtables, focused on work tasks, and facilitated by the PI, the national Advisory Group (see below), and selected participants. (Note: The number of meetings has been decreased from four, as outlined in the preliminary proposal, to three in response to reviewer feedback.)

Meeting A: Fifteen academic library administrators, library association leaders, and other learning analytics thought leaders will attend Meeting A. Prior to the meeting, all participants will attend the EDUCAUSE Annual Conference in Philadelphia (November 2017), focusing on presentations about learning analytics. Following the conference, participants will meet for a full day to discuss, envision, spearhead, and articulate:

1) the role of learning analytics in discovering, describing, analyzing, predicting, and ensuring student success;

2) the value that academic libraries can demonstrate by integrating library data in learning analytics; and

3) the active role librarians can play, by leveraging institutional learning analytics, in maximizing student learning, intervening in learning trouble spots, and supporting the teaching role of faculty.

The LIILA Project Team and Advisory Group, listed below, will attend all three meetings.

Name	Title	Institution
Megan Oakleaf	PI, Associate Professor	Syracuse University
Malcolm Brown	Director	EDUCAUSE Learning Initiative
Joan Lippincott	Associate Executive Director	Coalition for Networked Information
Rob Abel	CEO	IMS Global Learning Consortium
Andrew Pace	Executive Director, WorldShare Community Development	OCLC
Mary Ellen Davis	Executive Director	Association of College & Research Libraries
Scott Walter	University Librarian	DePaul University
Jenn Stringer	Associate CIO, Academic Engagement	University of California Berkeley

In addition to the Advisory Group, potential participants for Meeting A may include:

Name	Title	Institution
Sue Baughman	Deputy Executive Director	Association of Research Libraries
Joe Lucia	Dean of Libraries	Temple University
Dean Hendrix	Dean of Libraries	University of Texas San Antonio
Dennis Krieb	Director of Institutional Research and Library Services	Lewis & Clark Community College

Katherine Furlong	Director of Blough-Weis Library and University Librarian	Susquehanna University
Wendy Lougee	University Librarian and McKnight Presidential Professor	University of Minnesota
Laurie Alexander	Associate University Librarian for Learning and Teaching	University of Michigan
Ed Van Gemert	Director of Libraries	University of Wisconsin-Madison
Rebecca Miller	Head of Library Learning Services	Penn State University
Robert MacDonald	Associate Dean for Research and Technology Strategies and Associate Librarian	Indiana University
Andrew Asher	Assessment Librarian	Indiana University
Margie Jantti	Director, Library Services	University of Wollongong
Vince Kellen	CIO	University of California, San Diego
Rachel Frick	Executive Director of OCLC Library Partnership	OCLC
Tristan Denley	Vice Chancellor for Academic Affairs	Tennessee Board of Regents
Glenda Morgan	Research Director	Gartner Inc.

To prepare for the meeting, participants will engage in readings and preparatory listserv communications. Participants will complete a pre-assignment designed to help them analyze the maturity and activities of their own institutional learning analytics, elicit their prior experiences, issues, concerns, expectations, and hopes with regard to library integration in learning analytics, and describe potential cases in which library data could be used in conjunction with learning analytics to improve student learning and success. During the EDUCAUSE conference, participants will attend pre-identified programs and be exposed to cutting edge examples of learning analytics in higher education.

After the conference, participants will meet for a full day to engage in discussion, articulate visions, devise strategies, and anticipate ways to overcome obstacles to library integration in institutional learning analytics. Designed as a round table working group, meeting agenda items include: welcome and orientation, debrief of EDUCAUSE observations and connections to the pre-assignment, discussion of the potential impact of learning analytics on student learning and success, articulation of a vision of the role of libraries in institutional learning analytics, elicitation of connections between library integration in learning analytics and existing assessment and demonstration of library value, ideation of potential librarian roles in institutional learning analytics initiatives, development of a list of exemplars or cases to study, identification of obstacles to library involvement in learning analytics and strategies for overcoming them.

Intended outputs of this meeting include: a draft vision of the role of libraries in institutional learning analytics initiatives, a draft statement of the value library inclusion in learning analytics offers to students, faculty, and other institutional stakeholders, a draft list of example early adopter institutions and projects, a draft list of challenges to clarify and overcome, and a set of "use cases" that demonstrate ways in which the integration of library data in institutional learning analytics could impact student learning and success. Each use case can include library data that may be collected, how it could be gathered, and how it could be used to improve teaching and learning endeavors and/or the demonstration of library and institutional value. In short, Meeting A will address the question of *what should or could be done* in terms of integrating libraries into institutional learning analytics initiatives.

