



Innovative
Research
Universities



Learner Facing Analytics

Analysis of Student Perspectives

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Preliminary Team Members

Given the evolving nature and length of this project, many changes have taken place over that period of time including the composition of the Innovative Research Universities, institutional participation in the project, composition of institutional teams and individual's affiliations and roles.

However, we would like to acknowledge the input of all team members throughout the project relative to their role and participation.

The following is a list of people who were part of initial project discussions and their role at that time.

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Executive Summary

Learning analytics, commonly defined as ‘...the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs’ (Long & Siemens, 2011, p. 34), has a variety of applications and stakeholders. Despite the centrality of students as a key stakeholder group, little research has been undertaken to seek the views of students on learning analytics development and use.

Within the literature there has been a stronger focus on institutional and academic views related to learning analytics or in fact, what academics in the field feel would be useful to students. This is despite the fact that there is a considerable body of literature related to the issues of privacy and informed consent, (e.g. Gursoy, Inan, Nergiz & Saygin, 2017; National Academy of Education, 2017; Hoel & Chen, 2016; Rubel & Jones, 2016; Steiner, Kickmeier-Rust & Albert, 2016; Greller & Drachler, 2012), broader themes related to power and paternalism (e.g. Johnson, 2017; Scott & Nicols, 2017; Prinsloo & Slade, 2014; 2016; Buckingham Shum & Feguson, 2012) and the need for clear ethical principles, frameworks and decision making approaches (e.g. West, Huijser & Heath, 2016, Pardo & Siemens, 2014 Prinsloo & Slade, 2014; Slade & Prinsloo, 2013; Sclater & Bailey, 2015; Greller & Drachler, 2012).

With this focus on academic (rather than student perspectives) in mind and building on the previous Innovative Research Universities (IRU) funded project on *The use of Learning Analytics to Support Improvements in Teaching Practice* (West, Luzeckyj, Searle, Toohey & Price, 2018), this student-focused project aimed to:

- explore student understandings and concerns in relation to learning analytics;
- gather student input on the types of learning analytics reports, dashboards and tools that will be most useful in supporting student success;
- develop a series of principles to guide institutions in the creation of student-facing dashboards;
- identify the processes and training required to support students and staff to make sense of the data presented in dashboards and improve student success.

To achieve these aims, the IRU conducted a project over two years which had both a research and practical application focus. A core component of this work was a survey of students across the IRU, with 2017 respondents and focus group participation from 34 students (also from across the network).

Several journal articles have been produced related to this project including both a theoretical paper (West, Luzeckyj, Toohey, Vanderlelie & Searle, 2020) and a paper outlining the key results (West, Luzeckyj, Toohey, Vanderlelie & Searle, submitted for publication). This report therefore focusses on a more comprehensive presentation of the findings and the resources that were produced.

The results of the study indicated that students have a good general level of awareness that data is being collected by universities, but were more likely to expect data to be collected about their direct engagements around learning. Students also indicated that the terms that are used by institutions related to data and its use, are often vague and unclear. Universities therefore need to be explicit about the data they are collecting, how it is going to be used and for what purpose.

In terms of purpose, students indicated that they were more comfortable with data being used to support their learning journey, but what this means needs to be made more explicit. Over 60% of students had a level of concern with data being used to ‘trigger support services’. In further exploring

this, their concern related to the nature of the support being ‘triggered’ and how that would be provided. Academic staff were seen as more appropriate than administrative or student support staff to make contact with students clarifying their view that these kinds of services should be primarily focused on their learning.

A key theme that emerged was related to students being concerned that universities collected and possibly used data that they saw as distinct from their academic experience. These more extraneous data sources included demographic profiles, social media and WiFi use. Universities should be cautious in crossing this perceived personal/professional line in their use of ‘academic’ and ‘non-academic’ data when triggering student support services.

In terms of the types of dashboards that students felt would be most helpful to them, students were more positive about those that related to the provision of additional services or materials regardless of the grade they received. Students saw being able to view their progress through subject material (96.2%) as being useful along with information which suggested a need to change study behaviours alongside projections of anticipated final grades. Students were less positive in being able to view data that compared them in some way with other students in the class, with nearly 40% of respondents indicating a negative response to being compared to others in the class. This issue was also raised in other studies with somewhat consistent findings, at least for some cohorts of students particularly first year and high performing students (Roberts, Howell, Seaman & Gibson, 2016; Whitmer & Teasley, 2017). As such, a level of caution should be applied to the provision of such comparative dashboards and how they might be presented to students.

A strong message that came through from the study was that in order to provide informed consent, students need to be told what kinds of data are being collected, how it may be used and for what purpose. It is also not sufficient to provide this information at the time of enrolment but should, at a minimum, be presented to students on an annual basis. In addition, they wanted to make choices about the kinds of dashboards that are provided to them and have the ability to opt in or out of seeing such dashboards.

With a clear focus on ensuring that the research translates into action, a series of resources were produced including a *Code of Practice* for use when implementing learning analytics from a student lens, a set of checklists to help guide institutions on this journey and user stories from the student perspective. These resources are included as a series of appendices.

Recommendations

1. Universities are explicit about the data they are collecting, how it is going to be used and for what purpose when seeking informed consent from students.
2. Students are reminded at least once per year about data that is being collected.
3. Universities focus on developing student-facing dashboards related to:
 - the provision of additional services or materials related to study (regardless of student grades)
 - showing progression through subject material
 - providing information on how students might change their study habits to improve final grades.
4. Universities exhibit caution when providing dashboards which include data that compares a student’s progress with others in their class or cohort.

5. Students are provided with the option to turn dashboards and push notifications triggered by learning analytics on and off and advised of any consequences regarding these actions.
6. Universities exhibit caution when collecting 'academic' and 'non-academic' data and using it to trigger student support services.

Section 1: Introduction and Background

Introduction

The IRU 'is a coalition of seven comprehensive universities committed to inclusive excellence in teaching, learning and research in Australia' (IRU, 2019). The IRU has a strong focus on student success and teaches and supports a high percentage of students from non-traditional and low SES backgrounds (IRU, 2019). The most recently available data show that in 2017 the IRU enrolled 25% of Australia's low SES undergraduate students and 21% of Australia's Aboriginal and Torres Strait Islander students (IRU, 2019).

Learning analytics, commonly defined as '...the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs' (Long & Siemens, 2011, p. 34) is a key area of strategic interest for all members of the IRU network.

Each member had a strong interest in collaborating to further develop learning analytics capabilities that took a student-centric approach. The project reported here had both a research and practical underpinning to it and it was set up to serve several purposes including to:

- undertake research which responded to a clear gap in knowledge in the sector;
- provide a research base to inform learning analytics development which reflects a student-centric and ethical approach; and,
- develop a set of resources to support learning analytics development within each institution

This report is intended to provide an overview of the findings of the project but will focus predominantly on the key outputs and resources developed. Several journal articles have been developed which position the project in light of knowledge available in the sector via a comprehensive literature review (West, Luzeckyj, Toohey, Vanderlelie & Searle, 2020) and some of the research results (West, Luzeckyj, Toohey, Vanderlelie, & Searle, submitted for publication). As such, only a brief summary of these two aspects are covered in this report.

What is seen as potentially more valuable to institutions and to the students we serve is the provision of resources which are informed by the research to ensure a student-focused and ethical approach to learning analytics. Taking this approach will have far more impact than a presentation of all of the findings as it translates the findings into usable outputs.

Background Literature

This literature review summarises the key studies which have sought to identify what students concerns and needs are from *their* point of view. As noted above, a broader literature review is presented in a journal article and readers are referred to that journal article (West, Luzeckyj, Toohey, Vanderlelie & Searle, 2020).

However, to set the scene for this report, it is important to note that a finding of that review was the

majority of published work in this field relates to the perspectives of academics or institutions. This includes studies undertaken that identify what academics desire from learning analytics and their concerns, the needs of institutions and what academics and institutions believe would benefit students. While helpful, these publications provide an incomplete and somewhat paternalistic view, presuming as it does that academics and institutions know what students' views are.

Literature exploring the ethics of learning analytics highlights a number of key themes, including those related to specific issues such as privacy and informed consent (e.g. Gursoy, Inan, Nergiz & Saygin, 2017; National Academy of Education, 2017; Hoel & Chen, 2016; Rubel & Jones, 2016; Steiner, Kickmeier-Rust & Albert, 2016; Greller & Drachler, 2012), broader themes related to power and paternalism (e.g. Johnson, 2017; Scott & Nicols, 2017; Prinsloo & Slade, 2014; 2016; Buckingham Shum & Feguson, 2012) and the need for clear ethical principles, frameworks and decision making approaches (e.g. West, Huijser & Heath, 2016, Pardo & Siemens, 2014 Prinsloo & Slade, 2014; Slade & Prinsloo, 2013; Sclater & Bailey, 2015; Greller & Drachler, 2012). In all cases, recommendations are made to ensure learning analytics are carried out in an ethical manner and also suggest the need to put in place practices or activities that remediate both the specific issues and broader themes.

While there may be other work that has been undertaken within institutions, the literature available reveals only a few studies which have sought the views of students. Bodily and Verbert (2017) analysed 93 articles which focused on 'click-level data' with reports provided directly to students but found only six articles that presented a needs analysis. The focus of these articles, however, was primarily on usability and usefulness of the systems rather than students' views of the impact of these on their learning.

In terms of Australian published research which has directly sought the views of students, only two studies appear to have been published and while informative, the sample sizes of those studies were limited. A study by Brooker et al. (2017) undertook focus groups in two Australian universities and while the numbers participating are not clear, the findings suggest a sample size of between 30 and 60 students. The second study by Roberts, Howell, Seaman & Gibson (2016) also conducted focus groups, with 41 students participating. As such, the current study, with 2017 students participating in the survey and 34 students in focus groups across six Australian universities, is significant as it appears to be the largest study undertaken in Australia and possibly internationally.

The available research that has focused on student perspectives has found that students are cautious in relation to the use of learning analytics (Brooker et al, 2017; Khan, 2017, Roberts et al., 2016; Fisher et al., 2014). Khan (2017, p. 269) noted that 'they do not understand the technological complexity of learning analytics' and may need its meaning explained to them. Similarly, Roberts, Chang & Gibson (2016) found that Australian students were not sure about what learning analytics are, did not know what data was being collected nor how it was being used. Students in the study by Khan (2017) raised concerns related to the sharing of their data with third parties and their ability to opt out of data collection. In contrast, a study in Europe found that students generally have a positive view of learning analytics (Schumacher & Ifenthaler, 2018).

It maybe that this more positive attitude is connected to the provision of information and student understanding of learning analytics. Brooker et al. (2017) suggest that students are comfortable with the way the university collects their academic information and with additional information can see the potential for learning analytics to support their learning.

In terms of understanding what students actually want concerning learning analytics, three studies stand out as offering some insights. Ifenthaler and Schumacher (2016) presented students with various

dashboards to explore their preferences and the perceived value of the systems. They found a relationship between the complexity and breadth of data and student preferences and positive perceptions.

