

Hackathons for Awareness and Community Engagement in Learning Analytics

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ABSTRACT: Practitioner Presentation. Challenges of institutional adoption of learning analytics include lack of student engagement, little transparency, and few opportunities for feedback. In this report, we reflect on one element of our institution’s approach to these challenges: regular engagement of students, practitioners, and institutional leadership through Learning Analytics Hackathons. The history and evolution of these hackathons mirror the advancement of learning analytics at the University of British Columbia: they started as community-driven events but have gained institutional support and attention as our data infrastructure and learning analytics culture matures. At the time of writing, the authors are planning the 9th Learning Analytics Hackathon¹. In this report, we share our approach, lessons learned, and discuss opportunities for continued student engagement in learning analytics at our institution.

Keywords: Hackathon, Student Engagement, Institutional Learning Analytics, Stakeholders

1 INTRODUCTION

Hackathons are intensive events that bring participants with a wide range of skills and backgrounds together to both collaborate and compete to solve a problem or create something innovative within a short timeframe. Students participate in hackathons for various reasons, including the prospect of social interaction and fun, the opportunity to learn new skills and knowledge, the possibility to win prizes, and the chance to apply classroom knowledge in real-life scenarios (Nandi & Mandernach, 2016; Steglich et al, 2021). University-based hackathons often sit in a unique space outside of formal curricula or program requirements. Instead, students “donate” their time, often giving up several days in a row, to attend such events.

The use of hackathons as a strategy for student engagement by institutional learning analytics initiatives represents an opportunity to promote learning analytics as a field, to teach analytics skills necessary for researchers and practitioners, and to educate and engage students in learning analytics principles and practices. The past decade has seen learning analytics education occurring in a variety of formats including graduate degrees and courses, undergraduate certificates, MOOCs (Kizilcec & Davis, 2023), and events such as LAKathons² (which have been a regular occurrence at LAK since 2015) and workshops at LASI³. Hackathons are an opportunity to engage in student-centered analytics by involving students in the design of learning analytics tools, moving away from a “black box” of analytics and towards a paradigm of “Glassbox Analytics” (Ochoa & Wise, 2021) by creating transparency of data collection and use at the institution. Finally, these events may help students interpret analytics

¹ <https://github.com/UBC-LA-Hackathon/hack-la-2023>

² <https://lakathon.org/history/>

³ <https://www.solaresearch.org/events/lasi/>

and frame it not just as a tool or data, but as information that can be used to support their learning by introducing them to the field and techniques of learning analytics.

2 APPROACH

Hackathons at the University of British Columbia (UBC) take place over a weekend and are held in learning spaces designed for collaboration. The introduction to the event is an overview of the data (where it comes from, possible challenges of interpretation, and whether the data is representative of data collected at UBC) and the challenge we are asking students to tackle. Any important information about data privacy, ethics, and security is reviewed. These events offer opportunities for students to learn about the kinds of data being collected for the purposes of learning analytics – as much as possible we aim to share data with students that gives them a realistic view into these kinds of data, in particular, what is collected or used at UBC. Students are then free to “hack”; they work in teams with the data provided to solve a challenge presented to them or develop their own learning analytics tools which they will present in a lightning talk. Expert volunteers from the learning analytics community at UBC are available to provide support throughout. Volunteers have included programmers, experts in Open Education, data analysts, and LA researchers and practitioners (to name a few).

At the end of the event, students are invited to present their work in a lightning talk. Teams are provided with brief feedback and, depending on the specific event, top projects are recognized. This evaluation is part of an organizing strategy to blend light competition with a strong undercurrent of collaboration. During the short timeframe of the hackathon, participants within and across teams share ideas, solve problems, and lend expertise to fellow participants. This collaborative spirit not only fosters a sense of community but also leads to the creation of more robust and imaginative projects. Winning teams receive small prizes (e.g., gift cards to the University bookstore) and additional feedback from the hackathon organizers. Breakfast and lunch are provided throughout the hackathon and all attendees earn certificates of participation.

One of our goals is to engage with a diverse range of students with various levels of technical experience and skills; thus, in addition to our traditional hackathons, we alternate with events consisting of a series of workshops that introduce skills or techniques relevant to learning analytics. These “workshop-a-thons” are organized along similar principles and timeframes as the hackathons but involve more structure and mentor facilitation. Workshops are coordinated so that students are scaffolded through designing a tool or solution. Workshop topics range from ideation/design thinking for learning analytics to more technical sessions on data wrangling, data visualization, and software development. Students attend a workshop, have “hack” time where they apply what they learned, and then attend the next workshop in the series. For examples of the challenges presented and outcomes⁴ from both event types see Table 1.

