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Ethical and Privacy Issues
in the Application of Learning Analytics

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Abstract
The large-scale production, collection, aggregation, and processing of information from various learning platforms and online environments have led to ethical and privacy concerns regarding potential harm to individuals and society. In the past, these types of concern have impacted on areas as diverse as computer science, legal studies and surveillance studies. Within a European consortium that brings together the EU project LACE, the SURF SIG Learning Analytics, the Apereo Foundation and the EATEL SIG dataTEL, we aim to understand the issues with greater clarity, and to find ways of overcoming the issues and research challenges related to ethical and privacy aspects of learning analytics practice. This interactive workshop aims to raise awareness of major ethics and privacy issues. It will also be used to develop practical solutions to advance the application of learning analytics technologies.

General Terms
Algorithms, Measurement, Design, Human Factors, Legal Aspects

Keywords
Learning analytics, ethics, privacy, legal rights, data ownership, surveillance

1. Introduction
Until now, there have been few papers published relating to ethics and privacy in the research field known as 'learning analytics' [1]2,[3][4] and even fewer policies or guidelines regarding privacy, legal protection rights or other ethical implications that address Big Data in Education. One exception is a recent policy

published by the Open University UK[1]. Whereas the law relating to personally identifiable information (PII) is widely understood, there has been insufficient attention to privacy from a user-centered perspective, and there are no clearly defined best practices for scenarios such as anonymisation of educational data.

One of the particular challenges of the context of education is that it requires a degree of openness on the part of the learner. Learners perform learning tasks within a learning environment in order to increase their knowledge and develop competences, and they expect to receive support to overcome gaps in knowledge. They also expect to be in a safe environment where they can make mistakes without fearing any serious consequences.

Using learners' behavior and performance data in the context of learning analytics enables others to determine, visualize, and report strengths and weaknesses of individual learners and larger groups. In principle, this has always been the case in education; however, learning analytics enable the provision of this information in real time and on demand. Furthermore, learning analytics can take much more information into account than classroom assessment procedures, and it may not be clear to the learner which data is being used. Learning analytics can be used to compute the relationships between learners based on their interactions, or to compare the investment of a learner in a course based on time spent on the learning material, or to compare text written by students with pre-existing corpora. Thus, learning analytics go far beyond traditional assessment procedures and affect the privacy rights of learners in a new manner, necessitating a clarification of the concept. In this workshop, we will investigate different privacy notions and solutions, and propose ways of reconciling these in the field of learning analytics.

2. Ethics & Privacy in Learning Analytics
An analysis of papers presented at the LAK14 conference reveals that privacy is recognised as an important issue; however, privacy is not dealt with in any depth. Twelve of the 57 papers presented

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at the conference mentioned privacy, three of them describing how data had been anonymised to protect privacy. The rest of the papers that mentioned this subject were concerned with privacy for example as a barrier [5], as a restriction on data tracking, and a property of a cluster of stakeholder concerns revolving around risks [6].

The challenges posed by privacy are clearly obstacles that need to be overcome in order to reap the benefits of learning analytics. Arnold et al. noted that "many myths surrounding the use of data, privacy infringement and ownership of data need to be dispelled and can be properly modulated once the values of learning analytics are realized" [7]. This theme was also taken up by [5], "Learners need to be convinced that [these analytics] are reliable and will improve their learning without intruding into their privacy". Swenson [8] called for ethical literacy among learning analytics practitioners, "maintaining an ethical viewpoint and fully incorporating ethics into theory, research, and practice of the LAK discipline".

Aguilar [5] noted that it is important to be mindful of privacy when designing user interfaces. However, Piety [10] observed that approaches to privacy are likely to depend on context. While ethics and privacy are features of educational data sciences in many arenas, there are often distinctions between the approaches to these issues from private companies and public entities. In many countries, public bodies must adhere to regulations and standards when dealing with data. For example, those in the USA are required to adhere to the Family Educational Rights and Privacy Act (FERPA) and other regulations. However, "in the private sector there are fewer restrictions and less regulations regarding data collection and use" [10].

