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Student Consent in Learning Analytics: The Devil in the Details?

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Introduction

Few would contest the impact of technology on modern day society. There are, however, wide-ranging opinions and contestations regarding the social and ethical implications of the increasing entanglement of our lives with technology (Introna, 2017; Marx, 2016; Robertson & Travaglia, 2017). Introna (2017) suggests that “At the center of this technology/society interrelationship we find many complex questions about the nature of the human, the technical, agency, autonomy, freedom and much more” (para. 1). Central to our entanglement in this techno-societal complex is the issue of the use of personal data and the scope and limitations of individuals’ agency (a) to make rational, informed choices regarding consent to having their data collected, analyzed, and used (Prinsloo & Slade, 2015); (b) for freely gifting (Kitchin, 2013, p. 263) unrequested data in ways that suggest digital promiscuity (Payne, 2014); and (c) to negotiate terms and conditions around receiving benefits in exchange for personal data, in a phenomenon known as the “privacy calculus” (Knijnenburg, Raybourn, Cherry, Wilkinson, Sivakumar, & Sloan, 2017, para. 1). It is also important to note the increasing automated and directed surveillance of digital users without their knowledge or consent (Kitchin, 2013), which raises “unprecedented challenges to how we currently elicit, secure, and sustain user consent” (Luger, Rodden, Jirotko, & Edwards, 2014, p. 613). The Big Data revolution (Kitchin, 2014) with its accompanying generative mechanisms for extracting data “has become an idea with social and political power in its own right” (Robertson & Travaglia, 2017, para. 1). The reductive quantification of complex social phenomena and the combination of different datasets suggest the need to (re)consider the

notion of consent, the scope and limitations of informed consent, in general (Wilson, 2017), and, more specifically, consent in the context of higher education.

As the volume, velocity, and variety in data have increased, institutions, including higher education organizations, are increasingly enlarging their capacity to facilitate the tracking of students on an unprecedented scale. As such, “The privacy and ethical issues that emerge in this context are tightly interconnected with other aspects such as trust, accountability, and transparency” (Pardo & Siemens, 2014 p. 438). In deciding whether providing individuals (i.e., students) control over their personal data is a “true remedy or fairy tale” (Lazaro & Le Métayer, 2015), we suspect that the devil lies in the details.

In this chapter, we provide a broad overview of ethical considerations in the collection, analysis, and use of student data before investigating specific issues surrounding and informing the notion and scope of student consent. We map a broad framework of considerations and consider the ethical implications of allowing students to opt out of all or some aspects of the collection of their data.

A Brief Overview on the Origins of the Notion of Consent and Recent Developments in the Digital Arena

There is consensus that our understanding of ethics in research and, specifically, the notions of consent and informed consent are shaped by a biomedical model of ethics, as enshrined in the Belmont principles (Denzin & Giardina, 2007; Drachler, 2016; Ferguson, Hoel, Scheffel, & Drachler, 2016; Sedenberg & Hoffmann, 2016; Wilson, 2017). Though there are a few critical voices questioning the one-size-fits-all model of ethical guidelines for research (Denzin & Giardina, 2007; Manson & O’Neill, 2007), most literature refer to the biomedical roots of our understanding of consent and informed consent, which has changed little over the years. Luger and Rodden (2013) suggest that the deployment of now ubiquitous computing

systems that capture and interpret data about people “below the line of human attention” (p. 529) raises new and important questions around the practical implications of dealing with consent. In the next section, we explore issues pertaining to consent in these digital, increasingly pervasive environments by first exploring the evolution and issues pertaining to consent from the field of biomedical research.

Consent in the Medical Fraternity

Though this chapter focuses specifically on the notion of informed consent in the context of the collection, analysis, and use of students’ (digital) data, we should not ignore the broader history and evolution of the notion of consent and, more recently, of informed consent. The idea of consent was firmly established in the context of medicine in 1914 by Justice Cardozo who said “[e]very human being of adult years and sound mind has a right to determine what should be done with his (sic) body” (Wilson, 2017, p. 213). It was only later that this notion of simple consent developed into informed consent whereby patients were not only to be informed but also able to certify that they understood the risks, drawbacks, and benefits of the particular remedy or intervention. The scope and ability of patients to have a direct say in their care “is actually quite complex” (Wilson, 2017, p. 213), and while shared decision-making between patient and medical professionals is presented as the ideal, informed consent “means different things to different people” (Wilson, 2017, p. 214). Simple consent alluded to the belief and practice that patients trusted the physicians to “provide whatever treatment the physician deemed best” (Wilson, 2017, p. 215).

This basic definition of consent changed after the Nuremberg trials in 1946. New rules for consent were published by *The Journal of the American Medical Association*, which implied that voluntary consent (whereby a patient must freely give permission for a specific procedure to occur) could only be obtained without coercion, and with the provision of risks

or hazards. The details that emerged from the 1972 Tuskegee study, and more recently, from the 2010 study by U.S. researchers exposing Guatemalans to sexually transmitted infections without their consent, points to persisting complexities of and need for obtaining informed consent. Detailed analysis of the evolution of consent in the context of the medical and legal fraternities in the United States falls outside of the scope of this chapter, but it is helpful to point to some of the many issues that shaped the evolution and interpretations of consent in the medical context and their impact on notions of consent outside of that context.