After Meeting A, the PI, in consultation with the Advisory Group, will communicate the outputs of the meeting and prepare them for use in Meeting B. Feedback received from informal communications (blog posts, tweets) will be considered and incorporated as appropriate.

Meeting B: Eight systems librarians, IT administrators, representatives from large library vendor partner organizations, and other strategic learning analytics thought leaders will attend a full day meeting to discuss, investigate, and plan the underlying technology and data strategies (existing or to-be-developed) necessary for integrating library data into institutional learning analytics initiatives and articulate issues related to library data ownership and methods for sharing vendor data with libraries and institutions. To take advantage of participants' existing travel and minimize grant costs, this meeting will be held the day after the close of the Coalition for Networked Information (CNI) Fall Meeting in Washington, D.C. (December 2017).

Prior to the meeting, participants will engage in readings and preparatory listserv communications. Participants will view the outputs of Meeting A to prepare for discussions of the outlined vision and value of library integration into institutional learning analytics, early adopter institutions and projects, challenges to be overcome, and use cases in which library data could be used in conjunction with learning analytics to improve student learning and success.

During Meeting B, a round table working group, participants will address the question of *what can be done* to integrate library data into institutional learning analytics initiatives. Using the refined set of use cases from Meeting A as a starting point, participants will analyze the feasibility of enacting those cases based on existing systems and structures, strategies for ameliorating known challenges (privacy, data ownership, etc.), as well as the potential value the use cases could provide to student learning and success efforts. Participants will also brainstorm and describe additional potential use cases, analyzing the data implications of each based on the accessibility and transferability of data between systems.

Intended outputs of this meeting include a revised set of use cases that identify data sources; a list of data collection techniques or processes; descriptive analysis of the fit between anticipated use of data and existing or planned systems; a depiction of the gap between what data is needed and what data is currently generated, captured, or made accessible; graphic representations of the data inputs and outputs for vendor or other proprietary systems; and anticipation of the ways in which the results of the use cases can be employed to improve student learning and success or demonstrate library and institutional value.

In addition to the Advisory Group, potential participants for Meeting B may include:

Name	Title	Institution
Emily Lynema	Associate Head of IT and Director of Academic Technology	North Carolina State University
Shane Nackerud	Technology Lead Libraries Initiatives	University of Minnesota
Edward Corrado	Associate Dean Library Technology Planning and Policy	The University of Alabama
Rachel Vacek	Head of Design and Discovery, Library Information Technology	University of Michigan
Vince Kellen	CIO	University of California, San Diego
Sean DeMonner	Executive Director of Teaching & Learning Applications and ITS	University of Michigan
Peter Murray	Open Source Community Advocate at IndexData	FOLIO
Mike Sharkey	Vice President of Analytics	Blackboard
Jared Stein	Vice President of Research and Education	Instructure
Michael Winkler	Managing Director of Open Library Environment & Senior Advisor	Kuali Open Library Environment (OLE)

After Meeting B, the PI, in consultation with the Advisory Group, will communicate the outputs of the meeting and prepare them for use in Meeting C. Feedback received from informal communications will be considered and incorporated as appropriate.

Meeting C: Eight library technology administrators, learning analytics, and learning standards representatives will attend a full day meeting to discuss and find solutions for implementing and integrating existing educational technology interoperability standards into library systems. To take advantage of participants existing travel and minimize grant costs, this meeting will be held the day prior to the CNI Spring Meeting, San Diego (April 2018).

During Meeting C, a round table working group, participants will address the question of *how* to integrate libraries into institutional learning analytics initiatives by exploring, designing, and developing library data profiles that can be used with learning analytics standards to integrate library data with institutional data stores. Starting with the use cases and depictions of data inputs and outputs developed in Meetings A and B, participants will engage in a technical working meeting to discuss how to apply the interoperability standards to facilitate data communication between library systems and institutional learning analytics systems. One output of this meeting may be the development of library-specific "metric profiles" that encapsulate student interactions with the library in a way that can be defined, described, and exchanged between and among different systems. Another output of Meeting C is a concrete plan describing how to implement one or more use cases, including the products, data flows, and expected impacts. This information can then be deployed to enact projects at individual institutions and may serve as a focus for additional funded research.