A follow-up study by Schumacher and Ifenthaler (2018) more specifically identified key features that students perceived to be valuable to their learning: self-assessments; content recommendations; visual signals and graphs; suggestions for social interaction; and personalised learning activities.

In exploring one such application, a study by Whitmer & Teasley (2017) focused on student perceptions of the value of a dashboard and notifications related to their performance in a course. They found that generally students were positive about the provision of the dashboard but there was variability in this connected to their success in the course with students with lower GPAs indicating a more positive view.

In summary, the few studies available that explore student views on learning analytics highlight that students have mixed views about the use of their data to support their learning. Studies indicate that at least a percentage do not understand learning analytics and how it can be used but also that they are cautious in its use. Understanding student concerns and the employment of strategies to mitigate those concerns are critical if we are to utilise learning analytics in an ethical and transparent manner.

In terms of how learning analytics can be used from a student perspective, there are again, limited insights but some promise of potential applications. Investing time and effort into applications that students see as useful is more likely to result in the applications being used and subsequently having an impact on learning and student success. As such, this study is designed to explore these critical issues from the student perspective.

Overview of Project

A range of relevant work related to learning analytics has been undertaken in recent years by various IRU institutions (at both an institutional and individual research level), which set the foundation for and drew attention to the need for this current project.

While at different stages of development (in both learning analytics development and online delivery), each IRU institution was exploring the use of learning analytics to support learning and teaching and had a range of initiatives underway.

From a research point of view, an Australian Government Office of Learning and Teaching (OLT) strategic commissioned project, *Learning Analytics: Assisting Universities with Student Retention* (West et al., 2016) was completed in 2015 and included three current IRU universities and two non-IRU partners. This project focused on gathering information at both the institutional and academic level regarding implementation and use of learning analytics providing a strong insight into academic and senior management views.

A subsequent joint project of the IRU and the Malaysian Research University Network (MRUN) further explored the views of teaching academics regarding *The use of Learning Analytics to Support Improvements in Teaching Practice* (West, Luzeckyj, Searle, Toohey & Price, 2018). However, a major gap existed in our knowledge in relation to how students viewed the use of learning analytics. With this gap clearly identified both as part of our own projects and within the literature, a project proposal was developed and submitted to the OLT for funding. Unfortunately, funding was not available due to the closure of the OLT at that time and following the completion of the international project, the IRU

supported this current project with some minor changes to scope.

As such, this student-focused project aimed to:

- explore student understandings and concerns in relation to learning analytics;
- gather student input on the types of learning analytics reports, dashboards and tools that will be most useful in supporting student success;
- develop a series of principles to guide institutions in the creation of student-facing dashboards;
- identify the processes and training required to support students and staff to make sense of the data presented in dashboards and improve student success.

A cross institutional project team was established which included the IRU Vice Chancellors' Fellow. The project team consisted of both professional and academic staff with expertise in educational technology and learning and teaching; many of whom had responsibility for institutional learning analytics development.

As such, the project had both a research and practical underpinning to it and was set up to serve several purposes including to:

- undertake research which responded to a clear gap in knowledge in the sector;
- provide a research base to inform learning analytics development which reflects a student-centric and ethical approach;
- develop a set of resources to support learning analytics development within each institution.

Ethics approval was sought and provided via Griffith University's Human Ethics Committee and subsequently endorsed by all partner institutions.

Project approach

This project was a collaborative undertaking by the IRU universities. The approach taken from a project management perspective reflected the project's collaborative nature, with two key workshops held; the first in May 2017 to undertake project planning and the second in February 2018 to reflect on findings from the focus group and develop the survey instrument. Fortnightly video links were also held with all team members to review and refine the approach as the project developed and throughout the project.

The overall intention of the project reflected several purposes – to inform and support ongoing development within the partner institutions and to conduct research that would inform our own and others development in the use of learning analytics. A range of resources were identified at the first project workshop which form the core of a 'toolkit' – a key output of this project. These resources are discussed further in Section 6 and are presented in the appendices.

The project took a mixed methods approach which included focus groups and a survey which occurred in two phases. Phase one included the background literature work, initial work on resources and focus groups to inform the survey. Phase two included the survey and exploration of responses to survey via focus groups, cross checking and finalization of resources. Each of these phases are explored below.

Section 2: Project Phase 1

Phase 1: Methodology

The first round of focus groups involved exploring student perceptions about the use of data to support their experience and what insights students may have about the types of data that universities collect.

Students were asked about: the type of data they thought that institutions collect; what information the university can provide that would be supportive to them across their learning journey, and the concerns they may have about the data collected and its use.

The focus groups were designed as a two-part exercise using a series of prompting questions to promote discussion. Participants were asked to write down responses to questions on sticky notes which were collated and arranged under common themes to aid discussion.

In the first exercise students were asked:

Thinking about your broad experience at university, write down some of the questions that you would like answered for you by the university about your learning and experience at university.

This was followed by a series of conversational questions to aid the discussion;

1. Thinking about experience at university what information would you find helpful?
 - What are the most frustrating pieces of information to find?
 - What data could we provide that would help you?
2. Thinking about your learning journey in your course/program, what information would you find helpful for universities to provide?
 - What are the most frustrating pieces of information to find?
 - What data could we provide that would help you?
3. Thinking about your learning journey in your Unit/topic/subject/course, what information would you find helpful?
 - What are the most frustrating pieces of information to find?
 - What data could we provide that would help you?

In the second exercise students were asked to complete the following task:

The University gathers information about you and your experience at university. Please write down the data you think your university collects.

This was followed by a series of conversational questions to aid the discussion:

- For each of the types of information identified, how do you know this information is collected?
- What do you think we use the data for?
- What are your concerns (if any) about the collection of this data?
- What are your concerns (if any) about the use of this data?
- How would you like the university to talk to you about the data we collect and how it is used?
- If we were able to draw on data about your learning journey that could be used to predict your success in a subject or program how would you feel about that?

In this first round a total of six focus groups were conducted across four member universities with 14 students participating. All focus groups were recorded, transcribed and later analysed using a thematic approach; 'a method for identifying, analysing and reporting patterns within data' (Braun & Clarke, 2006, p6).

Phase 1: Findings

Key themes that were identified in the data analysis included:

- the most frustrating pieces of information to find
- student perceptions about the collection of data and any concerns
- the use of data in predicting academic performance.

Generally, students were frustrated by the process of finding information related to supporting their studies from either the University website or within the learning management system.

They were also frustrated by the design of learning management system sites and that each subject of study would present information very differently. A key concern was finding information regarding assessment deadlines, grades and submission points. Further, the students indicated that broader university support, information, access to library articles and transport services were also matters they commonly had difficulty finding information about.

There was a very mixed awareness of the range of data that is collected by the university with most students recognising that demographic data was collected but surprisingly only 50% explicitly identifying grades as a data set. Half of the students identified service usage data, where they had to fill out an online form, and less than 25% identified click and tracking data from the learning management system.

Most students felt the university was using their information to support their learning and make determinations about service provision. Interestingly, students often reported a more sophisticated use of data by the university than is currently possible or implemented.

Overall, students wanted the university to try to communicate with them about the data that is being collected but had mixed views about the most appropriate time for consent/information to be provided. They were clear that a 'one-off' consent at the time of enrolment was not sufficient. A strong theme was that students wanted to feel secure that their data would only be used by the university and not sold to third parties. Student were mixed in their preference to opt out of receiving information about their progress.

The following table presents the key words identified about data collection and concerns:

Table 1 Key words identified about data collection and concerns

% of Cases	What?
100%	Transparency / Awareness / Consent / Clarity of Information
98%	Privacy
90%	Time / Orientation / Semester / Email
80%	Third Party Concerns / Selling of Information / Misuse of Information
70%	Opt out

There were mixed views from students regarding the potential for universities to predict student success. In fact, 95% of students reacted negatively to the idea of predicting their success, indicating that it would cause anxiety or become a self-fulfilling prophecy. Students (55%) suggested that if such predictions were made, they needed to take a humanistic approach and suggest how learning could be enhanced or improved.

Students were happy for their information to be provided to university support services and a number thought that all areas of the university already had access to their information and were frustrated that they had to keep repeating their story.

Given these focus groups were intended to inform the development of the survey these initial findings were investigated further in the next phase.

Section 3: Project Phase 2

Phase 2: Methodology

The initial development of the student survey was based on the findings of the previous IRU project where academics had identified various uses of data for learning analytics as well as the findings from the first round of focus groups and further review of relevant literature.

The survey sought a range of demographic information from respondents and a series of Likert scale questions to establish students' understanding and opinions in relation to:

- their understanding of data the university collects about them
- their level of comfort concerning the use of data to help support their learning
- how useful they believe a range of learner analytics-driven 'interventions' would be to their learning experience
- levels of concern regarding the data collected about them
- how they would like to have their information displayed
- when they would like to be reminded about university data policies and practice.

The survey was hosted online in Qualtrics, and an invitation to participate was distributed via email to all undergraduate and postgraduate on-shore coursework students in six of the seven IRU universities (approximately 158,000 students). The survey was deployed at the beginning of Semester 1 2018 with each institution taking responsibility for the coordination and management of the survey deployment.

The survey received 2017 valid responses, which was 1% of potential responses, and while it is acknowledged this is a low response rate, the project team believe this data set is one of the largest available on student perceptions to date.

All survey responses were collated and analysed using SPSS with further analysis conducted by participating institutions using Microsoft Excel.

The second round of focus groups was designed to explore trends in the survey particularly in relation to reported comfort levels of key data types as well as understanding of key terms. Within the survey the term 'data to support your learning experience' was used rather than the term 'learning analytics'. Students understanding of this term was explored along with the terms used to identify different data types. Additionally, the six data types which students showed the most concern via the survey were explored. This included:

- Demographic data
- Location data from mobile phone
- University social media
- University mobile app usage
- Wireless network device usage
- Employment services data

Therefore, the two key questions asked consistently in relation to each data type were:

- What is your understanding of the term ...?
- What is it about this that you think may cause concern to students?

The final part of the focus groups explored the elements related to the use of the data in particular ways including presentation of data in dashboards and ‘triggering of support services’. The questions focussed on the various types of dashboards (e.g. presentation of dashboards to the student about their own engagement, comparative to other students or presentation to staff) and the nature of the support service and how they should be delivered (e.g. by professional staff, academic staff, via email, phone etc).

The focus groups were conducted at the end of 2018 and attracted 20 students in four member institutions. All focus groups were recorded, transcribed and later analysed using a thematic approach.

Phase 2: Findings

An overview of the demographic data for the survey compared to the demographic data from the IRU is provided in Table 2.

Investigation of this data emphasised that a higher proportion of female students responded to the survey than that of the general student population. All other demographic characteristics were similar to the student body reflected at IRU member institutions.

Table 2 Demographic Distribution of Survey Respondents

		% of Respondents	% IRU universities combined*
Gender	Male	28.7	40.3
	Female	70.4	59.7
	Other	1.0	-
Origin	Domestic	82.7	78.8
	International	17.3	21.2
Level of Study	Undergraduate	76.0	77.6
	Postgraduate	24.0	22.4
Study Load	Full-time	79.2	71.6
	Part-time	20.8	28.4

**based on data from the last available national data (Department of Education and Training, 2017)*

Additional analysis of survey data was undertaken to investigate potential differences in the responses based on gender, study status (full or part time; undergraduate or postgraduate; point in degree); domestic or international and mode of study. No differences in response patterns were linked to any of the demographic characteristics.

