

New Methods, New Needs: Preparing Academic Library Practitioners to Address Ethical Issues Associated with Learning Analytics

Kyle M. L. Jones^a and Lisa Janicke Hinchliffe^b

^aIndiana University-Indianapolis (IUPUI), USA

^bUniversity of Illinois at Urbana-Champaign, USA

kmlj@iupui.edu, ljanicke@illinois.edu

ABSTRACT

Academic libraries are participating in the collection and analysis of student data. Under the umbrella of *learning analytics*, these practices are directed toward developing an understanding of how libraries contribute to student learning, the educational experience, and efficient operations of academic institutions. Learning analytics, however, is loaded with ethical issues, which are complicated by privacy-related values espoused by library practitioners. This work-in-progress paper discusses emerging findings from a survey of academic library practitioners. The survey identifies what ethical issues practitioners associate with learning analytics and the degree to which they are prepared to address such issues.

ALISE RESEARCH TAXONOMY TOPICS

information privacy; big data; education; students; research methods; academic libraries

AUTHOR KEYWORDS

learning analytics; student privacy; higher education; academic libraries; research methods

INTRODUCTION

Data mining practices in higher education are now more than ever the norm and less the exception. Institutions are attempting to collect, analyze, and report “data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs” (Siemens, 2012, p. 4). These efforts are characterized as *learning analytics* practices. Institutions have used learning analytics to, inter alia, improve their admission yields, strategize to increase retention rates, personalize advising, predict student performance in courses, nudge students to just-in-time resources, and generally attempt to run highly bureaucratic and resource-

intensive institutions more effectively and efficiently (Damgaard & Nielsen, 2018; Essa & Ayad, 2012; Freitas et al., 2015; Jones, 2019a; Lane & Finsel, 2014; Lodge et al., 2018; Parry, 2011). While analyzing student data is nothing new for higher education, the granularity and sensitivity of these data increase as students became reliant on information technology infrastructures, applications, and devices to pursue higher education. Data about students' personal and academic behaviors and their academic performance may prove useful, but related data access, management, and use practices carry significant ethical burdens.

Learning analytics faces two notable challenges. First, researchers and practitioners alike face methodological questions. Chief among their concerns is determining whether or not learning analytics are efficacious and under what conditions; initial systematic reviews indicate weak results (Viberg et al., 2018). Second, the ethical conundrums facing learning analytics must be systematically and transparently addressed. Surveillance capitalism has raised serious concerns in broader society regarding data use and personal manipulation because of big data practices (West, 2017; Zuboff, 2015). If higher education continues to pursue learning analytics, then it must be willing—and fully able—to address concerns contextualized to education (Hartman-Caverly, 2019; Kumar et al., 2019).

The ethics of learning analytics are nothing but complicated, connecting various nodes, including privacy, autonomy and free will, intellectual property, justice and fairness, and democratic participation. These issues take on different considerations where academic libraries are concerned (Jones & Salo, 2018; Oakleaf, 2018). The values of the librarianship reject surveillance practices that potentially limit intellectual exploration and free speech, which are crucial parts of a higher education experience. If libraries are to uphold these values while using learning analytics, there may be a significant need for upskilling to meet these ethical challenges. This work-in-progress (WIP) paper describes a research and professional development project to improve ethical understanding of learning analytics.

To begin, we discuss academic library learning analytics and briefly outline existing ethical issues. Next, we describe our research questions and survey methodology. We end with an overview of emerging results from our project. The concluding remarks address both practitioner needs and how library and information science (LIS) students could be better educated to address the ethical challenges brought about by learning analytics.

LITERATURE REVIEW

Ethical issues for academic library practitioners.

Emerging library learning analytics literature suggests the ethical issues are especially wicked for library professionals, who espouse and staunchly defend privacy and intellectual freedom. Part of the challenge stems from a recognized privacy literacy gap. Participants at the “Library Values & Privacy in our National Digital Strategies” workshop stated:

[C]oncern that library staff, professionals, and administrators all fell short in terms of receiving proper training and education around issues of patron privacy. Literacy gaps persist on issues of privacy law, new technological threats, possible technical solutions,

and standard privacy best practices all threaten to limit the ability to sufficiently protect patron privacy. (Zimmer & Tijerina, 2018, p. 8)

Briney's (2019) review substantiates these comments. Her analysis of 54 library analytics articles "found many examples of inadequate data management practices, including extended data retention, a broad scope of data collection, insufficient anonymization, lack of informed consent, and sharing of patron-identified data" (Briney, 2019, p. 27).