In addition to the Advisory Group, potential participants for Meeting C may include:

Name	Title	Institution
Emily Lynema	Associate Head of IT and Director of Academic Technology	North Carolina State University
Shane Nackerud	Technology Lead Libraries Initiatives	University of Minnesota
Edward Corrado	Associate Dean Library Technology Planning and Policy	The University of Alabama
Rachel Vacek	Head of Design and Discovery, Library Information Technology	University of Michigan
Vince Kellen	CIO	University of California, San Diego
Sean DeMonner	Executive Director of Teaching & Learning Applications and ITS	University of Michigan
Anthony Whyte	IT Program Manager Chair, IMS Caliper Working Group	University of Michigan
Peter Murray	Open Source Community Advocate at IndexData	FOLIO
Mike Sharkey	Vice President of Analytics	Blackboard
Oren Beit-Arie	Chief Strategy Officer	Ex Libris Group
Katie Birch	Executive Director of Resource Sharing	OCLC
Hilary Newman	Senior Vice President	Innovative Interfaces

After Meeting C, the PI, in consultation with the Advisory Group, will communicate the outputs of the meeting. Feedback received from informal communications will be considered and incorporated as appropriate.

Phase 3 – Dissemination – Meeting outputs will be disseminated to the academic library and higher education community via rapid informal means, a formal white paper, and the development of conference presentation proposals. Blog posts, the white paper, and subsequent conference presentations will update the profession on

project progress, disseminate materials, and elicit feedback. Blog posts will be shared via ACRL blogs and EDUCAUSE's Transforming Higher Ed blog, and participants will be encouraged to use Twitter to communicate both to share content and receive feedback from the larger community. The LIILA white paper will be shared on the ACRL website and the EDUCAUSE Library online. Examples of appropriate conferences include both library-focused venues as well as those that emphasize learning analytics across higher education, such as the Library Assessment Conference 2018, the CNI Fall Meeting 2018, EDUCAUSE 2018, ELI Webinar Series, ACRL Webinar Series, IMS Learning Impact Conference 2018, and Learning Analytics and Knowledge Conference 2018. Participants will also be encouraged to share their LIILA experiences through conferences and publications as appropriate.

Outcomes – There are three expected outcomes from this forum:

1) Participants of Meeting A will develop awareness of institutional learning analytics initiatives and combine that awareness with their existing library leadership expertise to articulate a vision of academic library integration into institutional learning analytics and ignite a national dialogue amongst academic library leaders on the benefits and challenges of enacting that vision.

2) Participants of Meetings B and C will devise plans to integrate library data in institutional learning analytics initiatives.

3) Publication of a project white paper including the content emerging from the forum will support librarians as they a) investigate learning analytics on their campuses, b) develop partnerships to integrate libraries in institutional learning analytics efforts, and c) pursue other ideas revealed by the project.

The project will utilize an outcome-based evaluation model to measure the achievement of outcomes. Each evaluation chart includes *indicators* (observable result of the outcome), data *source* (where the information will be found), data *interval* (when the data will be collected), and *target* (expected change).

Indicators	Data Source	Data Intervals	Target
The PI will develop an environmental scan of learning analytics and emerging library involvement.	Project materials	Sept 2017	• Literature resources to underpin blog posts and white paper. • Environmental scan materials (circulated to Advisory Group for feedback). • Summary materials suitable for sharing with meeting participants.
Meeting A participants will discuss, envision, spearhead, and articulate the role of learning analytics in discovering, describing, analyzing, predicting, and ensuring student success and the value that academic libraries can demonstrate by integrating library data in learning analytics.	Meeting A materials	Nov 2017	• Draft vision of the role of libraries in institutional learning analytics. • Draft statement of the value of library inclusion in learning analytics. • Draft list of early adopter institutions and projects. • Draft list of key challenges to library involvement in learning analytics. • Draft use cases of library inclusion in institutional learning analytics. • Participant survey at close of meeting to elicit any unsurfaced feedback.