To leverage and make data available to learners, it is critical to gain insight into their understanding of concepts and ideas related to the type of data that universities collect. To gain these insights, the student survey asked students to answer 23 questions about what data they think universities collect about them.

Table 3 provides a summary of their responses from highest to lowest (not the order the questions were asked):

Table 3 What data respondents think universities collect about them

Type of data collected	% of Respondents
Submission of assignments	98.8%
Completion of quizzes	97.5%
Use of text matching/originality software (e.g. Turnitin or SafeAssign or Urkund)	95.0%
Grades from the subjects you have taken	95.0%
When you accessed the LMS	94.6%
Access to particular content in the LMS	92.6%
Activity on discussion boards	91.2%
Demographic information (e.g. age; gender; address)	90.1%
Academic background (previous study, credit applications)	90.1%
Looking at your grades for assignments and quizzes	88.4%
Participation in online lectures, tutorials or web conferencing	85.4%
How long you spend in the LMS	84.4%
Accessing feedback from assignments	84.1%
Access to library borrowing services	83.8%
Wireless network device usage (e.g. University WIFI, Eduroam, etc.)	82.3%
Access to lecture capture recordings	77.9%
Use of video and audio learning materials	75.4%
Use of academic skills services	74.8%
Access to library support workshops and training	73.9%
University mobile app usage	65.5%
Access to employment services	62.9%
University social media groups	48.9%
Location data from your mobile phone	36.5%

Survey respondents were clearly aware that data was being collected about them, mainly that which was related to their learning experience. For example, the points connected with access to the learning management system grading and assessment activities and/or associated systems were those that were rated most highly. Interestingly, only 90.1% of students thought that demographic and academic background data was collected despite this data being routinely collected as part of enrolment.

Conversely, it was noted that 82.3% of respondents thought their wireless network usage was recorded despite this being less commonly the case. This is a likely a reflection of general awareness that WiFi access patterns can be used to track human mobility. However, when explicitly asked if they thought that location data from their mobile phone was collected, fewer than half the respondents thought it was (36.5%). Similarly, less than half (48.9%) thought that data from university social media groups was collected.

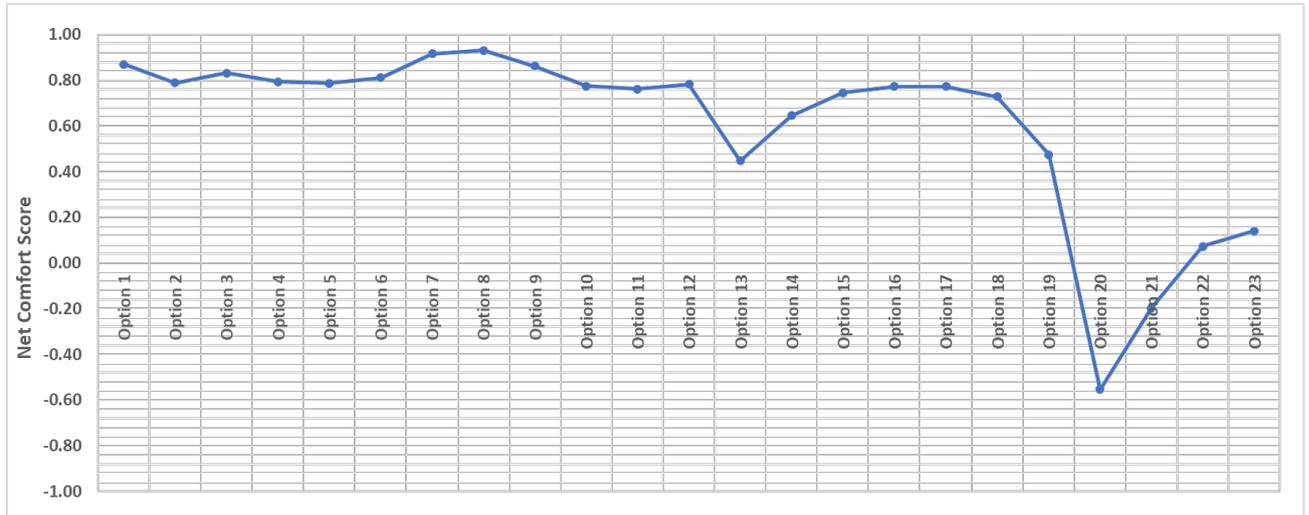
Using the same 23 questions, respondents were then asked to indicate their level of comfort concerning the use of data to help support their learning using a 5-point Likert scale, with Very Comfortable scoring 5, and Very Uncomfortable scoring 1. These scores were used to calculate a Net Comfort Score based on the approach taken with the Net Promoter Score. The Net Promoter Score was introduced in 2003 By Fred Reichheld and is used to calculate a response to the question; *How likely is it that you would recommend our company/product/service to a friend or colleague*. Net Promoter scores are reported as a score between 1.00 to +1.00, with a higher score being more desirable.

Like the Net Promoter Score, the Net Comfort Score has been formulated to provide a value between -1.00 and +1.00 to indicate the normalised magnitude of respondents who feel comfortable versus those who feel uncomfortable. Respondents with a neutral feeling are excluded from the equation to establish a score of zero as neutral. A score of -1.00 reflects a feeling of Very Uncomfortable while a score of +1.00 reflects Very Comfortable.

As can be seen in Figure 1, respondents reported feeling more comfortable with those items directly associated with their learning experience. These insights reveal, in a similar way to the question concerning what data students think the university collects, not only an awareness of data collection connected to their learning experience, but a higher level of comfort with data linked to their learning experience.

The data points that resulted in a lower level of comfort were those not directly related to learning, with location data from mobile phone usage (-0.55) and data about university social media groups (-0.20) representing the lowest comfort levels. While data from University mobile app usage (0.07) and data collected about wireless network device usage (0.14) is represented just above 0.00 it is indicative of comfort levels at the lower end connected to collection of these data.

Figure 1 Respondents level of comfort concerning the use of data to help support student learning



1. When you accessed the LMS	10. Participation in online lectures, tutorials or web conferencing	16. Access to library borrowing services
2. How long you spent in the LMS	11. Use of video and audio learning materials	17. Access to library support workshops and training
3. Access to particular content in the LMS	12. Access to lecture capture recordings	18. Use of academic skills services
4. Looking at your grades for assignments & quizzes	13. Demographic information (e.g. age; gender; address)	19. Access to employment services
5. Activity on discussion boards	14. Academic background (previous study, credit applications)	20. Location data from your mobile phone
6. Accessing feedback from assignments	15. Grades from the subjects you have taken	21. University social media groups
7. Completion of quizzes		22. University mobile app usage
8. Submission of assignments		23. Wireless network device usage (e.g. University Wi-Fi, Eduroam etc.)
9. Use of text matching/originality software (e.g. Turnitin or SafeAssign or Urkund)		

To explore student perception of the benefits that can potentially arise from learning analytics, survey participants were asked to rate how useful they thought a series of applications would be to their learning experience.

The results are presented from highest to lowest in Table 4.

Table 4 Respondents rating of the degree of usefulness of practice in relation to their learning experience

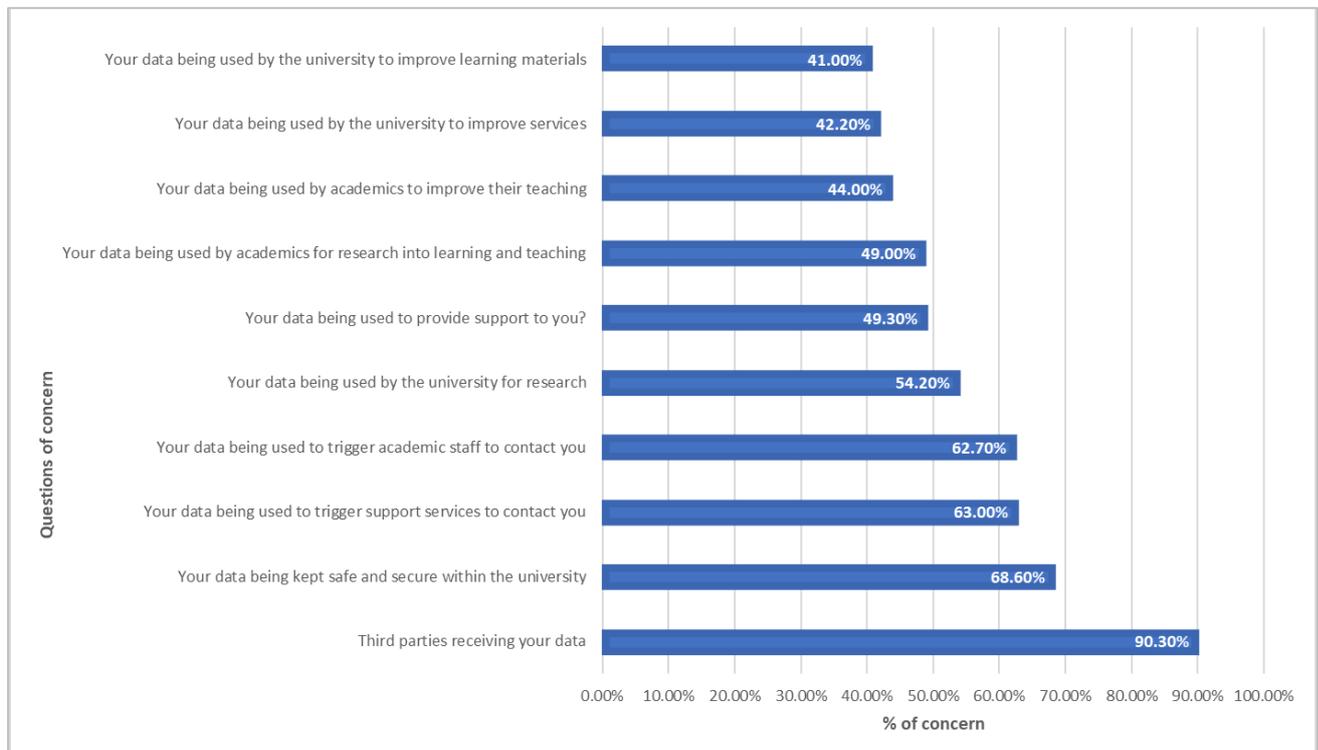
Usefulness of practice in relation to learning experience	% positive responses	% negative responses
You are given information about additional materials (readings; resources) you might like to access based on an assessment you have coming up.	96.3%	3.7%
You can see your progression through subject material.	96.2%	3.8%
You are given information about additional services at the university (e.g. academic writing support; library) you might like to access based on an assessment you have coming up.	95.5%	4.5%
You are given information about additional materials (readings; resources) you might like to access based on ANY grade received on an assignment/quiz	94.3%	5.7%
You are given information about additional services at the university (e.g. academic writing support; library) that you might like to access based on ANY grade received on an assignment/quiz	93.5%	6.5%
You are given information about additional materials (readings; resources) you might like to access based on a LOW grade received on an assignment/quiz	91.0%	9.0%
You are given information about additional services at the university (e.g. academic writing support; library) that you might like to access based on a LOW grade received on an assignment/quiz.	90.5%	9.5%
You are given a projection of your likely final grade.	86.2%	13.8%
You are given information that suggests that you will need to change your study behaviours in order to achieve a passing grade.	83.9%	16.1%
You are given information that suggests that you will need to change your study behaviours in order to achieve a higher grade.	81.6%	18.4%
You can see how much you are accessing the LMS	80.5%	19.5%
Can see your grades compared to others in class	71.9%	28.1%
How your access to the LMS compares to others in your class	61.1%	38.9%
Number of times accessed the LMS compared to others in class	61.0%	39.0%

The choices that were most positively viewed in terms of the degree of usefulness were mainly related to the provision of additional services or materials regardless of grade. In addition, students indicated that reports on their progress through subject material (96.2%) would be useful as would information suggesting the need to change study behaviours which were mapped to a projection of their likely final grade.