A lack of methodological training.

With learning analytics, practitioners may lack ability to navigate ethically sticky methodological concerns. Citing Park (2004) and Dilevko (2007), Jones (2019b) argues that part of the ethics problem is that most LIS students receive little research methods training and are likely to be "under-skilled and unprepared to lead quantitatively rigorous learning analytics projects" (p. 421). Likewise, Robertshaw and Asher's (2019) meta-analysis of library learning analytics reported that, even though a statistically significant value is often found between library use or instruction and student GPA, "there is either no, or a very small, effect" (p. 90). So, while a correlation exists, the size of the correlation is minimal and practitioners overstate their claims.

Current library learning analytics training initiatives.

To date, we have not identified research projects or professional development initiatives with the primary aim to educate practitioners about library learning analytics ethics. However, there are initiatives that have sought to raise professional consciousness about these concerns. For instance, the aforementioned "Library Values & Privacy in our National Digital Strategies" workshop included targeted conversations about library learning analytics. The "National Web Privacy Forum: Achieving Privacy in the Age of Analytics" discussed data mining, analytics, and privacy; outcomes included a white paper (Young, Mannheimer, et al., 2019) and an action handbook (Young, Clark, et al., 2019). And, the "Library Integration in Institutional Learning Analytics" (Oakleaf, 2018) capacity-building project identified privacy as an "obstacle" for learning analytics about which practitioners need further education.

METHODS

Research project and questions.

The research described herein is part of a multi-year, grant-funded research and professional development project on learning analytics and ethics. The planned outcomes of the project include a training program (online and face-to-face) as well as resources to enable others to offer similar training. The targeted populations academic library practitioners.

To inform our professional development training program, we fielded a practitioner-oriented survey. The survey is informed by the following research questions:

RQ.1: What ethical issues do practitioners perceive to be the most pressing for library learning analytics?

RQ.2: Are practitioners prepared to handle research and data ethics issues associated with library learning analytics?

Survey methodology.

As this is a WIP paper, the methodology can only be partially described. To begin, we drafted the survey after conducting an informative scan of the literature, both related to learning analytics, generally, and library learning analytics, specifically. To validate the survey before distribution, we conducted cognitive interviewing (Willis & Artino, 2013) to determine the degree to which targeted subjects make sense of questions and themes as researchers intend and expect (Collins, 2003). We completed four cognitive interviews with academic library practitioners who fit within our sampling criteria. We ran interviews via Zoom, a web conferencing tool, recorded the audio for analysis and took notes using an interview protocol to elicit feedback from participants. Upon completion of the interviews, we modified the survey and began distribution using the Qualtrics system. The survey was determined to be exempt by our respective institution's institutional review board.

The survey was posted to a range of academic library practitioner listservs (e.g., assessment, library learning analytics, technology). To protect against bots taking the survey, which is a common issue with listserv distributions, a Captcha screener question was included along with other screeners to ensure the respondent was 1) not a bot and 2) met the sample requirements. Distribution began in early March 2020; data collection was ongoing at the time of this writing (mid-March 2020). We verified 93 respondents who had fully completed the survey. Data reported below include select descriptive statistics; open-ended responses have not yet been analyzed.

EMERGING RESULTS

Demographics.