Meeting B participants will discuss, investigate, and plan the underlying technology and data structures necessary for integrating library data into institutional learning analytics initiatives and articulate issues related to library data ownership and methods for sharing vendor data with libraries and institutions.	Meeting B materials	Dec 2017	• Revised set of use cases that identify data sources, data collection techniques, the fit between anticipated use of data and existing or planned systems, the gap between what data is needed and what data is currently available; and data inputs and outputs of vendor or other proprietary systems. • Participant survey at close of meeting to elicit any unsurfaced feedback.
Meeting C participants discuss and find solutions for implementing and integrating existing educational technology interoperability standards into library systems.	Meeting C materials	April 2018	• Draft library-specific "metric profiles" that encapsulate student interactions with the library in a way that can be defined, described, and exchanged between and among different systems. • Draft plan to implement one or more use cases, including the products, data flows, and expected impacts. • Participant survey at close of meeting to elicit any unsurfaced feedback.
The PI, in collaboration with the Advisory Group, will disseminate meeting outputs.	Project materials	After meetings, at close of grant.	• At least 3 blog posts summarizing meeting content. • Formal white paper (May/June 2018) including all meeting outputs. • At least 5 conference proposals.

Participant surveys will include items designed to capture the accomplishment of LIILA's stated performance goals, in accordance with IMLS requirements.

Performance Goals	Performance Measure	Data Collected
• Train and develop museum and library professionals. • Support communities of practice. • Develop and provide inclusive and accessible learning opportunities.	• Increased understanding • Increased interest • Increased confidence	• Number of participants • Number of total responses • Number of responses/answer option • Number of non-responses

Risks and Assumptions – As with any cutting edge topic, participants may be challenged by new ideas, some of which are concerning. In the area of student learning and assessment, one new idea is the use of individual level library data. Over the last several years, the academic library value work conducted by ACRL and others has confronted this ethical issue, but it remains at the forefront of library discussions on this topic. Learning analytics assumes the use of individual level student data, but it also requires the highest levels of data security and data use training by higher education professionals with access to the data. A number of organizations have developed best practice documents on this topic, and these will be shared with project participants, and the need to follow ethical codes and use data security practices will be emphasized as a part of the forum meetings.

An additional risk to the project could be a difficulty with a meeting location. Advisory Group members have secured positions for our projects at the EDUCAUSE and CNI meetings, but in case of a weather event or

another unforeseen occurrence, meetings may need to be moved to another location, such as the ALA Midwinter Conference, to reach completion during the grant period.

Management Plan – The PI will participate in every aspect of the project and oversee the graduate assistant. The PI will conduct the environmental scan, write blog posts, compile feedback, compose the white paper, and develop conference proposals. Together with the Advisory Group, the PI will solicit and select meeting attendees, craft meeting agendas, develop meeting materials and revise them for use by subsequent meetings, and finalize the white paper.

Project Team and Advisory Group – The LIILA project will be conducted by the PI, a graduate student, and a team with complementary areas of expertise. Dr. Megan Oakleaf (PI) has researched and advocated for academic library assessment and learner support through the IMLS-funded RAILS grant and extensive work with the academic library value agenda. A national advisory group includes: Malcolm Brown, Director of EDUCAUSE Learning Initiative; Rob Abel, CEO of IMS Global Learning Consortium; Andrew K. Pace, Executive Director, Community Development at OCLC; Joan Lippincott, Associate Executive Director of the Coalition of Networked Information; Mary Ellen Davis, Executive Director of the Association of College & Research Libraries; Scott Walter, University Librarian at DePaul University; and Jenn Stringer, Associate CIO of Academic Engagement, University of California, Berkeley. The diverse nature of the Advisory Group is intended to ensure that diverse institutional perspectives are surfaced and that project impact is felt across multiple higher education sectors. The Advisory Group includes senior library administrators, academic library association directors, institutional research and effectiveness administrators, representatives from the library vendor and education technology sectors, and is anchored by an EDUCAUSE director—establishing a key partnership with the association that has conducted most of the learning analytics research to date.

Budget – This 1-year project requests funding of $99,876, and will cost share $15,223. The bulk of the request is to support travel costs of participants to attend one of three work meetings ($49,635), and this includes $825 registration for each of those meeting at EDUCAUSE to attend the conference. The budget also includes $25,003 for salary support for Dr. Oakleaf who will prepare and lead the forum, and prepare articles, reports and outreach materials, $4651 in fringe benefits, and $8220 for meeting room rental, supporting technology, and other costs for the meetings, $2000 to help cover publication costs, and $10,367 in indirect costs. Project activities will be supported by an iSchool graduate assistant supported through cost share. Travel for Dr. Oakleaf to each of the meetings, as well as clerical support for the travel arrangements, is cost shared as well.

National Impact – By continuing the arc of assessment efforts in academic libraries, expanding the boundaries of library data used to enhance student learning, jumpstarting librarian involvement in institutional learning analytics initiatives, and initiating the integration of library data into learning analytics systems, LIILA will have a number of national impacts, derived from the project goals and outcomes.