Students were less positive in seeing data that compared them in some way with other students in the class. Nearly 40% of respondents indicated a negative response in relation to the prospect of being compared to others in the class.

To understand students' concerns related to learning analytics, they were asked to indicate how concerned they felt about a series of statements presented in Figure 2 in descending order of concern.

Figure 2 Respondents level of concern about data collection



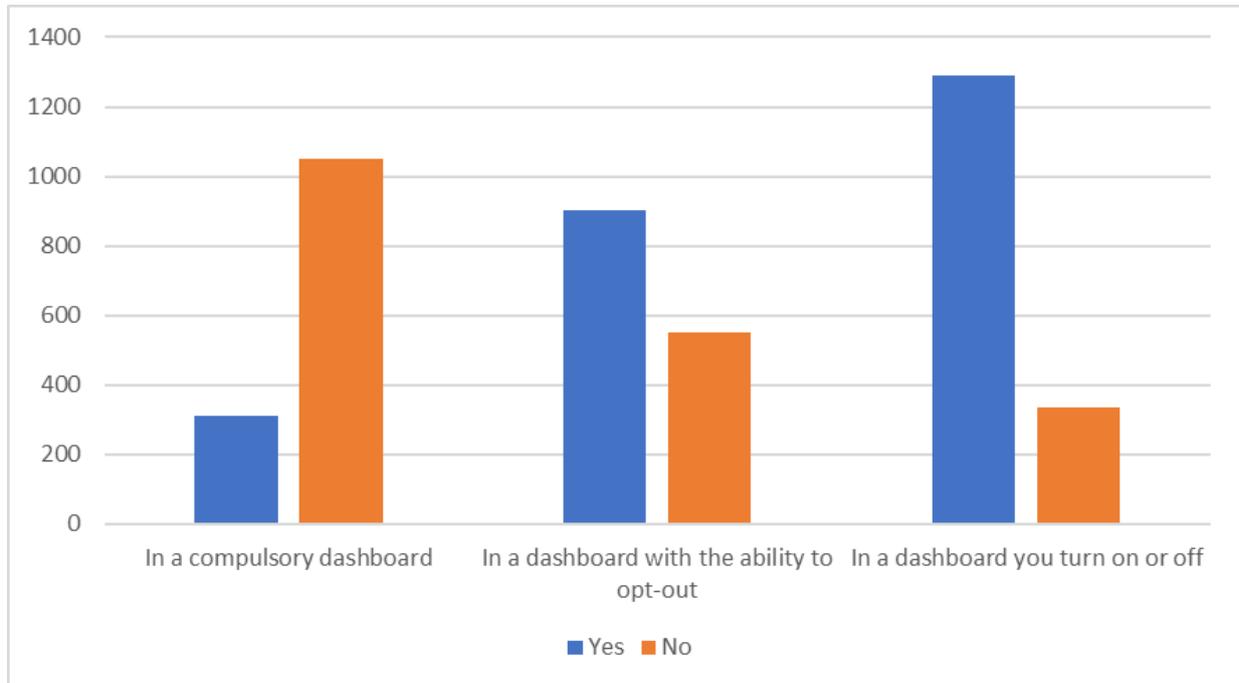
Almost all respondents (90.3%) indicated that they had concerns about third parties receiving their data, with nearly 70% of students indicating they have concerns connected to data security and safety. Respondents indicated lower levels of concern in relation to options that involved the provision of support, improvement of services or to improve learning and teaching in some way.

Over 60% of student responses indicated some level of concern with data being used to trigger support services to contact them or being used to trigger academic staff to contact them. Students also reported some level of concern with data being used by academic staff for research purposes (54.2%).

The final set of questions in the survey were connected to perceptions students have about how they would like their data displayed and when they would like to be informed/reminded about policy of practice by universities regarding collection and use of data.

The issue of compulsory or non-compulsory display of dashboards was explored with participants. Specifically, respondents were asked to indicate if dashboards were available, what options they would prefer (see Figure 3).

Figure 3 Respondents preference for the display of a dashboard

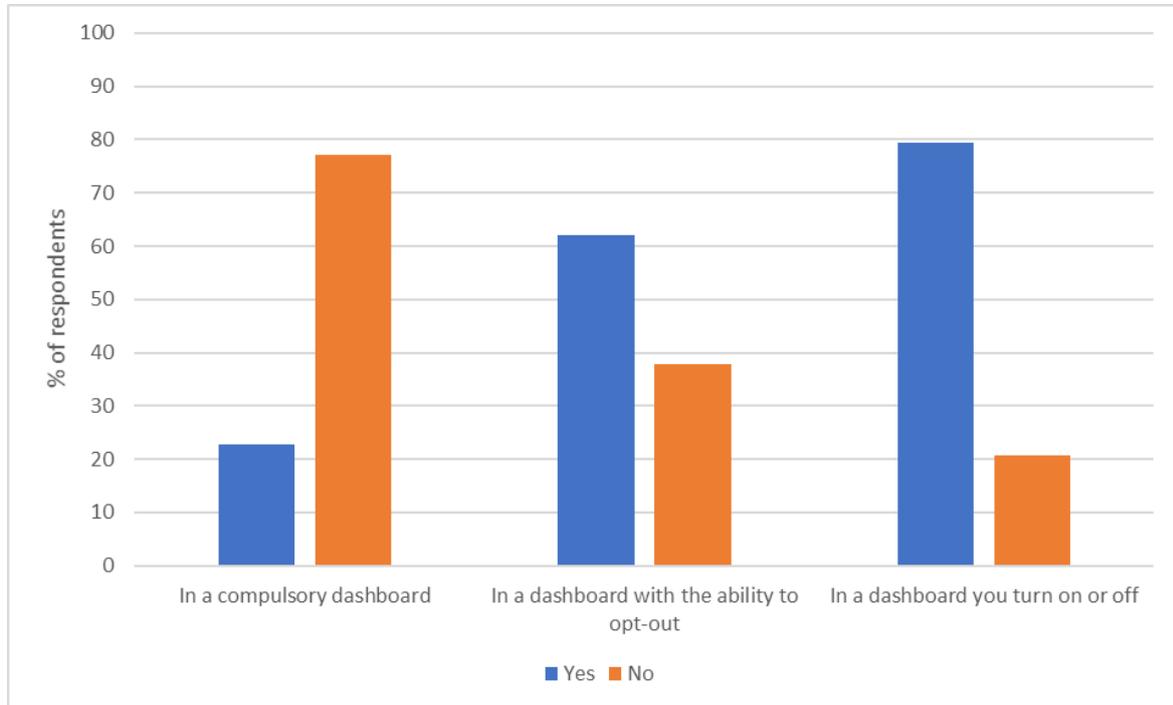


Only 22.8% of respondents agreed with the idea of a compulsory dashboard to display their information, while the majority (73.2%) were not in favour of this. The response to options with the ability to either opt-out of the dashboard (62.1%) or turn it on and off (79.3%) were viewed more favourability, indicating that participants clearly wanted a choice.

The literature concerning learning analytics is progressively demonstrating a desire on the part of students for increased transparency and the question of informed consent. To explore students' perceptions further, the survey included questions about when students would prefer to be notified of the university's data policies and procedures regarding data collection.

As can be seen in Figure 4, most respondents would prefer to be notified either at the beginning of each academic year or at the beginning of each semester. It was clear that students wanted to be reminded on a regular basis (although not necessarily for every subject), and not just at the time of initial enrolment.

Figure 4 Respondents preference for notifications concerning policy or practice



Phase 2: Focus Groups

The survey results identified several areas for further exploration in the second-round focus groups. Twenty students participated in the second round of focus groups, with participants evenly split between male and female, aged between 19 and 55 years of age, with the mean being 22 years. The majority (60.0%) were international students, predominately studying full-time (90.0%) in undergraduate programs (70.0%). As outlined above, the focus groups were designed to test awareness in relation to the language being used, understand why particular data sets were of higher concern and how dashboards could be used to support learning.

Student remarks reflected a good understanding of the term 'demographic data' as indicated by the following response; 'composition of people, about their age, nationality, distribution, about the lifestyle'. The concern that arose in relation to the use of demographic data related to students thinking they might be placed into categories or stereotyped, profiled or segregated based on demographics. The following account reflects these views:

'You're putting them in a category they might not want to be in.'

Participants also questioned why universities may want to know about specific demographics and what would be the relevance to their learning.

In relation to location data, students were interested in determining why universities might want to know where they were located, what universities were doing with the location data and how it could potentially be useful, an idea clearly expressed by the following participant, who said:

'I would question why you would want that data and why does it matter and why is that being tracked? And you just start to feel a bit like [you are] being watched a bit.'

While the survey analysis indicates that students had higher levels of comfort with data collection and tracking if it related to their learning, this response clearly demonstrates lower levels of comfort with data perceived as personal.

When asked about university social media groups, while some participants were comfortable in using social media for in-class purposes, others were adamant that social media should remain private. The following comment reiterates this point:

'My view of social media is, again, for being social. So, in the context of social wellbeing, I don't think that the lecturers or the facilitators would need to see what I share with my close group of friends or the circle.'

Although not clearly expressed, this comment appears to draw the line between professional and personal boundaries which was a common theme reflected throughout the project. When participants were asked about data from wireless network device usage and data from mobile app usage, similar responses emerged as indicated by the following comment:

'I'm not a big fan of tracking though. The device is where you stand, especially with IP address. But if it's using these to have access to the information that is shared over the class, such as looking at the slides or the information, there's no problem.'

Again, this comment seems to draw the line between personal and professional, and while there is a level of comfort expressed with data for learning and teaching purposes, it questions the collection of data for other purposes.

The suggestion that students should be able to opt-in or out and clarification as to why certain data may be collected was a common response across several themes.

The second set of questions in the focus groups were intended to gain more insight into the specific concerns participants had in relation to use of data by the university. The questions were designed to provide a more in-depth view of concerns about data being used to support their learning, such as staff-facing and student-facing dashboards and students being contacted by the institution.

When discussing triggers for support, participants were asked who they felt might be most appropriate to contact them, their teachers, professional staff or students in roles such as mentors.

