The use of learning analytics and the potential risk of harm for K-12 students participating in digital learning environments

Andrea L. Beerwinkle¹

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Abstract

This paper is in response to the manuscript titled “Ethical oversight of student data in learning analytics: A typology derived from a cross-continental, cross-institutional perspective” (Willis et al. in *Educ Technol Res Dev* 66(4):1029–1049, 2016). The response is from a K-12 educational environment perspective. Willis, Slade, and Prinsloo’s typology of different ethical approaches to learning analytics adds value to the special issue topic of shifting to digital as it provides different ways to view learning analytics as well as the type of approval(s) possibly needed for each view. K-12 educational institutions can utilize the manuscript as a starting place for review of their ethical oversights when analyzing student data as more schools are shifting to digital. A limitation of Willis, Slade, and Prinsloo’s manuscript in supporting the shift to digital is that the manuscript was published before the overwhelming shift to digital was mandated as a result of Covid-19. Future work related to the manuscript and with a focus on the K-12 educational environment could include K-12 education agencies deriving a K-12 specific typology from a review of ethical oversight protocols or analyzing the effects of the shift to digital in K-12 on the original typology. During the 2020 pandemic, K-12 schools in the United States moved to digital learning quickly and in large numbers. This move has resulted in a wealth of digital learning analytics available to be used in improving student learning outcomes. However, local education agencies must first make sure they have a clear framework for oversight of how digital learning analytics will be used. K-12 students are at risk of harm if local education agencies do not stop and carefully reflect on the potential risks to students resulting from decisions made as a result of using digital learning analytics.

Keywords Learning analytics · Digital learning · Ethics

Learning analytics is “the measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs,” (Siemens 2012, p.4), and it is an exponentially growing

✉ Andrea L. Beerwinkle
abeerwinkle@tamu.edu

¹ Department of Teaching, Learning, and Culture, Texas A&M University, College Station, TX 77843, USA

resource for academic institutions. Willis et al. (2016) point out a need to examine the ethical concerns around such data collection and analysis given the increased use of this form of research. To this point, Willis, Slade, and Prinsloo systematically reviewed the IRB or institutional equivalent frameworks and processes of ethical review at their respective universities focusing on the potential risk to students involved in research and the controls in place to ensure ethical research. The authors then provide a heuristic typology as a starting point for discussion of learning analytics as different types of research and the different ethical approaches that can be taken.

Unprecedented shift to digital learning for K-12

Between March and April of 2020, most public K-12 schools in the United States moved from face to face instruction to some form of distance instruction. Many distance instructional plans included a shift to digital learning. Students logged onto Google Classroom, completed tasks through Lexia, wrote emails and blogs, and participated in group discussions through Flipgrid.

This unprecedented leap into digital learning by 74% of the 100 largest school districts or local education agencies (LEA) in the United States comprising over 9 million students suggests that the 2020–2021 school year will likely provide an unexpected tsunami of student data (Education Week 2020). It is no surprise that districts will seek if they are not currently doing so, to utilizing digital learning analytics (DLA) to make sense of this tsunami to improve student learning outcomes across all grade levels.

This response takes the perspective that two of the ethical concerns discussed by Willis et al. (2016) are of critical importance when DLA is used by K-12 LEAs 1) an unclear definition of “harm”, 2) the need for careful oversight to prevent harm.

Ethical considerations at the K-12 level

Willis, Slade, and Prinsloo (2016) analyzed and found common values and issues across the policy frameworks of ethical review for their respective institutions. Just as Willis, Slade, and Prinsloo focus on multiple ethical considerations for university-level students, defining harm and oversight to prevent harm are critical points of discussion when considering DLA and K-12 students.

Unclear definition of “harm”

Willis, Slade, and Prinsloo point to an unclear definition of “harm” across all institutions. Students in K-12 are more vulnerable than college students because of a variety of issues including but not limited to age, maturity, educational abilities, parental involvement, and technology access. Therefore, defining harm is also a critical first step for LEAs and any university or college that works with them as they address the use of DLA.

DLA collected and analyzed by LEAs during this current digital shift will include data for students from widely diverse backgrounds. This data can provide invaluable information to help improve student learning. But it may not fully account for students’ digital experience, level of maturity, educational ability, home environment, and/or digital access.

Because DLA may not be able to consider the factors above, conversations about potential harm to students must carefully evaluate decisions that will be influenced by DLA. This includes discussions about the extent to which DLA will help determine intervention recommendations, grade promotions, advanced academic opportunities, pushes for uses of specific learning strategies, and continued purchase of educational software which can all greatly impact student achievement.

A discussion of harm must also include the collection and storage of data. Similar to the university level, oversight committees at LEAs must determine at what grain-size data will be collected- fine (e.g. student identifying) or large (e.g. school level) as well as how long data will be collected and where it will be stored.

Without careful discussion of the points above, K-12 students' educational opportunities could be harmed as DLA support interventions or changes to students' academic paths without consideration to students' non-digital experiences. Willis et al. (2016) point out that no matter how extensively the potential harm is examined, changes or recommendations based on learning analytics may still result in harm or limitations not anticipated by those analyzing the data. The same is true for DLA. LEAs should carefully consider this aspect of potential harm, especially at the K-3 level where placement in interventions, potentially based on DLA, can significantly affect critical learning outcomes such as reading achievement.

Need for careful oversight to prevent harm

Across each of their university policy frameworks, Willis, Slade, and Prinsloo (2016) found a core value in the oversight of human subject research to prevent harm. While it should be assumed that no LEA wishes to explicitly harm students, LEAs most likely rushed to implement digital learning environments without the benefit of a careful framework for using the resulting DLA to improve student learning. The development of such a framework should at its core help protect students from possible harms created through bias within DLA (e.g. A group of students is disproportionately selected for an academic program) and/or limitation of academic opportunity as a result of DLA (e.g. Students are invited to an advanced academic program based solely on limited analytic framework rather than a holistic evaluation). This is critical because students were also pushed into new digital environments and not all students are finding success. Careful oversight of DLA can help prevent students from experiencing further harm as they navigate a new academic world. Further, any university or college partnering with a local education agency must ensure a clear plan for oversight of learning analytics to improve student learning outcomes.

Conclusions

As LEAs rush to virtual learning environments and subsequently use digital learning analytics to improve learning outcomes, they must take a step back and consider the harm that could come students participating in a new environment in an unsure world. Willis, Slade, and Prinsloo (2016) offer several ethical considerations for the use of learning analytics and all are valid and important. Similarly, given the swift shift of K-12 LEAs toward digital learning and the increased possibility of digital learning analytics LEAs should examine the ethical considerations of DLA with the potential risk of harm being the most important.

Compliance with ethical standards

Disclosure of potential conflicts of interest I have no potential conflicts of interest.

Research involving human participants and/or animals This article does not include research involving human or animal participants.

Informed consent This article does not include human participant research so informed consent was not needed.

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Andrea L. Beerwinkle earned her doctorate in Curriculum and Instruction from Texas A&M University in 2018. She has over 10 years of classroom teaching experience. Dr. Beerwinkle is the senior research scientist for the Center for Urban School Partnerships at Texas A&M University. Her research focuses on reading comprehension and the text structure strategy.