The LIILA project will bring together a diverse group of library and higher education leaders and experts to articulate a vision for library inclusion in institutional learning analytics, devise strategies for bringing the vision to fruition, develop use cases that lead to increased library value and impact on student learning and success, and create the technical plans necessary to initiate action. Through these actions, LIILA will:

- advance the role of libraries as anchors within their higher education communities,
- enable libraries to provide indispensable data and contribute to a complete picture of institutional student learning, and ultimately,
- facilitate student learning and success by contributing to the identification, development, and assessment of the curricular and instructional improvements resulting from learning analytics initiatives.

In short, LIILA will initiate and proliferate the conversation about academic library involvement in learning analytics at institutions nationwide. Integrating libraries into learning analytics initiatives will simultaneously enrich institutional learning analytics efforts and expand academic library impact on and value to their higher education communities.

Activity	July 2017	Aug 2017	Sept 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018
PREPARATION												
Formal analytical and social intuitive environmental scan												
Solicitation and selection of meeting participants												
MEETING A												
Preparation of Meeting A materials												
Participant pre-work for Meeting A												
Meeting A at EDUCAUSE Oct 31-Nov 3												
Blog post about Meeting A and solicitation of feedback												
MEETING B												
Preparation of Meeting B materials												
Participant pre-work for Meeting B												
Meeting B at CNI Fall 2017 Meeting Dec 11-12												
Blog post about Meeting B and solicitation of feedback												
MEETING C												
Preparation of Meeting C materials												
Participant pre-work for Meeting C												
Meeting C at CNI Spring 2018 Meeting April 12-13												
Blog post about Meeting C and solicitation of feedback												
DISSEMINATION												
Ongoing drafting of white paper												
Development and submission of conference proposals												
Final revisions of white paper												
Publication of white paper												

DIGITAL PRODUCT FORM

Introduction
The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded digital products (i.e., digital content, resources, assets, software, and datasets). The products you create with IMLS funding require careful stewardship to protect and enhance their value, and they should be freely and readily available for use and re-use by libraries, archives, museums, and the public. However, applying these principles to the development and management of digital products can be challenging. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and practices that could become quickly outdated. Instead, we ask that you answer questions that address specific aspects of creating and managing digital products. Like all components of your IMLS application, your answers will be used by IMLS staff and by expert peer reviewers to evaluate your application, and they will be important in determining whether your project will be funded.

Instructions
You must provide answers to the questions in Part I. In addition, you must also complete at least one of the subsequent sections. If you intend to create or collect digital content, resources, or assets, complete Part II. If you intend to develop software, complete Part III. If you intend to create a dataset, complete Part IV.

PART I: Intellectual Property Rights and Permissions

A.1 What will be the intellectual property status of the digital products (content, resources, assets, software, or datasets) you intend to create? Who will hold the copyright(s)? How will you explain property rights and permissions to potential users (for example, by assigning a non-restrictive license such as BSD, GNU, MIT, or Creative Commons to the product)? Explain and justify your licensing selections.

The deliverables (blog posts and white paper) will be available under a Creative Commons license (CC Attribution - NonCommerical - NoDerivs 4.0). This is the standard EDUCAUSE arrangement and ACRL gives authors the choice of which CC license to use.

A.2 What ownership rights will your organization assert over the new digital products and what conditions will you impose on access and use? Explain and justify any terms of access and conditions of use and detail how you will notify potential users about relevant terms or conditions.

EDUCAUSE and ACRL will serve as distribution points for the project deliverables but will not assert any ownership rights.

A.3 If you will create any products that may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities, describe the issues and how you plan to address them.

No privacy concerns.

Part II: Projects Creating or Collecting Digital Content, Resources, or Assets

A. Creating or Collecting New Digital Content, Resources, or Assets

A.1 Describe the digital content, resources, or assets you will create or collect, the quantities of each type, and format you will use.

LIILA will generate 3 blog posts, one after each National Forum meeting, and one white paper summarizing the content and progress of the project. All three publications will be distributed via EDUCAUSE and ACRL. ACRL uses WordPress for blogs. The white paper will be in .docx or .pdf format.

A.2 List the equipment, software, and supplies that you will use to create the content, resources, or assets, or the name of the service provider that will perform the work.

Regular business-grade computers and word processing software.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to use, along with the relevant information about the appropriate quality standards (e.g., resolution, sampling rate, or pixel dimensions).