3 OUTCOMES

Since 2015, over 600 students have participated in our learning analytic hackathons; the events are popular and registration (which is capped due to room size) is always at capacity. The hackathons have promoted robust student engagement by immersing them in a dynamic, problem-solving environment where they actively contribute to solving real-world educational challenges. This hands-

⁴ The events are typically covered by internal reporting at our institution and summaries can be found at <https://learninganalytics.ubc.ca/for-students/hackathons/>

on engagement also empowers students with practical skills. Moreover, the hackathons serve as a platform for increasing student awareness of learning analytics.

Table 1. Hackathon and Workshop-a-thon Examples

<i>Event Type</i>	<i>Examples of Past Events</i>	<i>Student Projects</i>
Hackathon (80-100 students + mentors)	Use the Canvas REST API to extract your own data and develop a tool, analysis, or app that you would find useful for your own learning. Using deidentified data from Canvas and other supporting course information, what tools would you develop to support an instructor?	Gamified learning in Canvas – where you earn points for certain interactions; Grade predictions using a neural net model; Quiz and assignment statistic visualizations.
Workshop-a-thon (50-60 students + mentors)	Using data from an EdX MOOC, take the role of an LA expert: what would you do with this data to improve teaching or learning? You have the option of working with a team, individually, or attending our series of workshops to get a better understanding of some of the techniques that may be useful (R for data analysis, Tableau for visualization).	Interactive tree/Sankey diagrams showing student interaction with course content; Visualizations showing play/pause/seek behaviour of video watching.

Hackathons have helped UBC’s learning analytics staff gain insights into student interests both through the tools that students develop and conversations with students throughout the event. Additionally, the hackathons have helped build capacity within our institution for creating open resources including deidentified and cleaned data, allowing for safer and more responsible data sharing, and fostering a culture of transparency and collaboration. We have been able to use “real” data which has been scrubbed of any identifiable information through a combination of hashing data, noising data (i.e. adjustment of grades +/- certain points, changing timestamps to the future), completely removing any personally identifying data, and masking certain information (Khalil and Ebner, 2016). In addition, the event planning process often involves the development of policies and procedures for students to access data, ensuring that sensitive information is handled with care and in compliance with university policy and privacy regulations.

The organization of the hackathons has also been an opportunity for internal event promotion and summaries which include excerpts from interviews with collaborators and students. Students are enthusiastic about the experiential learning and the opportunity to contribute to the university: “Contributions to Canvas, even minor developments, can benefit tens of thousands of [masked] students by either improving efficiencies or providing insights,” said one student, continuing, “I regarded this hackathon as something I could do for our community” (2018). Collaborators recognized a lack of student voice and perspective in the implementation of learning analytics: “At the moment, most universities’ learning analytics designs are for instructors and researchers. We don’t see a lot of designs for students” (2018). Students frequently attend without expecting substantial prizes or incentives, driven solely by their genuine curiosity: “I came to the Hackathon because I was really curious about what could be done with the learning analytics side of data analysis,” said one student (2019). “I just wanted to get my feet wet and see what I could come up with.”

4 LOOKING FORWARD

The hackathons became recurring institutionally supported events during UBC's "pilot" phase of learning analytics. In this phase, engagement with stakeholders and feedback that might inform our institutional approach to learning analytics was a priority. One goal of the organizers was for hackathons to act as pipelines for student work to possibly become pilot initiatives – where we could offer continued opportunities for students to continue to build learning analytics tools alongside the learning analytics team. However, this has been a significant challenge to achieve, primarily due to lack of appropriate data infrastructure, budget for student employees, and a fair method to select which projects might enter the pipeline. The authors hope that with continued improvement to our data infrastructure this may still one day be an achievable goal. Regardless, we have found that hackathons can play a crucial role in engaging students in learning analytics institutionally. They provide a platform for students to apply their skills, collaborate, and gain practical knowledge while also contributing to the development of learning analytics tools and practices. A combination of low-barrier entry with the inclusion of workshop-a-thons, and a team of volunteers allows students at all levels to participate. These events can promote community engagement and help institutions better understand and involve students in shaping the future of learning analytics.

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