In this context, a lack of clarity in the language being used was highlighted as an issue as indicated by the following focus group participant:

'I think the phrase 'support you' is similar to say in your options here things like improve services and provide support, those are exceptionally vague phrases. I won't submit to something if I don't know what it is.'

Interestingly the terms 'support', 'service' and 'information' were highlighted as key word findings from the preliminary focus groups that informed the student survey, meaning that students had used these words frequently within that context. However, the connection of this to the use of data perhaps raises the subsequent need for combined clarity around the terms being used and the nature of the action that will be taken.

When asked about their thoughts connected with dashboards and reports, most students perceived that staff already had access to this information as reflected in the following comment:

'Isn't there already something like that in [the LMS], in the student support section? So, there was like a little student activity section where it has a graph and it has if you've attended a tutorial or something?'

However, when it came to data being used to inform or trigger support services, a more concerned response from participants was given:

'The thing is, when you're talking about support, I think it is imperative for a student to know what support [that] might [be] ... Is it my mental health, is that what the data is being collected for, is it my physical health, is it my learning environment, is it more social circle?'

In terms of who should contact them, participants were more comfortable about being contacted about their learning than other matters such as their health or wellbeing, but specifically referenced being contacted by academic staff with whom they have rapport and who they knew. They were less happy about being sent generic emails or being contacted by peers. The following response describes why they thought an academic was the best point of contact.

'... you have the trust with the teacher, you go first, or your teacher first comes to you like what's going on. And if you do have mental health issues or you're actually struggling with understanding the subject, the teacher can guide you and same with here, with the lecturer. Comes to that bond or that trust between you and your lecturers.'

In the focus groups, students were asked to answer questions related to data being used to develop dashboards that they might use, or staff might use to understand learning patterns. Generally, students were favourable about the idea of seeing a student-facing dashboard, as indicated by the following:

'And I think that's really important, like if you're trying to support yourself that's probably the best thing ever, that's a really good idea, the dashboard thing. Because some people like they got an HD and when they see okay, I'm lacking and I need a HD, that provides a theoretical data, which I could improve on and it could help me get a HD. Why not, why not use it?'

However, other students were less interested to see how they are progressing as indicated by this comment:

'I don't really want to know the average of my GPA.'

Section 4: Data points

Universities are in the business of collecting data and have been doing so for many years, however it comes from a range of sources, is used for multiple purposes, and is becoming increasingly diverse. Given the nature of the study, we sought to identify what data universities collect and, where possible, determine its application, for example for government reporting purposes, institutional business or learning analytics. Table 6 provides a summary of the key data points identified via the multiple IRU projects and indicates if that data is collected systematically and then its level of application.

Across the five IRU institutions that participated in this process, it is clear that the application is mixed, with each institution being at a different stage of development. While participating institutions predominantly collected data associated with enrolment, student success and student demographics, the collection of data concerned with student 'classroom' participation or learning and teaching, is less systematic. When institutions were further asked to identify if data collected was used in dashboards for staff or students, the participating institutions were less likely to have dashboards available for these purposes.

While it is evident that 'clickstream data' is collected from learning management systems in most cases, only two out of five institutions have this data available in dashboards for staff and one out of five institutions have used it in dashboards for students.

Table 5 What data universities systematically collect and its application

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
Student 'classroom' participation				
LMS clickstream – accessing content items (rate and duration)	3/5	1/5	2/5	1/5
LMS clickstream – accessing assessment items (rate and duration)	3/5	2/5	2/5	1/5
Time that a student takes to respond to a prompt (call to action) in the system	2/5	0/5	1/5	0/5
Submission of assessment	5/5	1/5	2/5	0/5
Submission of activities	4/5	1/5	2/5	0/5
Qualitative data on discussions/comments	0/5	0/5	0/5	0/5
Online live classroom participation (interaction)	2/5	0/5	0/5	0/5
Online live classroom attendance	1/5	0/5	0/5	0/5
Online live classroom – time spent	2/5	0/5	0/5	0/5
Time spent on activities	4/5	1/5	1/5	0/5
Interpersonal interaction	2/5	0/5	0/5	0/5
Lecture attendance	2/5	0/5	0/5	0/5
Accessing recorded lectures	4/5	1/5	2/5	0/5
Recorded lectures time spent	3/5	0/5	2/5	0/5
Recorded lectures – which specific points of video accessed; time spent on that	3/5	0/5	2/5	0/5

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
Data from social media that is used in classes (e.g. YouTube, Facebook)	1/5	0/5	0/5	0/5
Data from associated technologies such as e-Portfolios where outside of LMS	3/5	0/5	0/5	0/5
Attendance at tutorials and workshops	0/5	0/5	0/5	0/5
Participation in tutorials and workshops	0/5	0/5	0/5	0/5
Participation in additional learning experience (e.g. field visits, work experience)	1/5	0/5	0/5	0/5
Online quiz results broken down to be able to see key concepts/questions response patterns	2/5	0/5	1/5	0/5
Access to set readings	2/5	0/5	1/5	0/5
Indicator of emotional 'vibe'/feeling for different concept learning/content	0/5	0/5	0/5	0/5
Indicator of how students rate their own learning of a concept	0/5	0/5	0/5	0/5
Number and frequency of emails to teacher	0/5	0/5	0/5	0/5
Access to feedback on assessment	1/5	0/5	0/5	0/5
Use of text matching software (e.g. Turnitin; SafeAssign)	4/5	1/5	1/5	0/5
Teacher participation				
Clickstream data on teacher actions	3/5	0/5	0/5	0/5
Curriculum				
Type of assessment task	3/5	0/5	2/5	0/5

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
Student evaluations of units/subjects	3/5	1/5	2/5	0/5
Student evaluations/feedback on course/program	3/5	1/5	0/5	0/5
Staffing changes in a unit	2/5	0/5	0/5	0/5
Success indicators				
Unit/subject grade	5/5	1/5	2/5	0/5
Progress in unit/subject	5/5	1/5	1/5	1/5
Assessment item results	5/5	1/5	1/5	1/5
Completion	5/5	1/5	1/5	0/5
Grade trends in a unit/subject across various years	4/5	1/5	1/5	0/5
Student reflections on learning post unit completion (e.g. a year later to reflect)	1/5	1/5	0/5	0/5
Requests for special consideration	4/5	0/5	0/5	0/5
Academic integrity reported issues	5/5	0/5	1/5	0/5
Enrolment				
Course/program enrolment	5/5	4/5	2/5	0/5
Class size	5/5	1/5	1/5	0/5
Campus affiliation	5/5	4/5	2/5	0/5
Faculty/school affiliation	5/5	4/5	2/5	0/5
Withdrawal from units/subjects	5/5	1/5	2/5	0/5
Withdrawal from course/program	5/5	4/5	2/5	0/5

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
Reason for withdrawal from unit/subject	3/5	3/5	1/5	0/5
Reason for withdrawal from course/program	3/5	0/5	1/5	0/5
Course transfer reasons	2/5	2/5	0/5	0/5
Enrolment load (with full-time/part-time indicators)	5/5	3/5	1/5	0/5
Demographic				
Age	5/5	4/5	2/5	0/5
Gender	5/5	5/5	2/5	0/5
Domestic	5/5	5/5	3/5	0/5
International	5/5	5/5	3/5	0/5
ATSI	5/5	5/5	2/5	0/5
Basis of entry	5/5	5/5	3/5	0/5
First in family	2/5	2/5	2/5	0/5
Scores for basis of entry (e.g. TER)	4/5	4/5	3/5	0/5
Primary language	5/5	5/5	2/5	0/5
Disability	5/5	5/5	2/5	0/5
Hours worked	2/5	1/5	1/5	0/5
Postcode	5/5	4/5	2/5	0/5
High school subjects completed (including mark)	2/5	0/5	0/5	0/5
Scores on IELTS	2/5	2/5	0/5	0/5

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
Student internet connection (including capacity/speed)	0/5	0/5	0/5	0/5
Admission data from first point of contact	5/5	2/5	0/5	0/5
Follow up of departed students (those who complete)	1/5	0/5	0/5	0/5
Wireless network access	1/5	0/5	0/5	0/5
Location data	2/5	0/5	0/5	0/5
Follow up of departed students (those who attrite)	2/5	0/5	0/5	0/5
Support service				
Awareness of support services at start of enrolment	1/5	0/5	0/5	1/5
Services provided	4/5	0/5	0/5	1/5
Participation in co-curricular activities	1/5	0/5	0/5	0/5
Library access including item access	5/5	1/5	0/5	0/5
Access to learning support services (run by or contracted by the university)	4/5	1/5	1/5	0/5
Access to library workshops and training sessions	1/5	0/5	0/5	0/5
Access to counselling service	4/5	0/5	0/5	0/5
Access to equity services	4/5	1/5	0/5	0/5
Accessing different parts of website	4/5	0/5	0/5	0/5
Study apps (including English Language apps)	4/5	1/5	0/5	0/5

Data Points	Data Systematically Collected	Data used for institutional purposes (e.g. Gov't reporting; retention modelling etc)	Used in learning analytics dashboards for staff	Used in learning analytics dashboards for students
eBook app	1/5	0/5	0/5	0/5
Access to employment services	3/5	0/5	0/5	0/5
Attendance at orientation/induction programs	4/5	0/5	0/5	0/5
Belonging/University Engagement				
Use of University social media groups	3/5	0/5	0/5	0/5
Use of University mobile app	4/5	0/5	0/5	0/5

Section 5: Discussion & Summary

Bringing together the findings from the various parts of the project (round one focus groups, survey and round two focus groups) facilitated a deeper understanding of student perspectives. This approach aided the emergence of several key themes which included:

- informed consent and how it needs to be enacted
- the connection between data collection and purpose including follow-up actions
- issues of power and choice
- personal and professional boundaries.

Each of these themes, while important, are also integrated to build a picture of what universities need to consider and act upon.

The overall findings paint a picture that students are reasonably aware of data collection and usage which is in contrast to Roberts, Chang & Gibson (2016) and more in line with the findings from Schumacher and Ifenthaler (2018). Quite possibly this is a reflection of the date of these studies and the increasing awareness of data collection in society more generally. However, the language, terms and information provided to students by universities were seen as unclear. While one would not expect the term 'learning analytics' to be used when communicating with students, it also appears that many of the terms that are used are too vague.

One example referred to 'data to support you', was seen as far too vague and potentially removed from the student learning journey. The term 'support services' was also seen as too vague as it potentially lacked relevance to the learning and could be perceived as non-academic.

This raises another issue related the nature of the data. Data that universities think might be useful may actually cross a line for many students. A key theme that ran through the student responses was related to a personal/professional boundary. Students indicated that they were at university primarily to learn and so that is their professional context and reference point. As such, they felt that data closer to the learning experience (such as data collected by the LMS in terms of usage and access) was more acceptable for use in analysis. The more peripheral to this or more personal the data became, the greater the number of students who felt it started to infringe on their privacy. These types of data can be seen as those where the comfort level dropped (i.e. demographic, locational, WiFi).