A number of legal cases illustrate the unresolved tensions between the rights of patients to be informed in terms that they might reasonably be expected to understand and the extent of the information that a reasonable physician might be expected to disclose. Several cases have considered informed consent in terms of both the burden on patients who may simply not have enough knowledge or understanding to provide genuinely informed consent and on the ability of physicians to determine the extent and depth of their patients' understanding when sharing information. Wilson (2017) flags a number of issues, such as (a) the scope of information needed by patients to prevent "defective consent" (p. 228); (b) the frailty and burdens of the forms and written format of consent; (c) the associated time and understanding required from both patients and physicians; (d) the increasing use of digital media to ease the burden on physicians to inform patients of the risks; (e) and the persisting issue of dealing with patients with diminished capacity.

There are also issues that include, *inter alia*, (a) the need to disclose the experience and expertise (or lack thereof) the physician; (b) the identity of the physician who will perform the procedure (reference to the phenomenon of ghost surgery where a physician other than the one to whom consent was provided performs the procedure); (c) the physical and/or mental state of the physician (e.g., if the physician is HIV positive); (d) whether the

procedure will be used for training of others; and (e) whether the physician financially benefits from the intervention outside the actual procedure.

Of specific interest for our consideration is the role that trust plays in consent. There is ample evidence that patients tend to trust the expertise, authority, and professionalism of their physicians to advise them correctly. Wilson (2017) concludes that, despite the need to explore the potential of shared decision-making between physicians and patients, the ability of patients to accept full responsibility for evaluating the risks “remains surprisingly hard to realise in practice” (p. 239). The typology of “shared decision-making, informed consent and simple consent” provided by Whitney, McGuire, and McCullough (2004, p. 54) may be of use in making sense of some of the complexities and nuances. In contrast to simple and informed consent, shared decision-making involves “an exchange of ideas between patient and physician and collaboration in the decision itself. Shared decision-making in its fullest sense only occurs when *real choice* exists and the physician involves the patient in the decision” (Whitney et al., 2004, p. 55; emphasis added).

Whitney et al. (2004) suggest that informed consent in the medical context requires not only independent authorization of an intervention, but the required existence of a process that both allows interventions to proceed and reduces physicians’ liability. Crucial for our consideration of informed consent in a broader educational context is an acceptance that informed consent “does not happen when a form is signed; it occurs when patient and physician discuss a problem and choose an intervention together, a process that may take place in one sitting or over the course of several encounters” (Whitney et al., 2004, p. 54). They distinguish between simple consent and informed consent as shown in Table 6.1.

Table 6.1: Simple consent versus informed consent (Whitney et al., 2004, p. 55)

Characteristic	Simple consent	Informed consent
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Type of decision	Low risk	High risk
Elements	Explanation of intervention, followed by patient agreement or refusal (expressed or implied); other elements, such as discussion of risks, benefits, and alternatives are present when appropriate	Discussion of the nature, purpose, risks and benefits of proposed intervention, any alternatives, and no treatment, followed by explicit patient agreement or refusal

The authors go on to develop a typology that contrasts simple consent, informed consent, and shared decision-making. They suggest that simple consent is appropriate only where there is low risk associated with the medical intervention. Shared decision-making is required where there is low certainty (that is, more than one clear choice regarding available interventions). Whether choice exists or not, the likelihood of a high-risk procedure prompts the need for informed consent.

Consent in Digital Environments

While the practices of simple and informed consent in medical contexts may be useful in our consideration of informed consent in Learning Analytics (LA), there remain important differences. The relationship between a patient and a physician has as basis a particular health concern (on the side of the patient) or an identified risk or need of treatment as indicated by the physician. The relationship is based on a fiduciary duty of care and the Hippocratic Oath

undertaken by physicians at the start of their careers. But when digital data are gifted, provided in response to a directed collection of data, or are integral to automated data collection processes, the boundaries and purposes are less clear. Those providing data may not always know at the point of consent or use of the digital service, *inter alia*: (a) the identity of data collectors; (b) the scope and purpose of collection; (c) the downstream uses of data; (d) and the potential for third party use (Kitchin, 2013). In the context of ubiquitous digital environments, there is neither an explicit duty of care nor a general equivalent of the Hippocratic Oath (O’Neil, 2016). The issue of purpose, that is, *in whose* interests the data are being collected and applied is also unclear. In the medical context, the purpose might usually be assumed to be the health of the individual patient (although may also be reduction of medical liability). In a digital context, the purpose is less likely to be an optimal outcome for an individual, but may more reasonably be assumed to be the optimization of a particular organizational goal. This section attempts to highlight the complexities of consent in a digital world.