ACRL uses WordPress for blogs. The white paper will be in .docx or .pdf format.

B. Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

The Advisory Group will review and oversee the workflow and products.

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period of performance. Your plan may address storage systems, shared repositories, technical documentation, migration planning, and commitment of organizational funding for these purposes. Please note: You may charge the federal award before closeout for the costs of publication or sharing of research results if the costs are not incurred during the period of performance of the federal award (see 2 C.F.R. § 200.461).

The project deliverables will be available via the EDUCAUSE and ACRL web sites indefinitely.

C. Metadata

C.1 Describe how you will produce any and all technical, descriptive, administrative, or preservation metadata. Specify which standards you will use for the metadata structure (e.g., MARC, Dublin Core, Encoded Archival Description, PBCore, PREMIS) and metadata content (e.g., thesauri).

Not applicable.

C.2 Explain your strategy for preserving and maintaining metadata created or collected during and after the award period of performance.

Not applicable.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content, resources, or assets created during your project (e.g., an API [Application Programming Interface], contributions to a digital platform, or other ways you might enable batch queries and retrieval of metadata).

Not applicable.

D. Access and Use

D.1 Describe how you will make the digital content, resources, or assets available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content).

The project deliverables will be available via the EDUCAUSE and ACRL web sites, and therefore openly available online. These sites are well known and utilized by interested audiences, both in higher education and academic librarianship.

D.2 Provide the name(s) and URL(s) (Uniform Resource Locator) for any examples of previous digital content, resources, or assets your organization has created.

The LIILA project has not created any previous resources. An example of ACRL white papers and blog posts can be found at http://www.acrl.ala.org/value/, the EDUCAUSE Library is located at https://www.educause.edu/library, and the EDUCAUSE Transforming Higher Ed blog is online at http://er.educause.edu/columns/transforming-higher-ed.

Part III. Projects Developing Software

A. General Information

A.1 Describe the software you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) it will serve.

N/A

A.2 List other existing software that wholly or partially performs the same functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

N/A

B. Technical Information

B.1 List the programming languages, platforms, software, or other applications you will use to create your software and explain why you chose them.

N/A

B.2 Describe how the software you intend to create will extend or interoperate with relevant existing software.

N/A

B.3 Describe any underlying additional software or system dependencies necessary to run the software you intend to create.

N/A

B.4 Describe the processes you will use for development, documentation, and for maintaining and updating documentation for users of the software.

N/A

B.5 Provide the name(s) and URL(s) for examples of any previous software your organization has created.

N/A

C. Access and Use

C.1 We expect applicants seeking federal funds for software to develop and release these products under open-source licenses to maximize access and promote reuse. What ownership rights will your organization assert over the software you intend to create, and what conditions will you impose on its access and use? Identify and explain the license under which you will release source code for the software you develop (e.g., BSD, GNU, or MIT software licenses). Explain and justify any prohibitive terms or conditions of use or access and detail how you will notify potential users about relevant terms and conditions.

N/A

C.2 Describe how you will make the software and source code available to the public and/or its intended users.

N/A

C.3 Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:N/A

URLN/A

Part IV: Projects Creating Datasets

A.1 Identify the type of data you plan to collect or generate, and the purpose or intended use to which you expect it to be put. Describe the method(s) you will use and the approximate dates or intervals at which you will collect or generate it.

N/A

A.2 Does the proposed data collection or research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity been approved? If not, what is your plan for securing approval?

The LIILA project is likely to be IRB exempt and, the PI will seek IRB approval prior to the start of the project.

A.3 Will you collect any personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information? If so, detail the specific steps you will take to protect such information while you prepare the data files for public release (e.g., data anonymization, data suppression PII, or synthetic data).

No.

A.4 If you will collect additional documentation, such as consent agreements, along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

N/A

A.5 What methods will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

N/A

A.6 What documentation (e.g., data documentation, codebooks) will you capture or create along with the dataset(s)? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

N/A

A.7 What is your plan for archiving, managing, and disseminating data after the completion of the award-funded project?

The project deliverables will be available online indefinitely via ACRL and EDUCAUSE.

A.8 Identify where you will deposit the dataset(s):

Name of repository: N/A - no dataset

URL: N/A

A.9 When and how frequently will you review this data management plan? How will the implementation be monitored?

N/A. (If unforeseen changes occur in LIILA planning, the PI will consult with IMLS to ensure compliance with all rules and requirements.)