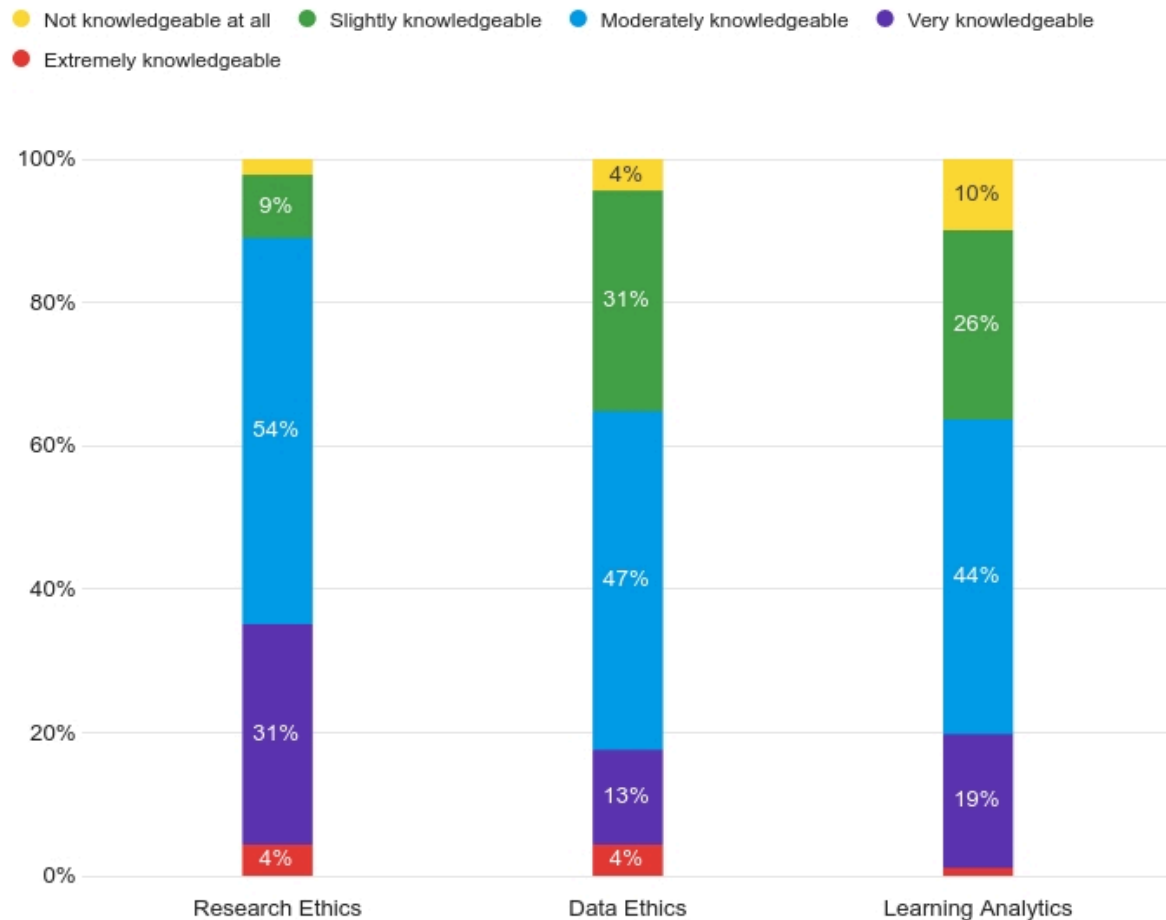
Institutional, professional, academic, and personal demographics indicate a fairly diverse respondent pool. Respondents primarily work at master's (21%) and doctoral (67%) Carnegie classified institutions. Respondents are mostly faculty (61%). The professional experience of the respondents was mixed with the majority (30%) reporting 5-9 years of experience, with 10-14 years of experience following (24%). A vast majority (90%) of respondents had a master's degree, and 76 (93%) of those respondents reported a master's degree in LIS; 15 respondents held an LIS doctoral degree. 63% identify as female and 23% as male. Only 5% of respondents indicated a non-binary gender identification.

Knowledge of learning analytics, research ethics, data ethics.

The survey asked respondents to rate their knowledge of learning analytics, research ethics, and data ethics, respectively. Across all three measures, most respondents signaled they felt moderately knowledgeable. More respondents indicated a higher degree of knowledge (moderately knowledgeable, very knowledgeable) for research ethics (see Figure 1).