Considerations of Control

Lazaro and Le Métayer (2015) state that underpinning debates regarding informed consent to the collection, analysis, and use of individuals’ digital data is the notion of control—“the notion of control dominates the contemporary conceptual and normative landscape of data protection and privacy” (p. 4). This notion of control over one’s data is ambiguous or paradoxical in that users of networked environments may, on the one hand, express concern regarding the collection, analysis, and exploitation of their data, and, on the other, be accused of digital promiscuity (Payne, 2014) or freely sharing and posting a broad range of personal information online across a number of sites. While our notions of privacy have been shaped by claims of the right to be left alone, privacy is much more than “protecting one’s space

from intrusion, but is determined by the ability to control personal information” (Lazaro & Le Métayer, 2015 p. 6). Unlike the medical context, where information is sought and applied for a specific end, digital data, once shared, may be extracted and reapplied for reasons as yet undefined.

Most of the discourse on control over the collection, analysis, and use of an individual’s data is linked to notions of ownership and property. The emphasis on data as property overestimates individuals as autonomous and rational agents (Lazaro & Le Métayer, 2015; Solove, 2008). Floridi (2005) have proposed an ontological understanding of data where, for example, “data is an integral, albeit informational part of students’ being. Data is therefore not something a student owns but rather *is*. Students do not own their data but are constituted by their data” (Prinsloo, 2017, p. 36). Common agreement perhaps needs to be reached around the status and role of digital data in different contexts to better understand and apply consent options.

Toward an Understanding of Digital Data

The lexicological analysis of the terminology used to describe personal data developed by Parkinson, Millard, O’Hara, and Giordano (2017) serves as basis for their model of the “digitally extended self” (p. 1) and includes the following concepts:

- Digital footprint: the data traces left by individuals when using or being observed by computing devices;
- Third-party digital footprint: data traces that can be created by a computer system, or an individual, describing another individual (data subject);
- Digital mosaic: “a collection of digital footprints which can be used to create a picture of a person” (p. 5);
- Digital persona: “a model of an individual created by the analysis of digital footprints” (p. 5);

- Digitally extended self: the combination of the above elements.

Rights of Control

Lazaro and Le Métayer (2015) map the rhetoric of control deployed by the European Union that has as a central tenet the rights of and means provided to individuals “to make sure they are fully informed about what happens to their personal data and to enable them to exercise their rights more effectively” (p. 11–12). The issues of trust so readily apparent in the medical context are not so easily seen in the digital world. Accompanying the rhetoric of individuals’ rights to control their data is access control. Access control allows for restriction of “access to a resource (for example ... personal data) to authorized users” (Lazaro & Le Métayer, 2015, p. 14). This may be discretionary access control, where the owner of the data defines the rules of access, or mandatory access control, where the rules of access to data are determined by the system administrator. “This difference raises the question of who is the actor in charge of deciding, or who is ‘in control’” (Lazaro & Le Métayer, 2015, p. 14).

User-Defined Rights of Control and Privacy

Lazaro and Le Métayer (2015) further distinguish between active and negative rights. Active rights allow users to preset their own boundaries. This allows users to recognize oversharing of information and highlights the activities and scope of activities of cookies installed as part of a digital service provision. Examples include services such as Do not track, Ghostery, and Privacy Bird. In adopting this stance, users are assuming perhaps that potential outcomes for uses of their digital data are high risk and are proactively enforcing the type of informed consent position described by Whitney et al. (2004, p. 56) for making medical decisions. Negative rights place the emphasis on curbing access by adopting practices of non-disclosure and data-minimization or uses of privacy enhancing technologies (PETs).

Further, a hard privacy approach tries “to avoid as much as possible placing any trust in any third party,” while a soft privacy approach assumes “that the subject will, technically speaking, lose control over his (sic) data and therefore will have no choice but to place a certain amount of trust in the data controller” (Lazaro & Le Métayer 2015, p. 19). In such a case, where there is little choice, we can see some parallels with the high-certainty medical context, in which little or no choice makes the consent option a potentially simple one (Whitney et al., 2004, p. 56).

Lazaro and Le Métayer (2015) conclude that meaningful control cannot be achieved if there is no way for a user to monitor compliance with their privacy preferences. In the light of increasingly ubiquitous systems, any such options of control are untenable. We agree with Luger and Rodden (2013) who suggest that “contemporary articulations of ‘consent’ have become stretched thin to the point of breaking” (p. 529). The clear difference between understanding a patient’s choices in the medical context and in the digital data context is the significant potential for actions to be hidden and unknown.

Moving Toward Meaningful Digital Consent

Existing studies show that users do not engage with online privacy policies and/or that these policies are unreadable, that individuals are anything but autonomous and rational agents, and their privacy preferences “are highly malleable and context dependent” (Yeung, 2017, p. 125). We consider that there is a growing need to review and refine approaches to digital consent. Luger and Rodden (2013) agree and flag the “fallibility of consent” (p. 535). They suggest that in recalibrating more meaningful consent, further attention is given to the following:

- Engaging users - the communication processes pertaining to obtaining consent. Their research found that consent is contextual, social, “dynamic, and indivisible from the environment within which it was performed” (p. 532). There is a need to both scaffold

user expectations and clearly communicate potential alternative uses for information provided.

- Ensuring an understanding of risk and control - the subjective nature of risk, consent “as a transmission of power” (p. 533), and the very diverse realities pertaining to understanding and practices of user control.
- Providing information rather than disclosure—“current methods of informing were mostly considered unfit, particularly in the case of personal or sensitive data” (p. 534). The content and scope of consent change over time.