As would be expected, this personal/professional boundary did vary a little bit for different students but was not connected to any particular demographic factor. It would therefore be more appropriate to use the phrase 'data to support you in your learning journey' in the consent statement. Yet, this narrows the scope of what students are consenting to and therefore how universities can utilise the data.

Additionally, generally consent for use of data is sought at the beginning of the enrolment process in and amongst a range of other paperwork and at a time when students are often overwhelmed with the transition to university. Students in this study indicated that consent at the time of enrolment was not sufficient. They wanted to be reminded about the data being collected, as they felt that often people had forgotten about this aspect. While some students wanted to be reminded and/or provide consent more frequently, the responses suggested that such a reminder should take place at least once a year.

There is a key ethical challenge for universities in that data that may be seen as valuable to learning analytics development may be seen as too personal by students. Issues related to power and paternalism as identified in the literature (Johnson, 2017; Scott & Nicols, 2017; Prinsloo & Slade, 2014; 2016; Buckingham Shum & Feguson, 2012) become important and central to the decision-making process around what we should ethically use. It may be if the connection to learning is made clearer, students maybe more comfortable, however there are other issues that arise.

One aspect in particular was related to profiling of students (even where data was used for retention support) and the balance between the intrusiveness of this with the potential benefits. Being more specific about how such an approach would be of benefit to students is critical. For example, being able to identify that use of this data would enable the university to target key services to support their learning or personalise their learning materials is more likely to be palatable.

Being able to clearly articulate how the data is going to be used and the value of this to students appears to be the key. Students want to know specifically what data is being collected, how it is going to be used and what the benefit will be for them. This finding supports the work of Ifenthaler and Schumacher (2016), which found a relationship between the complexity and breadth of data and student preferences and positive perceptions. Despite systems automatically collecting data due to the digital nature of the environment, further consideration needs to be given to how that data is stored and whether it should in fact be used.

Students are very concerned about third parties receiving data and to a lesser extent, the safety and security of data held by universities which is consistent with the literature (Kahn, 2017). It is therefore important to provide students with information related to how their data is stored and secured, but also about providing more specific information related to the sharing of data with third parties. Without such information, informed consent is not possible.

Informed consent is also not possible without knowing how the data is going to be used. This presents a complex challenge, as the use of data will be variable and, in some cases, not yet known. Students had quite mixed views on some uses of data that universities generally think would be useful (and in fact are reported on quite extensively in the literature) such as retention and the triggering of support services. For example, students indicated that the triggering of a support service could be seen as being a good thing as it shows the university cares, but others believe it is paternalistic. In discussion, this raised the issue of students having the choice to opt in or out of the triggered events.

While there is little opportunity for students to opt out of some types of data collection if they want to enrol in a university (e.g. government required demographic data or LMS automated data), care should be taken to ensure we are able to provide as much information as possible.

All universities have consent statements for students to agree to in relation to the collection of data which is taken as informed consent. However, this is arguably not sufficient as identified in a range of literature related to informed consent (Gursoy, Inan, Nergiz & Saygin, 2017; National Academy of Education, 2017; Hoel & Chen, 2016; Rubel & Jones, 2016; Steiner, Kickmeier-Rust & Albert, 2016; Greller & Drachsler, 2012). Being more specific about the data collected, as well as the use and the purpose, is a good step forward.

While some choice may be limited in terms of the type of data, there are other choices that can be enabled and should be considered. For example, students should have the choice of turning on or off dashboards or push notifications triggered by learning analytics. The issue of grades comparative to others in the class is a specific example where choice was seen as critical, as some students (40%) do

not want to see where they are in relation to their peers, as they felt it may be intimidating. This finding is similar to that of Roberts, Howell, Seaman & Gibson (2016) who found that not all students were in favour of data being presented in a way that compared them to their peers. A study by Whitmer and Teasley (2017) suggested that while students generally found comparative dashboards useful, some did raise concerns about this aspect. As such combined studies indicate that some caution should be applied to the use of these approaches.

Even the idea of action being taken to address the risk of failing was seen by some students as paternalistic. Other students indicated that any action or reporting mechanism needed to be proactive and followed by the provision of services to ameliorate the situation. The indication was that it needed to be about what could be done to improve and the services to assist rather than to suggest that the student was not suited to a particular course.

These findings also highlight the fact that should universities go down this path, they have a duty to provide the appropriate services. The key theme arising here was related to the power and control the university has over students and linked to a view that taking such choice away from students can be seen as paternalistic.

Also linked to the idea of power is an issue students raised in focus groups about the need for the sharing of information to be two-way. Comments were made indicating that the university has a lot of information about students but they don't get much about the university. Connected to this is the idea that universities must close the loop with students about what we do with the data and how it is useful to overall improvement for both students and the university.

This reinforces the key issue of transparency as highlighted in the literature (Slade, Prinsloo & Khalil, 2019) and advocated throughout a range of ethical frameworks and codes of practice (West, Huijser & Heath, 2016, Pardo & Siemens, 2014 Prinsloo & Slade, 2014; Slade & Prinsloo, 2013; Sclater & Bailey, 2015; Greller & Drachsler, 2012).

Overall, the data from all parts of the project indicated a need to be transparent and clear with students about what data we are collecting, why and how it is being used. Student control over their data needs to be facilitated as much as possible. While opting in or out of data collection is in some case impossible, other choices can and should be given (e.g. turning on or off dashboards). At a minimum, universities need to be clearer about what students are agreeing to and to provide reminders of this at key times.

A key tension for universities to resolve is the use of data that respects students' autonomy but also meets our institutional responsibilities and obligations. This is a challenging line to walk ethically, with the temptation to utilise all of the data available in ways that may be useful into the future, but which may be seen to cross the personal/professional divide by students. The following section provides a set of resources developed from the project which are intended to assist institutions in walking this line.

Section 6: Resources

This project was designed to ensure that the research outcomes translated into practical applications in order to have an impact on the practice taking place in universities. Throughout the project key resources were identified and developed based on the findings and/or identified gaps. As such, a set of resources were developed for use in the IRU institutions as well as the broader sector. Each of these are discussed briefly and then presented in full in the appendices.

Code of Practice for the Ethical Use of Learning Analytics

A key theme of the student survey was to identify student concerns and comfort levels related to both the collection of data and various uses of such data for learning analytics applications. However, knowing what does or does not concern students is the first step in ensuring that we act ethically and appropriately in the use of such data.

All of the IRU institutions have a strong value base related to empowering and supporting students and therefore an underpinning code of practice for the use of learning analytics was seen as a way to make this explicit at the institutional level.

As part of the background work for the development of the survey, various documents, resources and literature were reviewed which suggested the need for a code of practice, suggested elements which needed to guide learning analytics implementation and use or in fact presented such an artefact. Given the substantial work undertaken by JISC (Sclater & Bailey, 2015) in this space, it was seen as most appropriate to utilise that as a basis. Permission from JISC was sought and received to use this as the basis of an IRU Code of Practice.

The JISC Code of Practice was then reviewed in light of the Australian and IRU institutional context and some amendments made. Following the survey and the focus groups, the proposed code was revisited to ensure that the document remained in line with the findings of the study and the student views. The key principles were reinforced based on the findings.

The Code of Practice was presented to the IRU Deputy Vice Chancellor (Academic) group for their endorsement. The document was strongly supported by the group and endorsed in principle for adoption across the IRU subject to institutional governance review. However, they also made the point that it vital to ensure that the statements translate to actions that are embedded in the relevant policy, procedures and processes of the institutions.

It is important to note that throughout the project the need for a code of practice has been reinforced in a number of ways. During the survey, the *Cambridge Analytica* scandal hit the press with the broader community (including our students) becoming more aware of the potential impacts of misuse of data. Toward the end of the project as endorsement was being sought for the code of practice news emerged regarding a major data breach at one of Australia's most prestigious universities. Slight changes were made at both of these points to ensure a higher level of focus on these issues. However, the events also suggest the need for the code of practice to be a 'living document' which can be amended to keep up with the rapid rate of change in this field.

The endorsed *Code of Practice for the Ethical Use of Learning Analytics* is presented in Appendix B.

Checklists

The checklists are a set of documents which attempt to guide institutions in the process of translating the statements outlined in the Code of Practice into actions through the implementation process. They were drafted based on existing resources gathered from within IRU institutions, more broadly in the sector within both the literature and policy arenas and informed by our own experiences of implementation. They are specifically focussed on the implementation of student facing learning analytics dashboards (rather than more general and/or academic facing learning analytics). Following the data collection stage, they were cross referenced with findings and amended accordingly.

The following resources are included in the appendices:

- Student Data Protection Checklist (Appendix C)
- Academic Interaction and Support Checklist (Appendix D)
- Student Dashboard ICT Technology Support Checklist (Appendix E)
- Change Communications Checklist (Appendix F)

User Stories

The final set of resources are a set of user stories which are intended to assist in the learning analytics development and implementation process. The term 'user story' was originally coined by Kent Beck (Beck, 2000) a software engineer and creator of Extreme Programming and later developed by Mike Cohn (Cohn, 2004).

User stories are typically applied in the development of software applications and are defined as '...short, simple descriptions of a feature told from the perspective of the person who desires the new capability, usually a user or customer of the system. They typically follow a simple template: As a < type of user >, I want < some goal > so that < some reason >' (Mountain Goat Software, website).

The aggregate findings from the survey questions were used to identify the type of user and what they want. Analysis was also undertaken on the data (both survey and focus groups) to identify the more specific user stories (e.g. as a domestic student; as an international student, as an undergraduate etc) however there was virtually no variation in terms of the goal or the reason. Consequently, the user story is generalised to '*As a student... I want to... so that I can...*'. Table 6 in Appendix G presents this approach.

Looking at the user story from the perspective of comfort or concern is another way to view the findings, taking the approach as a <type of user>, I have concerns about <some issue> because <some reason>. This is presented as Table 7 in Appendix G which summarises the type of concerns that arise for students in relation to the key data types based on the aggregate results of the survey questions and the focus groups. The transcripts from the focus group discussions informed the because statements.

While focus groups did represent various student user types there was only limited occasion to align comments from students by gender, citizenship, level of study or study load. However, when doing so the key concerns did not vary in substance. Consequently, Table 7 (in Appendix G) presents the range of reasons students had concerns about key data being collected and/or used. However, one case stood out as requiring an alignment with international students and that is presented within Table 8 in the same appendix.

Appendices

1. Appendix A: References
2. Appendix B: Code of Practice for the Ethical Use of Learning Analytics
3. Appendix C: Student Data Protection Checklist
4. Appendix D: Academic Interaction and Support Checklist
5. Appendix E: Student Dashboard ICT Technology Support Checklist
6. Appendix F: Change Communications Checklist
7. Appendix G: User Stories

Appendix A: References

Beck, K. (2000). *Extreme programming explained: embrace change*. Addison-Wesley Longman Publishing: Boston, USA.