Figure 1

Self-reported knowledge of learning analytics, research ethics, and data ethics



Self-reported knowledge can be over- or under-estimated so we attempted to establish a baseline against a standard definition. Participants defined learning analytics, research ethics, and data ethics and then asked them to rate the similarity between their definition and one we provided. Indicated similarity (very or somewhat similar) was more than 80% across all three definitions.

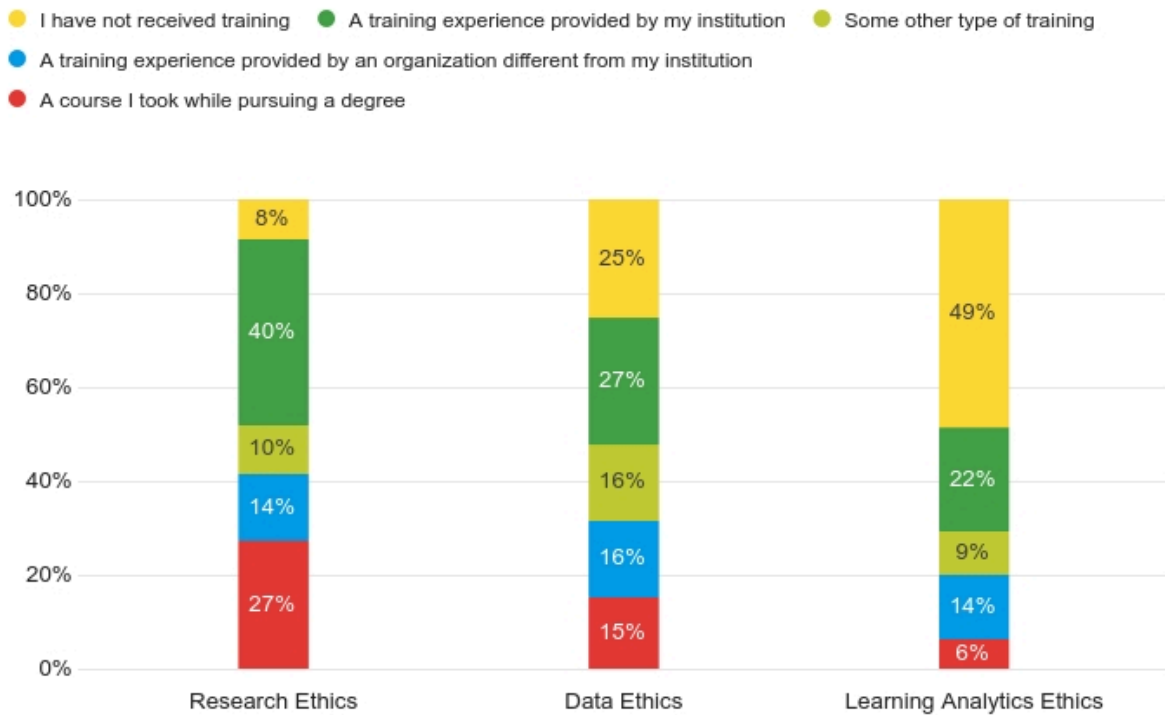
Preparation to address ethical issues.

Comparatively, there is a notable difference in ethics training for research, data, and learning analytics. Respondents indicated the sources of their research ethics training were

primarily a course they took while pursuing a degree or a training experience provided by their institution. The percentage of responses for both of these categories shrunk when examining ethics training for data and learning analytics (see Figure 2). Also notable is that 49% of respondents had not received any training for learning analytics ethics; only 6% reported receiving training in a course while pursuing a degree.

Figure 2

Sources of ethics training for research, data, and learning analytics



We asked respondents if their research, data, or learning analytics ethics training had prepared them to address ethical issues associated with learning analytics. The data were consistent. A majority of respondents strongly or somewhat agreed their training—whatever the type—had prepared them to address learning analytics and related ethical issues (see Table 1); however, there was a slight uptick in the percentage of respondents who somewhat disagreed with the statement where data ethics and learning analytics ethics training were concerned.