The Future of Consent in a Changing Context

Despite a general consensus that consent as currently understood “cannot hope to meet the challenges posed by ubiquitous computing systems” (Luger & Rodden, 2013, p. 536), the concept should not be abandoned altogether. There is an increasing move to context-aware systems that create personalized and seamless-to-the-user experiences. “Within such an environment, it is virtually impossible for explicit informing (i.e., disclosure) to occur in scenarios other than those within which users have expressly agreed to systems collecting data...” (Luger & Rodden, 2013, p. 536). They posit that it is crucial to see consent as a social process rather than an isolated act at a specific moment in time, and that consent should be sustained rather than simply obtained. It is important to move to continuous informing that goes beyond notice and disclosure. Users need to be able to review or withdraw their data and to withdraw their consent “at any point during or after their interaction with the system” (p. 537). In the next section, we begin to look at consent relating to student data in an educational context.

Consent in the Context of the Broader Ethical Implications in Learning Analytics: The Early Roots

In an LA context, the purpose of using student data is not necessarily to seek the best possible outcome for an individual student. Rather, it may more reasonably be assumed to be the optimization of an institutional goal, such as improved overall retention—involving decisions or constraints that are not always in accord with the goals of each student. Where purpose is less clear, clear consent becomes increasingly important.

In addition, the context of consent in an LA context is potentially complex—unlike medical studies, which involve direct contact with participants, LA often relies on analyses and applications of datasets relating to multiple student behaviors. In order to obtain meaningful consent in the traditional sense, higher education institutions (HEIs) would effectively need to pause and engage in an exchange of information prior to any application. Furthermore, to ensure that consent is informed, HEIs would need a greater understanding of how information might be applied and reinterpreted in the future. LA continues to evolve, and it would not be simple for an HEI to have foresight of all future applications.

Policy Approaches 1.0

Those HEIs that have attempted to tackle consent have tended to do so in a fairly generic and often opaque way. Many include broad ranging and often bland statements regarding potential uses of student data as largely hidden steps within the registration process or as post-registration information only (Hayden, 2012). In other cases, students remain blithely unaware that their institution is collecting, analyzing, and using their information at all. Unlike research involving students governed by institutional review or ethics boards and explicitly requiring the consent of participants, the application of insight gleaned from student data based on prior research has no formal equivalent approvals or consent process (Willis, Slade, & Prinsloo, 2016).

The recognition that consent forms a necessary part of the application of LA has grown over the past few years. Given the recency of LA as a discipline and the need to establish agreed ethical principles, much of the earliest work focuses on the development of formal policies and codes of practice. Ferguson (2012) describes a number of future challenges relating to the development of LA, one of which is the need for a set of ethical guidelines that address how HEIs obtain informed and ongoing consent to the use of student data, and how the potential problem of opt-out might be addressed. Greller and Drachsler (2012) also touch on the issue of consent, highlighting that a sense of “endangered privacy may lead to resistance from data subjects” (p. 50). They state that although there is strong existing legal protection relating to personal data, the lack of clarity around who owns the data leads to potential threats to a principle of informed consent.

We provide a fuller discussion of informed consent including a general lack of awareness around increasing uses of student data, argue the need for consent in an educational context, and discuss a number of suggested approaches to managing informed consent (Slade & Prinsloo, 2013). In that paper, we suggested, as a core ethical principle, the concept of students as active agents, providing informed consent regarding the collection, use, and storage of data, and voluntarily collaborating in the provision of “data and access to data to allow LA to serve *their* learning and development, and not just the efficiency of institutional profiling and interventions” (Slade & Prinsloo, 2013, p. 1519).

In 2014, the Open University published what is thought to be the first institutional policy of its kind, specifically focusing on ethical uses of student data for LA (The Open University, 2014). The policy defines the scope of LA at the university and defines datasets in and out of scope. It establishes eight principles covering areas such as student co-responsibility for their learning, recognition that students should not be wholly defined by their visible data, and modelling and interventions based on analysis of data should be sound and free from bias.

Although the authors of the policy broadly supported a position of opt-out, institutional nervousness around the creation of barriers to registration led to a final position of what became loosely known as informed consent. In practice, this translates to a few words embedded within the registration agreement (to allow students who would not want their data to be used for LA purposes to not proceed with registration). Links to the details of the policy and a set of user-friendly resources that explain how LA is used in practice are available for registered students.

Sclater (2014) usefully discusses a wide range of issues around consent flagged by the advisory group that supported the development of Jisc's Code of Practice (Sclater & Bailey, 2015). Consent is broken down into a number of sub-issues, such as when it should be sought and under what conditions; the need to avoid opaque privacy policies so that students genuinely understand what their consent means; the right to opt-out (and the consequences for the student and others of doing so); and whether there is a need to seek additional consent if an institution decides to use the data for purposes for which consent was not originally given.

The Illusion of Student Control

Pardo and Siemens (2014) explore ethical and privacy issues in the collection, analysis, and use of student data, and explore a number of hypothetical but realistic questions/scenarios around student consent. Examples include the collection and use of student views posted in a closed platform; implications for harvesting and sharing data generated as part of teamwork, sharing of data harvested in the context of one course with teaching faculty from another, etc. And, in the context of an open course, "Should learners involved in an open course be required to give consent for data collection and analysis?" (Pardo & Siemens, 2014, p. 442).

