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DEVELOPMENT ARTICLE

Exploring the relationship of ethics and privacy in learning analytics and design: implications for the field of educational technology

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Higher education institutions have always used a variety of data about students, such as socio-demographic information, grades on higher education entrance qualifications, or pass and fail rates, to inform their academic decision-making as well as for resource allocation. Such data can help to successfully predict dropout rates of first-year students and to enable the implementation of strategies for supporting learning and instruction as well as retaining students (Mah 2016; Tinto 2005).

Advanced digital technologies enable higher education institutions to collect massive administrative, systems, academic, and student learning data. This vast amount of educational information requires well-established data management, analysis, and interpretation (Berland et al. 2014). Further, learning analytics systems enable higher education institutions to collect real-time data from all student activity, offering huge potential for personalized and adaptive learning experiences and support (Ifenthaler & Widanapathirana 2014).

However, more educational data does not always make better educational data. Learning analytics has its obvious limitations and data collected from various educational sources can have multiple meanings. Therefore, serious concerns and challenges are associated with the application of learning analytics (Pardo & Siemens 2014).

1. Not all educational data is relevant and equivalent. Therefore, the validity of data and its analyses is critical for generating useful summative, real-time, and predictive insights (Macfadyen & Dawson 2012).

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2. Limited access to educational data generates disadvantages for involved stakeholders. For example, invalid forecasts may lead to inefficient decisions and unforeseen problems (Ifenthaler & Widanapathirana 2014).
3. Information from distributed networks and unstructured data cannot be directly linked to educational data collected within an institution's environment (Long & Siemens 2011).
4. Ethical and privacy issues are associated with the use of educational data for learning analytics. That implies how personal data is collected and stored as well as how it is analyzed and presented to different stakeholders (Slade & Prinsloo 2013).

Consequently, higher education institutions need to address ethics and privacy issues linked to educational data analytics: They need to define who has access to which data, where and how long the data will be stored, and which procedures and algorithms to implement for further use of the available educational data (Ifenthaler 2015).

The special issue gathers diverse perspectives and examples on ethics and privacy linked to learning analytics and learning design and expands the current understanding of how educational data will influence higher education institutions in the future. The articles foster the discussion of ethical dilemmas of intervention strategies for at-risk students, the ethics of categorizing at-risk students, student perceptions and expectations of privacy, and ethical oversight of student data – all through the lens of learning analytics and learning design.

Paper selection process

In summer 2015, a call for submissions was circulated through electronic mailing lists of the following organizations: AECT (Association for Educational Communications and Technology), AERA (American Educational Research Association), ascilite (Australasian Society for Computers in Learning in Tertiary Education), as well as through the regular channels of ETR&D, TechTrends, and educational technology groups. The call defined the focus of the potential submissions as follows: (a) ethical and privacy principles for learning analytics, (b) the relationship between ethics and design for learning.

Initially, 15 three-page abstracts were submitted by the end of August 2015. Upon careful review and agreement among the guest editors, seven of them were invited to submit a full manuscript by the end of November 2015. Main criteria for the selection of manuscripts was a clearly articulated focus on ethics or privacy issues focusing on learning analytics and design and how well this focus was consistently enunciated throughout the proposed work. Each manuscript was assigned to at least 3 reviewers of the special issue review board. All of the initial reviews were completed by the end of February 2016. Based on the comments of the reviewers and on the individual feedback of each guest editor, the manuscripts were moved to the second round of reviews. Authors were asked to submit their revised manuscript by the end of May 2016 addressing the comments from the reviewers and from the guest editors. The final acceptance of manuscripts was completed by the end of July 2016.

Contributors to this special issue

This special issue begins with a cross-institutional review of policy frameworks and processes by James E. Willis III (Indiana University), Sharon Slade (The Open University), and Paul Prinsloo (University of South Africa). In this article, *Ethical oversight of student*

data in learning analytics: a typology derived from a cross-continental, cross-institutional perspective, a working typology of ethical approaches is suggested within the scope of determining the moral intersection of internal student data usage and application.

Deborah West (Charles Darwin University), Henk Huijser (Xi'an Jiaotong-Liverpool University), and David Heath (Charles Darwin University) investigate the views of key stakeholders on ethical implications and considerations in higher education institutions. In *Putting an ethical lens on learning analytics*, the authors propose an ethical decision making framework that encourages institutional leaders and those involved in implementing learning analytics.

In *Student perceptions of privacy principles for learning analytics,* authors Dirk Ifenthaler (University of Mannheim and Deakin University) and Clara Schumacher (University of Mannheim) examine student perceptions of privacy principles related to learning analytics. Based on empirical evidence, the authors conclude that all stakeholders need to be equally involved when learning analytics systems are implemented at higher education institutions.

Vanessa Scholes (The Open Polytechnic of New Zealand) suggests in *The ethics of using learning analytics to categorize students on risk*, that the principal ethical concern with the differing treatment is the failure to recognize students as individuals. The author concludes that learning design offers ways to mitigate ethical concern with respect to learning analytics.

Identification of "at risk" students using learning analytics: the ethical dilemmas of intervention strategies in a higher education institution, by Celeste Lawson (Central Queensland University), Colin Beer (Central Queensland University), Dolene Rossi (Central Queensland University), Teresa Moore (Central Queensland University), and Julie Fleming (Central Queensland University), recommend that in order to resolve ethical dilemmas, higher education institutions could increase transparency of the process to students and obtain consent at multiple levels throughout the student journey.

In *Inscribing ethics and values in designs for learning: a problematic,* Colin M. Gray (Purdue University) and Elizabeth Boling (Indiana University) argue for a heightened view of designer responsibility and design process in an ethical framing. They further demonstrate the frequency of ethical concerns that emerge in a content analysis of design cases that document authentic instructional design practice.

This special issue concludes with a contribution by J. Michael Spector (University of North Texas). In his article, *Ethics in educational technology: towards a framework for ethical decision making in and for the discipline*, the author provides a preliminary framework for ethical decision making with regard to educational technologies.

The seven papers cover ethical and privacy principles for learning analytics and learning design and provide empirical evidence as well as practical implications for an emerging field in educational technology. The theoretical foundations, insightful findings, and innovative frameworks shall inspire future high-quality research studies and contribute to the growing knowledge base of educational technology, learning analytics, and learning design.

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Compliance with ethical standard

Conflict of interest The authors declare that they have no conflict of interest.

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