Table 1

Agreement that training prepared them to address ethical issues associated with learning analytics

Type of Training	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Research Ethics Training	19%	51%	13%	12%	5%
Data Ethics Training	17%	46%	13%	21%	3%
Learning Analytics Ethics Training	11%	53%	13%	24%	0%

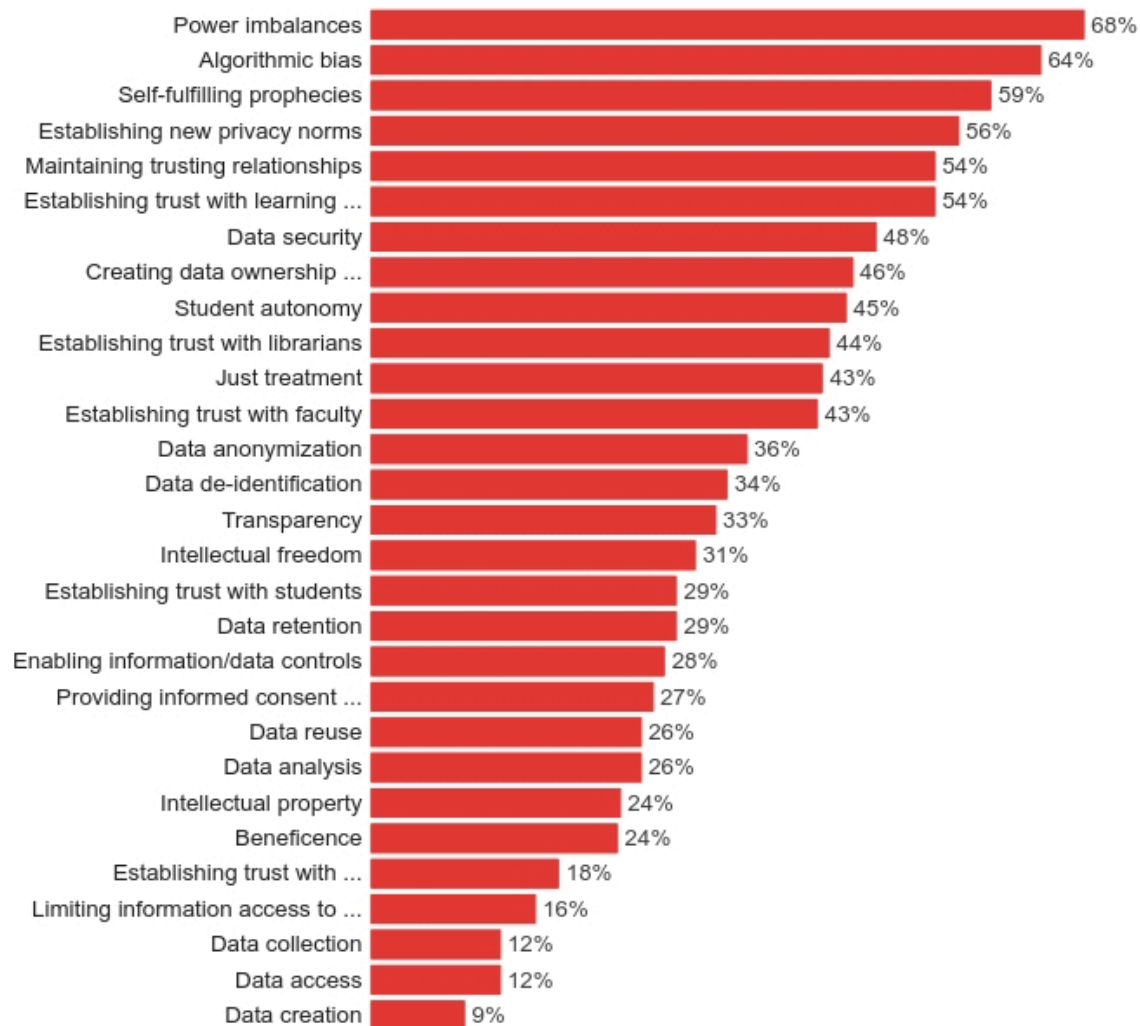
Even though respondents indicated their training has prepared them, they also want more training. 88% responded they somewhat or strongly agree they need learning opportunities to better understand ethical issues associated with learning analytics. Examining these responses by job classification (e.g., staff, faculty, and administration) and whether the respondent has an MLIS degree, we see no major differences except that 8% of administration respondents strongly disagree that they need more training.