The authors go on to suggest that while the issue of student control is to be found in most privacy regulations, the implementation of that control varies significantly (Pardo & Siemens, 2014, p. 446). Most approaches with regard to student control to their data are found in institutions' *Terms and Conditions* documents that not only delimit the collection, analysis, and use of student data but also make students aware of the scope, analysis, range of use, and access to their data for what purposes. However, as Prinsloo and Slade (2015) have pointed out, there are several issues with regard to *Terms and Conditions*, such as the length of the documents; the technicality and legal nature of the terminology used; the use of capital letters that impact negatively on the readability of these documents; and perhaps most importantly, that at the moment of accepting the *Terms and Conditions*, users often do not have a right to decline or negotiate aspects of those documents that could affect them. The existence of *Terms and Conditions* also implies that humans make rational decisions. Despite a general belief that individuals base their decisions on rational processes, we underestimate the bounded rationality people have as they negotiate meaning and compromise priorities within complex situations (Solove, 2013).

Pardo and Siemens (2014) suggest transparency as a key issue to address this complexity and that while data collection often requires student consent, "the principle of transparency can be taken beyond this requirement" (p. 445). Having said that, they voice concerns as to whether transparency then allows for students to correct or modify datasets containing their own information, such as log-on dates. We would suggest that the issue is not the correction of data *per se*, but provision of an opportunity to verify information, to provide context, or to help with interpretation of the data. The real issue is around making sense of the data and negotiating any meaning and potential implications, which might (adversely) affect them. Although Pardo and Siemens (2014) touch on issues of student consent related to use of their anonymized data by any educational institution as part of open datasets, they do not flag

issues around the discriminatory potential of even anonymized data (i.e., against classes or categories of students based on race, socioeconomic income, gender, age, etc.). Further, there is a danger that blanket consent allows for anonymized data to be used outside of the original purpose of collection, or for combination with other anonymized or identifiable datasets.

In this early stage of exploring ethics and consent issues, much of the discussion has centered around the need to satisfy legal frameworks and privacy policies that are “written by lawyers for lawyers” (Cate & Mayer-Schönberger, 2013, p. 67) and the negative (largely to the institution) consequences of allowing an opt-out position. Other than occasional reference to student agency (Slade & Prinsloo, 2013; Solove, 2013) there is little (detailed) recognition of the interests of students. More recently, greater consideration has been given to moving beyond legislative and policy requirements and recognizing the importance of greater transparency and trust.

Recent Issues in Considering Consent within Ethical Implications in Learning Analytics

There has been a prolific increase in the number of published articles with regard to the ethical implications and considerations of LA over more recent years. Following a series of expert workshops with members of the LA community, the Learning Analytics Community Exchange network established the DELICATE eight-point checklist aimed at those teachers, researchers, policy makers, and institutional managers who engage in LA (Drachsler, 2016). The checklist includes issues such as stakeholder involvement and the need to operate within relevant legal frameworks, but also briefly touches on the need to seek consent through clear questions.

Also significant was the decision of the journal, *Educational Technology, Research and Development* to dedicate a whole issue in 2016 (Volume 65, issue 4) to the ethical

considerations and implications in/of LA. Central to all of the articles in this volume is the issue of consent, informed consent, and various propositions for students' access and control of their data (Ifenthaler & Tracey, 2016; Lawson, Beer, Rossi, Moore, & Fleming, 2016; Scholes, 2016;. In their editorial to a special issue dedicated to “Ethics and Privacy in Learning Analytics” in the *Journal of Learning Analytics*, (Ferguson et al., 2016) mention as a challenge the need to gain informed consent and to “limit time for which data are held before destruction and for which consent is valid” (p. 9).

Consent as a Notional Requirement?

Despite the frequency with which reference is made to the notion of consent and informed consent (e.g., Dawkins, 2016; Hoel & Chen, 2016; Khalil & Ebner, 2016; Roberts, Howell, Seaman, & Gibson, 2016), there is little analysis of the different nuances of consent and informed consent in the context of LA. A notable exception is work published by Rodríguez-Triana, Martínez-Monés, and Villagrà-Sobrino (2016) focusing on small-scale, teacher-led LA and included recommendations that

- Formal consent should be obtained before data are collected/analyzed;
- Details of what might be done with (analyzed) information should be made clear—and, if possible, agreed upon with students;
- Students should be able to update their digital dossiers and provide additional context;
- Data should be deleted once it no longer serves its original purpose or when users request deletion; and
- Students should be made aware of (any) consequences of opting out of the analysis.

In our recent paper (Prinsloo & Slade, 2016a), we suggest that the “matter of consent is complex” (p. 168) and that obtaining prior affirmative consent in all cases may be impractical. We follow Solove (2013) who said, “consent is far more nuanced, and privacy

law needs a new approach that accounts for the nuances without getting too complex to be workable” (p. 1901; Prinsloo & Slade, 2016b, 2017a).