Bodily, R., & Verbert, K. (2017). Review of Research on Student-Facing Learning Analytics Dashboards and Educational Recommender Systems. *Learning Technologies, IEEE Transactions on Learning Technologies*, 10(4), 405-418. doi: 10.1109/TLT.2017.2740172

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi: [10.1191/1478088706qp063oa](https://doi.org/10.1191/1478088706qp063oa)

Brooker, A., Corrin, L., Fisher, J. & Mirriahi, N. (2017). Defining 'data' in conversations with students about the ethical use of learning analytics. In H. Partridge, K. Davis & J. Thomas. (Eds.), *Me, Us, It! Proceedings ASCILITE2017: 34th International Conference on Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education*, Toowoomba, Queensland (pp, 27-31).

Buckingham Shum, S., & Ferguson, R. (2012). Social Learning Analytics. *Journal of Educational Technology & Society*, 15(3), 3-26. <http://www.jstor.org/stable/jeductechsoci.15.3.3>.

Cohn, M. (2004). *User stories applied: for agile software development*. Addison-Wesley Publishing: Boston, USA.

Fisher, J., Valenzuela, F.-R., & Whale, S. (2014). *Learning Analytics: A Bottom-up Approach to Enhancing and Evaluating Students' Online Learning*.
http://www.olt.gov.au/system/files/resources/SD12_2567_Fisher_Report_2014.pdf

Greller, W., & Drachsler, H. (2012). Translating Learning into Numbers: A Generic Framework for Learning Analytics, *Educational Technology & Society*, 15(3), 42-57.
<https://www.jstor.org/stable/jeductechsoci.15.3.42>

Gursoy, M.E., Inan, A., Nergiz, M.E., & Saygin, Y. (2017). Privacy-Preserving Learning Analytics: Challenges and Techniques. *IEEE Transactions of Learning Technologies*, 10(1), 68-81. doi: [10.1109/TLT.2016.2607747](https://doi.org/10.1109/TLT.2016.2607747)

Hoel, T., & Chen, W. (2016). Privacy-driven design of learning analytics applications: exploring the design space of solutions for data sharing and interoperability. *Journal of Learning Analytics*, 3(1), 139–158. doi: [10.18608/jla.2016.31.9](https://doi.org/10.18608/jla.2016.31.9)

Ifenthaler, D. & Schumacher, C. (2016). Student perceptions of privacy principles for learning analytics. *Educational Technology Research and Development*. 64:923-938. doi: 10.1007/s11423-016-9477-y

Innovative Research Universities (2019). *IRU Statistics on Students*. Innovative Research Universities, Melbourne. <https://www.iru.edu.au/about/statistics/>

Johnson, J.A. (2017). Ethics and Justice in Learning Analytics. *New Directions for Higher Education*, 2017(179), 77-87. doi: 10.1002/he.20245

Khan, O. (2017). Learners' and Teachers' Perceptions of Learning Analytics (LA): A Case Study of Southampton Solent University (SSU). Paper presented at the 14th International Association for

Development of the Information Society (IADIS) International Conference on Cognition and Exploratory Learning in Digital Age (CELDA), Algarve, Portugal.

Long, P. & Siemens, G., (2011). Penetrating the Fog: Analytics in learning and education. *Educause review*, 46(5), 31–40. <https://er.educause.edu/articles/2011/9/penetrating-the-fog-analytics-in-learning-and-education>

Mountangoat Software (2019). *What is a user story?* mountangoatsoftware.com/agile/user-stories

National Academy of Education (2017). *Big Data in Education: Balancing the Benefits of Educational Research and Student Privacy: Workshop Summary*. Washington, DC: National Academy of Education. <https://files.eric.ed.gov/fulltext/ED574440.pdf>

Pardo, A. & Siemens, G. (2014). Ethical and privacy principles for learning analytics. *British Journal of Educational Technology*. 45(3): 438-450. doi: 10.1111/bjet.12152

Prinsloo, P. & Slade, S. (2016). Student Vulnerability, Agency, and Learning Analytics: An Exploration. *Journal of Learning Analytics*. 3(1): 159-182. doi: 10.18608/jla.2016.31.10

Prinsloo, P. & Slade, S. (2014). Educational Triage in Open Distance Learning: Walking a Moral Tightrope. *The International Review of Research in Open and Distance Education*. 15(4): 307-331. doi: [10.19173/irrodl.v15i4.1881](https://doi.org/10.19173/irrodl.v15i4.1881)

Prinsloo, P. & Slade, S. (2013). Learning Analytics: Ethical Issues and Dilemmas. *American Behavioral Scientist*. 57(10): 1510-1529. [doi/pdf/10.1177/0002764213479366](https://doi.org/10.1177/0002764213479366)

Reichheld, F. (2003). The One Number You Need To Grow. *Harvard Business Review*. December Issue 2003 <https://hbr.org/2003/12/the-one-number-you-need-to-grow>

Roberts, L., Chang, V., and Gibson, D. (2016). Ethical considerations in adopting a university- and system-wide approach to data and learning analytics. In Daniel, B. (Ed.) *Big Data and Learning Analytics in Higher Education: Current theory and practice*. pp. 89–108. Springer: Cham, Switzerland. doi: [10.1007/978-3-319-06520-5_7](https://doi.org/10.1007/978-3-319-06520-5_7)

Roberts, L.D., Howell, J.A., Seaman, K. & Gibson, D.C. (2016). Student Attitudes toward Learning Analytics in Higher Education: ‘The Fitbit Version of the Learning World’. *Frontiers in Psychology*. 9(1959): 1-11. doi:10.3389/fpsyg.2016.01959

Rubel, A. & Jones, K.M. (2016). Student privacy in learning analytics: An information perspective. *The Information Society*. 32(2): 143-159 doi: [10.1080/01972243.2016.1130502](https://doi.org/10.1080/01972243.2016.1130502)

Schumacher, C., & Ifenthaler, D. (2018). Features students really expect from learning analytics. *Computers in Human Behavior*, 78: 397-407. <https://doi.org/10.1016/j.chb.2017.06.030>

Sclater, N. & Bailey, P. (2015). *Code of practice for learning analytics*. JISC. U.K. <https://www.jisc.ac.uk/guides/code-of-practice-for-learning-analytics>

Scott, J., & Nichols, T.P. (2017). Learning analytics as assemblage: Criticality and contingency in online education. *Research in Education*, 98(1), 85-105. doi: 10.1177/00345237/7723391

Slade, S., & Prinsloo, P. (2013). Learning analytics: ethical issues and dilemmas. *American Behavioural Scientist*, 57(10), 1509-1528. doi: [10.1177/0002764213479366](https://doi.org/10.1177/0002764213479366)

S. Slade, P. Prinsloo & M. Khalil. (2019). Learning analytics at the intersections of student trust, disclosure and benefit. In The 9th International Learning Analytics & Knowledge Conference (LAK19), March 2019, Tempe, AZ, USA. ACM, New York, NY, USA. doi: <https://doi.org/10.1145/3303772.3303796>

Steiner, C.M., Kickmeier-Rust, M.D., & Albert, D. (2016). LEA in Private: A Privacy and Data Protection Framework for a Learning Analytics Toolbox. *Journal of Learning Analytics*, 3(1), 66-90. doi:10.18608/jla.2016.31.5

West, D., Luzeckyj, A., Toohey, D., Vanderlelie, J. & Searle, B. (2020). Do academics and university administrators really know better? The ethics of positioning student perspectives in learning analytics. *Australasian Journal of Educational Technology*. 36(2): 60-70. doi.org/10.14742/ajet.4653

West, D., Luzeckyj, A., Toohey, D., Vanderlelie, J. & Searle, B. (submitted for publication) Perspectives from the stakeholder: Students' views regarding learning analytics and data collection.

West, Luzeckyj, Searle, Toohey & Price (2018). The Use of Learning Analytics to Support Improvements in Teaching Practice. Innovative Research Universities. Melbourne, Australia. <https://www.iru.edu.au/wp-content/uploads/2018/04/MRUN-Learning-Analytics-report.pdf>

West, D., Huijser, H. & Heath, D (2016). Putting an ethical lens on learning analytics. *Educational Technology Research and Development*. 64(5): 1-20. doi: [10.1007/s11423-016-9464-3](https://doi.org/10.1007/s11423-016-9464-3)

West, D., Huijser, H., Heath, D., Lizzio, A., Miles, C., Toohey, D., Searle, B., Bronnimann, J. (2015). *Learning Analytics: Assisting Universities with Student Retention*. Australian Office for Learning and Teaching, Sydney. https://ltr.edu.au/resources/SP13_3268_West_Report_2015.pdf

Whitmer, J. & Teasley, S. (2017). *Final Report: The impact of student-facing LMS dashboards*. Blackboard, USA. <https://www.si.umich.edu/sites/default/files/REPORT%20-%20Student-Facing%20Dashboards%20-%20FinalHQ.pdf>

Appendix B: Code of practice for learning analytics

Code of practice for learning analytics

This document sets out the Code of Practice for learning analytics as endorsed in principle by the Deputy Vice-Chancellor (Academic) group of the Innovative Research Universities (IRU). It is based on the JISC Code of practice for learning analytics¹ but has been modified to fit the Australian and IRU context.

Introduction

Learning analytics uses data about students and their activities to help institutions understand and improve educational processes and provide better support to learners. It should be for the benefit of students, whether assisting them individually or using aggregated and anonymised data to help other students or to improve the educational experience more generally. It is distinct from assessment and should be used for formative rather than summative purposes.

The effective use of learning analytics will initially involve the deployment of new systems, and changes to institutional policies and processes. New data may be collected on individuals and their learning activities. Analytics will be performed on these data, and interventions may take place as a result. The use of learning analytics presents opportunities for positive engagements and impacts on learning, however misunderstandings, misuse of data and adverse impacts on students may also occur. Bearing in mind the potential for adverse effects that could arise from misuse of students' data, institutions must make every effort to ensure data security. Additionally, complete transparency and clear institutional policies are essential regarding the purposes of learning analytics, the data collected, the processes involved, and how they will be used to enhance the educational experience.

Learning analytics will take different forms and approaches in different institutions. Such variation is connected, at least in part, to the institutional context and as such consideration should be given to geographic location, level of maturity of systems and thinking, the nature of student engagement (e.g. modality of study) and the support that is able to be provided.

Learning analytics can be used for a variety of purposes including supporting students, informing curriculum renewal, improving teaching practice, improving instructional design, and informing support services. It can provide data to support agency, inform decision making and provide insights to how students are learning and managing their studies. However, the data needs to be interpreted in the context of the topic, course and institution. As online presence increases, analytics becomes more important as it can provide key insights into behaviours and actions.

Learning analytics is useful across the entire student lifecycle. This goes beyond retention and supports students to have agency over their learning. Responsibility may shift over time as students become more capable to make decisions to support their learning.

¹ Sclater, N. & Bailey, P. (2015) *Code of practice for learning analytics*. JISC, UK. Available at: <https://www.jisc.ac.uk/guides/code-of-practice-for-learning-analytics>

This Code of Practice aims to set out the responsibilities of educational institutions to ensure that learning analytics is carried out responsibly, appropriately and effectively, addressing the key legal, ethical and logistical issues which are likely to arise.