Ethical issues.

The data confirm that ethical issues abound with learning analytics. 90% of respondents indicated they somewhat or strongly agreed learning analytics raises ethical issues. To probe what those issues may be, we presented respondents with 29 ethical and practical learning analytics issues identified in our literature search grouped by four themes: privacy, data ethics, data management, and trust. The top five ethical issues respondents identified as being very challenging for high education were: power imbalances (68%), algorithmic biases (64%), self-fulfilling prophecies (59%), establishing new privacy norms (56%), and maintaining trusting relationships (54%) (see Figure 3 for all issues).

Figure 3

Indicating very challenging issues for higher education institutions



62% of respondents noted that they had encountered a data ethics issue as part of their job responsibilities. When asked specifically about learning analytics, nearly 42% of respondents indicated they had participated in a library learning analytics project; and among those respondents, about 40% said they encountered an ethical issue. 53% said they were able to address the issue in a way that partially or fully resolved it. We hypothesize the ability to address an ethics issues may be due to practical and ethical skills, but also due to institutional culture. To get at the latter, we asked respondents if they felt empowered to address learning analytics ethical issues, to which 53% of respondents indicated they strongly or somewhat agreed with the statement.

CONCLUDING REMARKS

Initial findings have helped to identify ethical issues practitioners should consider when pursuing library learning analytics (RQ.1) and may help prioritize which issues need more focus and resources. Findings also help fill in the knowledge gap regarding whether practitioners feel prepared to handle ethical issues associated with library learning analytics (RQ.2). While the data indicate that existing research and data ethics training have helped prepare them, they perceive the need for specific training for ethical issues that learning analytics presents.

The motivation for this research was to inform the creation of a library practitioner professional development program. The findings support our initial claim that training is needed and that there are specific areas where our ethics training should focus. Nonetheless, respondents indicated the need for training may not be as pressing as we once believed given they perceived their previous ethics training as sufficient. Instead of composing the training as something separate and unique from research ethics, we will focus on particular areas where ethics training is unique to learning analytics and augment existing data and research ethics training.

We also discovered a potential gap in LIS education. If it is the case—as it seems to be—that students entering into academic librarianship need to be prepared for library learning analytics, then the type of ethics training they require needs rethinking. Beyond traditional research ethics training, students need to encounter ethical issues associated with information and data ethics courses, such as algorithmic bias and fairness. LIS programs should reconsider the learning outcomes and experiences associated with courses that address research methods, academic librarianship (including management), and information policy and ethics.

REFERENCES

- Briney, K. (2019). Data management practices in academic library learning analytics: A critical review. *Journal of Librarianship and Scholarly Communication*, 7(1), 1–39. <https://doi.org/10.7710/2162-3309.2268>
- Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research*, 12(3), 229–238. <https://doi.org/10.1023/A:1023254226592>
- Damgaard, M. T., & Nielsen, H. S. (2018). Nudging in education. *Economics of Education Review*, 64, 313–342. <https://doi.org/10.1016/j.econedurev.2018.03.008>
- Dilevko, J. (2007). Inferential statistics and librarianship. *Library & Information Science Research*, 29(2), 209–229. <https://doi.org/10.1016/j.lisr.2007.04.003>
- Essa, A., & Ayad, H. (2012). Improving student success using predictive models and data visualisations. *Research in Learning Technology*, 20(2012), 58–70. <https://doi.org/10.3402/rlt.v20i0.19191>
- Freitas, S. de, Gibson, D., Plessis, C. D., Halloran, P., Williams, E., Ambrose, M., Dunwell, I., & Arnab, S. (2015). Foundations of dynamic learning analytics: Using university student data to increase retention. *British Journal of Educational Technology*, 46(6), 1175–1188. <https://doi.org/10.1111/bjet.12212>
- Hartman-Caverly, S. (2019). Human nature is not a machine: On liberty, attention engineering, and learning analytics. *Library Trends*, 68(1), 24–53. <https://doi.org/10.1353/lib.2019.0029>