Willis et al. (2016) investigated the ethical oversight pertaining to the collection, analysis, and use of student data. Central to the problematics of consent in LA is that, as these authors have found, LA is not currently seen as Research (with a capital R) and, therefore, informed consent is not required for LA. Willis et al. (2016) state:

Given the range of concerns and real potential for harm, one institutional response might be to subject all learning analytics to research ethics boards for approval. This would, however, contribute to the mission creep and increasing bureaucratization of research, and would solidify concerns that learning analytics practice does not fit comfortably with traditional descriptions of researchers, research, informed consent, and approval

(p. 897).

In practice, there appears to be a paucity of examples of institutional implementation of meaningful consent. In their research review of eight policies for LA of relevance for higher education, Tsai and Gašević (2017) found three policies that specifically refer to when consent (i.e., informed consent) should be sought and required: (1) during student enrollment, (2) in the context of personal interventions, and (3) when HTTP cookies are used in the LA system. And in a recent article, Wintrup (2017) distinguishes between “meaningful consent and a passive acquiescence” (p. 30) and points to the need for interactions that require and are based on consent to be intelligible and controllable by the user. Consent as practiced currently and as shown in these examples appears as little more than a box-ticking exercise. In Daniel’s (2017) recent comprehensive overview of Big Data and Learning Analytics in Higher Education, the notion of consent is mentioned only 22 times in 264 pages (Roberts, Chang, & Gibson, 2017). While our work (Slade & Prinsloo, 2013) is the most referenced

work with regard to the issue of consent, the only brief attempt to expand the notion of consent beyond a mere mention is in reference to work by Kay, Korn, and Oppenheim (2012) who refer to the need for student consent when policies and materials change after the initial opt in.

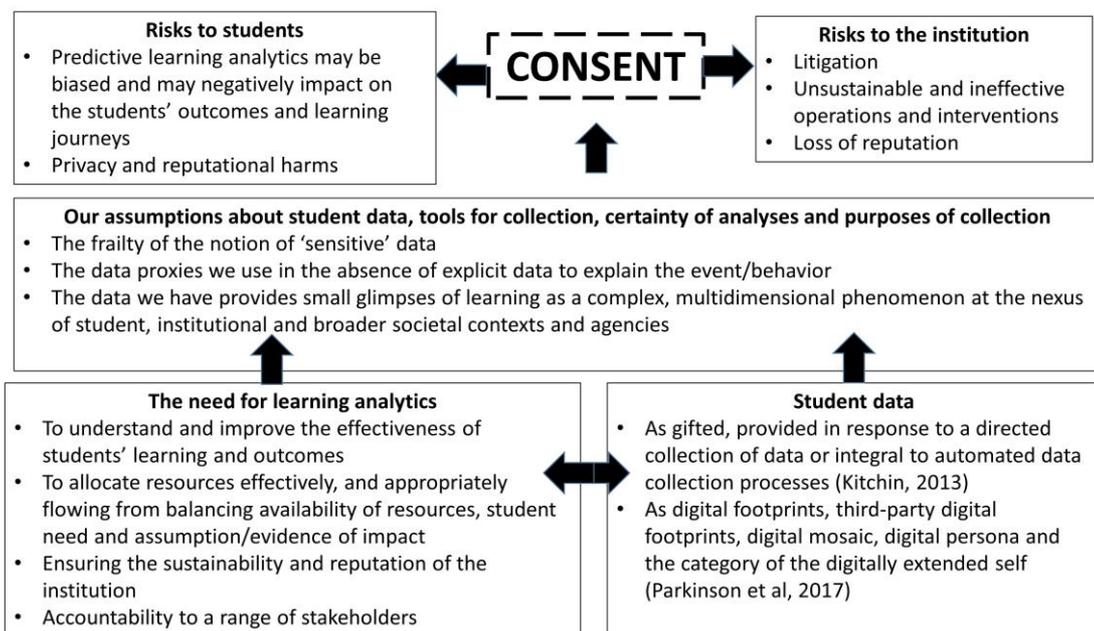
The most recent attempt to tackle the issue of consent in the context of LA emerges in guidelines proposed by Jisc (Sclater, 2017). In attempting to make consent more practicable, they suggest that institutions do the following:

- Not ask for consent for the use of nonsensitive data for analytics, with the current understanding that this can be considered as of legitimate interest or public interest.
- Ask for consent for use of sensitive data, which, under the 2018 European Union General Data Protection Regulation (GDPR), will be called special category data. For many higher education institutions (HEIs), relevant sensitive data would include ethnicity and information relating to disabilities.
- Ask for consent to take interventions directly with students on the basis of the analytics

In the next section, we attempt to make sense of how HEIs can begin to clarify and move forward institutional positions on consent as it relates to uses of student data. Although it has perhaps been demonstrated that decision-making around consent in a medical context has fewer unknowns, we share some tentative reflections and a broad adaptation of the Whitney et al. (2004) typology to prompt further reflection and consideration. While we acknowledge that the issues pertaining to medical risk, for example, are different from the multidimensionality of risk in LA, the typology also opens up a particular discursive space to consider ownership of data, the question of ‘who benefits?’ and how to engage with the issue of the multidimensionality of risk. We also acknowledge that every nuance or type of the data typology (e.g., digital footprints, third-party digital footprints, digital mosaic, digital persona, and the category of the digitally extended self) by Parkinson et al. (2017) significantly impacts the complexities and layers in the broad categories of risk and, especially, certainty.