Privacy is typically not defined in the LAK community papers we have analyzed. In order to make issues related to privacy more central to learning analytics application design, there is a need to unpack this concept in terms of its sociocultural context. Privacy is related to how data are used in learning analytics. When data contain information that can be linked to a specific individual, we refer to them as 'personal data'. We also talk about 'private data', data that individuals want to keep to themselves and share only on their own terms. The boundaries between personal and private data are social agreements that depend on who the person is and in what social setting the data are created. A key question to be addressed is 'Who owns the data?' The answer certainly involves the individual associated with these data, but assigning ownership of the data to this person is often too simple a solution. Data are often generated in a social context – they may be seen as a resource that is shared within a community or a network. Some rights may also rest with the individual or organization that is responsible for generating and storing these data, or for arranging and visualizing sets of data in ways that generate actionable insights.

3. Workshop Organization

3.1 Workshop Facilitators

The workshop will be organized jointly by the FP7 EU LACE project (http://www.laceproject.eu), the Apereo Foundation (https://www.apereo.org), the SURF SIG Learning Analytics (https://www.surfspace.nl/sig/18-learning-analytics/) and the European Association for Technology Enhanced Learning (EATEL) SIG dataTEL (http://ea-tel.eu/sig-datatel/). All partners aim at advancing the learning analytics field by coming up with practical solutions and guidelines for ethical & privacy issues that

are a critical part of most data-driven research in Education. The main goals are to increase the knowledge and awareness about ethical and privacy boundaries of learning analytics research and practice, to identify existing theories of trust and privacy, to promote the re-use of best practice solutions on privacy and ethics, to foster the cooperation between different learning analytics research units, and to develop a kind of code of honor for learning analytics research supported by IT-based legal tools.

3.2 Expected outcomes of the workshop

We aim to publish the submitted topics and the practical solutions gained from the workshop in proceedings that will be disseminated by the LACE project after the workshop.

4. ACKNOWLEDGMENT

References

[1] Greller, W., & Drachsler, H. (2012). Translating learning into numbers: a generic framework for learning analytics. *Educational Technology & Society*, 15 (3), 42–57.

[2] Prinsloo, P, & Slade, Sharon. (2013, 8-12 April). An evaluation of policy frameworks for addressing ethical considerations in learning analytics. Paper presented *LAK13*, Leuven, Belgium.

[3] Slade, Sharon, & Prinsloo, Paul. (2013). Learning analytics: ethical issues and dilemmas. *American Behavioral Scientist*, 57 (10), pp. 1510-1529

[4] Pardo, A., & Siemens, G. (2014). Ethical and privacy principles for learning analytics. *British Journal of Educational Technology*, *45*(3), 438-450.

[5] Ferguson, R., De Liddo, A., Whitelock, D., de Laat, M., & Buckingham Shum, S. (2014). DCLA14: Second International Workshop on Discourse-Centric Learning Analytics. (pp. 283-284). In *Proceedings of the LAK14*, New York, USA: ACM Press. doi:10.1145/2567574.2567631

[6] Drachsler, H., Stoyanov, S., & Specht, M. (2014). The impact of learning analytics on the Dutch education system (pp. 158–162). In *Proceedings of the LAK14*, New York, USA: ACM Press. doi:10.1145/2567574.2567617

[7] Arnold, K. E., Lynch, G., & Huston, D. (2014). Building Institutional Capacities and Competencies for Systemic Learning Analytics Initiatives, (pp. 257-260). In *Proceedings of the LAK14*, New York, USA: ACM Press.doi:10.1145/2567574.2567592

[8] Swenson, J. (2014). Establishing an ethical literacy for learning analytics, (pp. 246-250). In *Proceedings of LAK14*, New York, USA: ACM Press.doi:10.1145/2567574.2567631

[9] Aguilar, S. (2014). Perceptions and Use of an Early Warning System During a Higher Education Transition Program, (pp. 113-117). In *Proceedings of LAK14*, New York, USA: ACM Press.doi:10.1145/2567574.2567592

[10] Piety, P. J., Hickey, D. T., & Bishop, M. J. (2014). Educational Data Sciences – Framing Emergent Practices for Analytics of Learning, Organizations, and Systems, (pp. 193-202). In *Proceedings of LAK14*, New York, USA: ACM Press. doi:10.1145/2567574.2567631