

Outline of the LLAP Guide to Library Learning Analytics

1. Define your goals and timelines
 - a. Operational objectives
 - b. Research goals
 - c. Deadlines
 - d. Milestones
2. Identify partners and stakeholders
 - a. Internal actors e.g., leadership, institutional research, computing, students, etc.
 - b. External actors e.g., professional bodies, other libraries, state agencies, etc.
3. Map your institutional environment and especially the learning analytics ecosystem
 - a. Privacy guidelines: <https://libraryanalytics.org/wp-content/uploads/sites/9/2019/04/LLAP-Privacy-Guide-2019.pdf>
 - b. Data access restrictions and guidelines
 - c. Data management and analysis resources (human, computing)
 - d. Prospect where your data are, and who are the gatekeepers
 - e. Transparency about what you are doing, data you are collecting, etc.
4. Develop general understanding of the data
 - a. Potential sources of serious error e.g., reporting gaps or failures
 - b. Are there systematic omissions of classes or categories of users?
 - i. Users who are on-campus when you're looking at off-campus access data
 - ii. [https](https://) interactions where referring URLs are suppressed by default
 - iii. VPN use that masks location
 - iv. Challenges distinguishing between real/human users and agents/bots/crawlers
 - c. Are you responsible for any ETL (Extract, Transform, Load) tasks?
 - d. Who does the data pulls?
 - e. Are raw data structured or unstructured?
 - f. How big are the data, and do you have the resources to store and analyze the data?
5. Communicate with your institutional IRB on protecting the rights and welfare of those in the institution's data
 - a. What type of application? Consult your IRB as needed; <https://research-compliance.umich.edu/irb-application-process>
 - i. Human subjects research
 - ii. Secondary use research
 - iii. Activities not regulated as human subjects research
 - b. Prepare and submit IRB application
 - i. Exempt vs non-exempt;
<https://az.research.umich.edu/medschool/guidance/federal-exemption-categories>
 - ii. Exempt vs not regulated
6. Establish protocols for data safety and management
 - a. Who has/needs access
 - b. Training needs/requirements
7. Set up secure data infrastructure
 - a. Pipelines
 - b. Repositories

- c. Workstations and/or servers
 - d. Virtual enclaves
8. Resolve data flow issues
 - a. How often data “dumped” into repositories
 - b. Will library data be merged with campus data?
 - i. Strong identifiers
 - ii. Commonality of identifiers across (and within) library and campus data
 - c. Scripts for data retrieval from repositories and into database
 - d. If data are unstructured, scripts for structuring the data
 - e. Periodic/regular updates to database, and maintenance of database
 9. Develop detailed understanding of the data
 - a. Define/describe variables
 - b. Develop data dictionaries
 - c. Missing data & systematic errors
 - d. Theoretical frameworks for data analysis
 10. Use the data to examine your operational objectives and/or research goals
 - a. Exploratory analysis & descriptive statistics
 - b. Statistical analysis/modeling
 - c. Other types of inquiry e.g., network analysis, machine learning, etc.
 11. Share findings with partners and stakeholders e.g., one-on-one, dyadic interactions, group presentations, website, social media, briefs and reports, manuscripts, etc.
 12. Translation (borrowing from medicine <https://ictr.wisc.edu/what-are-the-t0-to-t4-research-classifications/>), or how to turn the findings from library learning analytics into interventions that improve learning for communities of users and the nation such as by e.g., improving library operations and service delivery so as to better tackle racial disparities in library use and access, developing state and national evidence-based policies and legislation that addresses disparities for disadvantaged groups, improving analytics training for librarians, etc.