We would like to bookmark our intention, in a next iteration of this research, to consider the implications of the data typology by Parkinson et al. (2017) for the scope and shape of consent in ubiquitous learning environments. However, Figure 6.1, below, attempts to provide a broad framework for some ethical considerations for the future of consent.

Figure 6.1: A conceptual overview of the generative mechanisms for considering consent



Some Ethical Considerations and Implications for the Future of Consent in Ubiquitous Learning Environments

From this broad overview of the evolution of consent in a variety of biomedical, legal, and digital contexts, and given that consent is invariably a frail, until-further-notice arrangement, this section aims to highlight some of the ethical considerations for the future of consent in the context of ubiquitous learning environments. While the notion of consent is germane to

the literature on the collection, analysis, and use of student data, and is specific LA, there is a severe lack of theoretical or conceptual work and even fewer guidelines for practice. Other than the broad guidelines provided by a number of authors (e.g., Pardo & Siemens, 2014; Sclater, 2017; Slade & Prinsloo, 2013), consent in ubiquitous learning environments is at present imperfect (Lazaro & Le Métayer, 2015).

The Purpose of Consent

We do not claim to have the answers, but agree with Sedenberg and Hoffmann (2016) that there is a need to ask difficult questions about what individual freedom of choice really means when flows of online information are increasingly controlled by a few large internet companies with their own interests in mind. Despite a general consensus that it would be both impossible and impractical to apply conventional informed consent in ubiquitous learning environments, we should guard against allowing this to “distract us from heeding the key values (like autonomy or respect for persons) that consent was designed to support in the first place” (Sedenberg & Hoffmann, 2016, p. 26).

So where to start? While the three broad Jisc guidelines outlined by Sclater (2017) provide a useful and usable framework for (re)considering consent, the issue of sensitive data is complex. The first guideline suggests that consent is not required for non-sensitive data, which can be assumed to be of legitimate or public interest. Data are framed according to their context (e.g., economically, in time, etc.), and do not exist independently of the “ideas, instruments, practices, contexts and knowledges used to generate, process and analyse them” (Kitchin, 2014, p. 2). If data are never “neutral, objective, and pre-analytic” (Kitchin, 2014, p. 2), an absolute determination of the scope and content of what may be considered nonsensitive data becomes problematic. If it can be accepted that data are, *per se*, political, then all data, depending on the context, might reasonably be considered to be sensitive. For

example, seemingly innocent data such as gender, race, home addresses, age, and occupation may appear nonsensitive, but may, depending on the ideological orientation of the individual or institution collecting the data, become sensitive and open for bias, misuse, and abuse (boyd & Crawford, 2013; Ekowo & Palmer, 2017; Henman, 2004; Johnson, 2017; Prinsloo, 2017). In addition, what might constitute non-sensitive data in one context or at a particular time might be considered sensitive in another context or time.

Embracing student-centered LA (Slade & Prinsloo, 2013), and a teleological ethical orientation where the definitions, meanings, and uses of data are discussed, it is also worth examining the extent to which an institution can decide whether data are sensitive or not.

Although there are sometime overarching legal frameworks that can establish boundaries and definitions, these are not universal. If we accept student data sovereignty as a principle such that institutions do not own students' data, but rather have temporary stewardship (First Nations Information Governance Centre, 2016; Smith, 2016; Tuck & Fine, 2007), it is inconsistent to assume that institutions may unilaterally decide on the sensitivity of that data.

We suggest then a need to co-determine with data subjects what would be regarded as nonsensitive data in one specific context and time, and to clearly establish how these nonsensitive data will be used, by whom, and for what purposes.

Exploring Risk and Consent

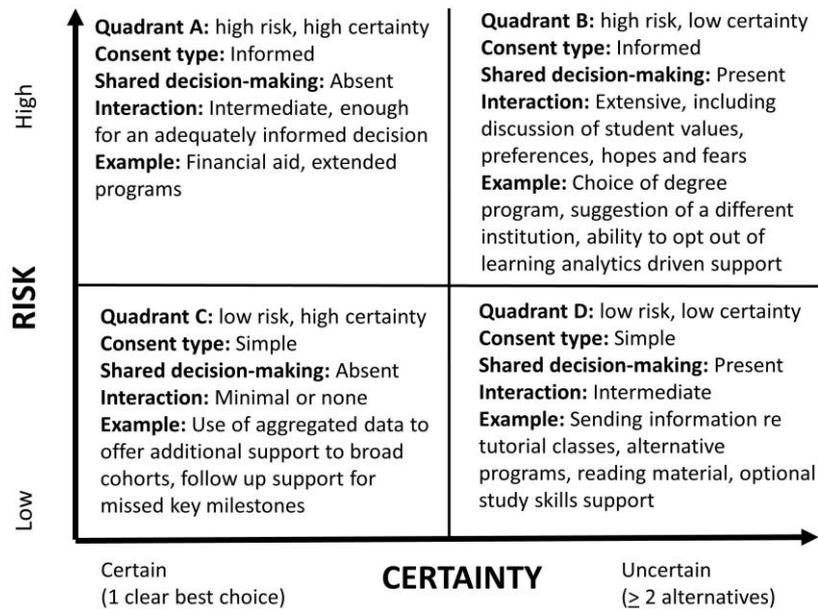
While acknowledging the limitations of applying the definition and practices pertaining to consent derived from the biomedical fields as-is to the field of ubiquitous learning environments, the typology developed by Whitney et al. (2004) offers some interesting ways forward. While their typology speaks about risk in the context of the health status of the patient or data subject, the notion of risk, in the context of student-centered LA, is arguably broader. From an individual student perspective, this may translate to the risk of a poor