- Jones, K. M. L. (2019a). Advising the whole student: eAdvising analytics and the contextual suppression of advisor values. *Education and Information Technologies*, 24(1), 437–458. <https://doi.org/10.1007/s10639-018-9781-8>
- Jones, K. M. L. (2019b). “Just because you can doesn’t mean you should”: Practitioner perceptions of learning analytics ethics. *portal: Libraries and the Academy*, 19(3), 407–428. <https://doi.org/10.1353/pla.2019.0025>
- Jones, K. M. L., & Salo, D. (2018). Learning analytics and the academic library: Professional ethics commitments at a crossroads. *College & Research Libraries*, 79(3), 304–323. <https://doi.org/10.5860/crl.79.3.304>
- Kumar, P. C., Vitak, J., Chetty, M., & Clegg, T. L. (2019). The platformization of the classroom: Teachers as surveillant consumers. *Surveillance & Society*, 17(1/2), 145–152. <https://doi.org/10.24908/ss.v17i1/2.12926>
- Lane, J. E., & Finsel, B. A. (2014). Fostering smarter colleges and universities: Data, big data, and analytics. In J. E. Lane (Ed.), *Building a Smarter University: Big Data, Innovation, and Analytics* (pp. 3–26). SUNY Press.
- Lodge, J. M., Horvath, J. C., & Corrin, L. (2018). Data-informed nudges for student engagement and success. In *Learning Analytics in the Classroom: Translating Learning Analytics Research for Teachers*. Routledge.
- Oakleaf, M. (2018). *Library integration in institutional learning analytics*. <https://library.educause.edu/resources/2018/11/library-integration-in-institutional-learning-analytics>
- Park, S. (2004). The study of research methods in LIS education: Issues in Korean and U.S. universities. *Library & Information Science Research*, 26(4), 501–510. <https://doi.org/10.1016/j.lisr.2004.04.009>
- Parry, M. (2011, December 11). Colleges mine data to tailor students’ experience. *The Chronicle of Higher Education*. <https://www.chronicle.com/article/A-Moneyball-Approach-to/130062>
- Robertshaw, M. B., & Asher, A. (2019). Unethical numbers? A meta-analysis of library learning analytics studies. *Library Trends*, 68(1), 76–101. <https://doi.org/10.1353/lib.2019.0031>
- Siemens, G. (2012). Learning analytics: Envisioning a research discipline and a domain of practice. *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge*, 4–8. <https://doi.org/10.1145/2330601.2330605>
- Viberg, O., Hatakka, M., Bälter, O., & Mavroudi, A. (2018). The current landscape of learning analytics in higher education. *Computers in Human Behavior*, 89(2018), 98–110. <https://doi.org/10.1016/j.chb.2018.07.027>
- West, S. M. (2017). Data capitalism: Redefining the logics of surveillance and privacy. *Business & Society*, 58(1), 20–41. <http://journals.sagepub.com/doi/10.1177/0007650317718185>
- Willis, G. B., & Artino, A. R. (2013). What do our respondents think we’re asking? Using cognitive interviewing to improve medical education surveys. *Journal of Graduate Medical Education*, 5(3), 353–356. <https://doi.org/10.4300/JGME-D-13-00154.1>
- Young, S. W. H., Clark, J. A., Mannheimer, S., & Hinchliffe, L. J. (2019). *A national forum on web privacy and web analytics: Action handbook*. <https://doi.org/10.15788/20190416.15446>

- Young, S. W. H., Mannheimer, S., Clark, J. A., & Hinchliffe, L. J. (2019). *A roadmap for achieving privacy in the age of analytics: A white paper from a national forum on web privacy and web analytics*. <https://doi.org/10.15788/20190416.15445>
- Zimmer, M., & Tijerina, B. (2018). *Library values & privacy in our national digital strategies: Field guides, convenings, and conversations*. <https://cipr.uwm.edu/2018/08/02/project-report-library-values-privacy/>
- Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75–89. <http://journals.sagepub.com/doi/10.1057/jit.2015.5>