personal outcome such as failure or dropout or perhaps an inability to pursue particular study goals. It might also include the risk of having one's data used for as yet unknown future purposes. From an institutional perspective, risk may relate to the need to ensure the financial sustainability of the institution or to minimize reputation risk (Prinsloo & Slade 2017b). For the sake of exploring the potential of the typology developed by Whitney et al. (2004) for (re)considering the notion of consent in LA, we do not consider, *for now*, institutional/reputational risk.

Whitney et al. (2004) define certainty as relating to the clarity of choice. That is, in medical terms, there may be high certainty where there is really only one course of action (and so, minimal choice) and low certainty where there is a range of treatment options that offers patient choice and suggests a more shared decision-making approach. In LA terms, certainty might relate to the choices flowing from the finite study options on offer or from the confidence with which interventions may be made based on analysis of a dataset. For example, a decision to offer support when a student has not turned in an assignment is made on the basis of known information, whereas an intervention based on a prediction that a student is unlikely to turn in their next assignment may have less confidence associated.

What are the implications, potential, and limitations of applying a broad framework of simple consent, informed consent, and shared decision-making to LA scenarios? If we establish risk as relating to student outcome (where high risk might include the use of sensitive data, undisclosed future uses of personal data, or undesirable study outcomes), and certainty to the extent to which there is student choice in their study options and/or to levels of confidence that we might have in suggested interventions, then Figure 6.2 offers a potential typology for consent, adapted from the Whitney et al.'s (2004, p. 56) decision plane for consent.

Figure 6.2: Typology for consent in learning analytics



In practice, *simple consent* at the point of registration at an institution might mean that students provide consent to the collection, analysis, and use of anonymized, aggregated data for basic support based on non-sensitive data (Quadrant C). Simple consent may also be appropriate where there is relatively low risk, but also low certainty with regard to the surety of outcome (e.g., where predictive analytics are used), and where there may be multiple choices available to the student (e.g., different study options) (Quadrant D). However, while we opt for simple consent in this particular scenario, we'd suggest the inclusion of *shared decision-making* as a prerequisite. So, the level of consent is simple, but students are involved in making shared decisions regarding interventions and the use(s) of their data. Students therefore may wish to have greater input where there is more than one path and/or if decisions are potentially being made on their behalf based on predictive analytics. The involvement of students in seeking to establish which option is most appropriate as opposed to seeking consent for an HEI-established intervention provides a key step toward redressing the power imbalance between institution and student.

Following Whitney et al. (2004), we would suggest that the high risk of, for example, use of sensitive data, leads to a need for *informed consent*, but not necessarily shared decision-making (Quadrant A). In cases where there is a high risk (of student dropout or use of sensitive data such as medical status or socioeconomic indicators) and a more complex set of options available, we suggest a need to have not only informed consent but also shared decision-making (Quadrant B). It is this combination of potentially sensitive data and a range of potential outcomes that provides a more nuanced version of Jisc's framework (Sclater, 2017). This additional step potentially ensures that HEIs continually review the status of what might qualify as sensitive data and, at the same time, engage directly with students in agreeing the next steps taken as a result of using their data. The implications of shared decision-making combined with consent positions undoubtedly make the adoption of LA more complex, but provide a much-needed step in allowing students an increased voice in determining study futures based on their own data. In doing so, transparency is increased and greater trust established.

(In)conclusions

Unlike medical consent, consent in the context of LA practice is in its early stages. Although most researchers and practitioners would now accept the need to consider the ethical implications of a LA approach, this has not yet translated into a similarly coherent set of standards or even broadly agreed guidelines for consent. The typology of Whitney et al. (2004) draws on the recognition of necessary patient involvement where procedures have greater associated uncertainty. The adapted typology proposed here considers risk to the student and certainty of outcome and/or in the approach, and is an initial attempt to differentiate between simple consent and consent requiring greater and more nuanced student input. Sedenberg and Hoffman (2016) suggest that consent should include voluntariness on

the part of subjects, and informally reached, mutual agreements between subjects and practitioners. They suggest that consent needs to go beyond a “bureaucratic, administrative process of recordkeeping” (Sedenberg & Hoffman, p. 22). In the higher education context where decision-making power is not equally shared, this may prove more difficult, but we would argue that there remains a need for institutions to consider how to better engage and involve students in the provision of meaningful consent.

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