Responsibility

Use of analytics is the responsibility of everybody involved. All must act in ethical way, and with agency in the utilisation of the information to support decision-making and as such:

- students have a responsibility to actively engage with learning analytics training and support to inform their decision-making
- staff have a responsibility to reasonably act on the information provided by the analytics to support their students and engage in training as appropriate.

Institutions must decide who has overall and ongoing responsibility for the legal, ethical and effective use of learning analytics. They should allocate specific responsibility and resources within the institution for the:

- collection of data to be used for learning analytics
- anonymisation of the data where appropriate
- analytics processes to be performed on the data, and their purposes
- interventions to be carried out
- data security
- retention and stewardship of data used for and generated by learning analytics
- provision of training and support for the staff and students.

Student representatives and key staff groups at institutions should be consulted around the ongoing implementation and monitoring of learning analytics.

Transparency and Consent

Institutions will define the objectives for the use of learning analytics, what data is necessary to achieve these objectives, and what is out of scope. This includes:

- data sources, the purposes of the analytics, the metrics used
- who has access to the analytics
- boundaries around usage
- how data will be interpreted and explained clearly to staff and students
- clearly describing processes involved in producing the analytics to students and staff.

At the point of enrolment and on a regular basis during their enrolment students will be informed about the university's policy and practices on data collection and its use.

Students should be provided the capacity to opt-out of the presentation of their data in a personal student dashboard. Students should subsequently be able to easily amend their decisions.

Students will not be provided the opportunity to opt-out of the use of their de-personalised data in an aggregated form.

Privacy

Access to student data and analytics should be restricted to those identified by the institution's governance frameworks, as having a legitimate need to view them.

Where data is to be used anonymously, particular care will be taken by institutions to avoid:

- identification of individuals from metadata
- re-identification of individuals by aggregating multiple data sources.

The use of 'sensitive data' such as religious affiliation and ethnicity and health service access for the purposes of learning analytics requires additional safeguards.

Circumstances where data and analytics could be shared externally (e.g. requests from educational authorities, security agencies or employers) will be made explicit to staff and students.

Institutions should ensure that student data is protected when contracting third parties to store data or carry out learning analytics on it.

Institutions may have a legal obligation to intervene, and hence override some privacy restrictions in the release of data.

Validity

It is vital that institutions monitor the quality, robustness and validity of their data and analytics processes in order to develop and maintain confidence in learning analytics and ensure it is used to the benefit of students.

Data and analytics may be valid but should also be useful and appropriate; learning analytics should be seen in its wider context and combined with other data and approaches as appropriate.

Institutions should ensure that:

- inaccuracies in the data are understood and minimised
- the implications of incomplete datasets are understood
- the optimum range of data sources is selected
- spurious correlations are avoided.

All algorithms and metrics used for predictive analytics or interventions should be understood, validated, reviewed and improved by appropriately resourced and qualified staff.

Access

Learning analytics should be presented in meaningful, accessible formats that support data interpretation and subsequent decision-making processes. Staff and Students have a legal right under the Privacy Act 1988, Australian Privacy Principles to be able to correct inaccurate personal data held about themselves.

Enabling positive interventions

When learning analytics suggest that a student could benefit from additional support institutions should:

- provide guidance on actions to be taken by staff or students, which may include advising students about alternative options

- clarify the type and nature of interventions, and who is responsible for carrying them out. Some may require human rather than digital intermediation
- normally record predictions and program-based interventions and review their appropriateness and effectiveness
- consider the impact of interventions on staff roles, training requirements and workloads
- ensure senior management considers and adequately resources appropriate interventions
- decide how to allocate resources for learning analytics appropriately for learners with different requirements and ensure that diverse groups and individuals are treated equitably.

Minimising adverse impacts

Institutions will make every effort to minimize negative impacts through the use of analytics. Institutions recognise that analytics can never give a complete picture of an individual's learning and may sometimes ignore personal circumstances. Institutions will take steps to ensure that trends, norms, categorisation or any labelling of students do not bias staff, student or institutional perceptions and behaviours towards them, reinforce discriminatory attitudes or increase social power differentials.

Institutions will not develop and provide analytics that have a reasonable capacity to have a negative impact on student wellbeing and progress or where the institution is unable to respond with adequate support.

Analytics systems and interventions will be carefully designed and regularly reviewed to ensure that:

- students maintain appropriate levels of autonomy in decision making relating to their learning, using learning analytics and where appropriate to help inform their decisions
- opportunities for 'gaming the system' or any benefit to the student from doing so are minimised
- adverse impacts as a result of giving students and staff information about the students' performance or likelihood of success are minimised
- staff are provided with training and support to appropriately use learning analytics and in relation to understanding legal and ethical practices in the use of learning analytics
- learning analytics data will only be provided to students where adequate institutional support is available.

Security and Stewardship of data

Institutions have a responsibility to take every reasonable step to ensure data safety and security. Learning analytics data collection, storage will comply with existing institutional data policies and the Australian Privacy Act 1988 and where appropriate the GDPR.

Appendix C: Student Data Protection Checklist

The following checklist is designed to provide Student Dashboard stakeholders with a list of actions and triggers that are desirable to ensure student data is protected and student privacy rights are respected in accordance with the Australian Privacy Principles, Privacy Act 1988 (Cwth) (referred to in the checklist as APP#) and other relevant state-based legislation.

Open and transparent collection and use of student data

- The University has an existing and up to date policy about the management of student personal information (APP 1).
- The University's student data-collection and use practices are documented in clear and transparent documents that students and staff may access (APP 1).
- The proposed use of student data does not represent a breach of the University's policy about the management of student personal information.
- The proposed collection, storage, use or disclosure of student data does not represent a breach of the University's privacy policy.
- Students have the opportunity to provide full informed consent about the collection of their personal data by the University (APP 3).
- As part of the consent process, students are made aware of the purposes for which the information is collected and ways in which their data may be used by the University (APP 5, 6).
- The University has existing processes to ensure the student data is accurate at any point in time (APP 10).
- Students are made aware of any likely disclosures of their data to State or local government, or to the private sector, or to the public at large (APP1, 6).
- The University has clear procedures for dealing with requests from students to access their personal data that are compliant with the Privacy Act 1988 (Cwth) and the Freedom of Information Act 1982 (APP 12).

Keep and use data only for specified purposes

- The University only collects student data that is reasonably required for University functions or activities (APP 3).
- The University has explicitly defined for what purposes student data may and may not be used (APP 6).
- The University has assigned responsibility for maintaining a list of all data sets and the purpose associated with each (APP 6).

- Students and staff have access to a clear statement about student data retention and disposal requirements in accordance with the Privacy Act 1988 (Cwth) and relevant state Retention and Disposal Schedule.

Student datasets security provisions

- There data security provisions in place for the storage, security and retention of each student data set that are appropriate to the sensitivity of the personal data and reflective of current industry best practice and subject to regular review (APP 11).
- Computers and databases are password-protected, and encrypted if appropriate (APP 11).
- Computers, servers, and files securely held securely and not accessible by unauthorised people or organisations (APP 11).

Triggers to seek further advice

It is recommended that if any of the following items are checked, the user engage with the University privacy, cybersecurity and risk specialists for further advice:

- Will the proposal restrict access by individuals to their own personal information?
- Will the proposal establish or amend a public register?
- Does the proposal change or create any confidentiality provisions or secrecy provisions relating to personal information?
- Are any proposed powers of entry, search or seizure involved?
- Is any surveillance proposed?
- Are any new or amended offences proposed relating to the misuse of personal information?
- Will the proposal create an identification system, e.g. using a name, a number, or a biometric signature like a finger scan? Will it require existing ID, such as a driver's license?
- Is it proposed to link or match personal information across or within organisations?
- Does the proposal involve exchange or transfer of personal information outside your state whether with another government or otherwise?
- Does the proposal relate to handling personal information for research or statistics, de-identified or otherwise?
- Does the proposal contain any other measures that may affect privacy?

References

<https://www.teachingandlearning.ie/learning-analytics-educational-data-mining-learning-impact/data-protection-checklist-learning-analytics/#1503271883075-89fb1a38-146f>

<https://www.oaic.gov.au/individuals/privacy-fact-sheets/general/privacy-fact-sheet-17-australian-privacy-principles>

Appendix D: Academic Interaction and Support Checklist

Consideration needs to be given to support academic interaction, in particular training for staff and students, to use the dashboard, interpret data and act on it. Processes need to clearly identify roles and responsibilities and support mechanisms.

- Subject design allows for early triggers or assessment that support students to develop effective learning habits as early as possible.
- There is endorsed process for ensuring consistent data is displayed in the dashboard eg: Use of Gradebook/Grademark functions in the Learning Management System.
- Academic staff understand the source of the information displayed on the dashboard as it relates to their subject and assessment design in the Learning Management System.
- Academic staff have a good understanding of the use tools and functions within the Learning Management System for assessment and activity design.
- There is information, training and support for staff to understand and interpret the data in the dashboard.
- There is clear guidance for academic staff on how to advise students to make informed decisions based on the data presented to them.

Appendix E: Student Dashboard ICT Technology Support Checklist

The following checklist is designed to provide Student Dashboard stakeholders with a list of project conception, pre implementation, implementation and post implementation actions that are desirable to ensure implementation success and avoid the most common challenges encountered by software implementations.

At project conception

- Identify the current university business intelligence / analytics capabilities.
- Identify system owners and their roles in managing the university business intelligence / analytics functions.
- Involve these stakeholders at appropriate levels of Student Dashboard project planning and governance; such as Steering Group members, subject matter experts or project team members.
- Ensure the Student Dashboard project communications plan and risk management systems recognise the importance of maintaining open and regular communication with these stakeholders to ensure the project's ultimate success.

Prior to implementation

- Identify the current university business intelligence / analytics capabilities.
- Identify system owners and their roles in managing the university business intelligence / analytics functions.
- Involve these stakeholders at appropriate levels of Student Dashboard project planning and governance; such as Steering Group members, subject matter experts or project team members.
- Ensure the Student Dashboard project communications plan and risk management systems recognise the importance of maintaining open and regular communication with these stakeholders to ensure the project's ultimate success.
- There is leadership support for the Student Dashboard implementation across the institution.
- There is leadership support and recognition within policy for the Student Dashboard implementation across the institution.
- All relevant ICT staff received adequate training to enable them to support the Student Dashboard.
- The additional ICT support requirements resulting from the implementation have been factored into ICT staffing models.

- The staff and student ICT helpdesks are ready to support users of the Student Dashboard.
- The vendor (where utilised) is available and budgeted to provide additional support during implementation.
- ICT has the required expertise available to support and maintain the Student Dashboard from implementation.
- The ICT systems escalation processes been updated to include the Student Dashboard.
- The testing phase of the Student Dashboard satisfactorily completed.
- The defect identification, review and remediation systems and processes well established.

During implementation

- Vendor systems (where used) support period funded to extend beyond the implementation phase.
- The required ICT support staff positions securely funded.
- The Student Dashboard analytics functions are fully functional.
- The post implementation reporting metrics agreed and systems in place to generate these at required frequencies.

Post implementation

- An ICT succession plan is in place to maintain the required Student Dashboard expertise.
- The Student Dashboard functionality been adequately documented to inform its support and expansion.

References

Mukerjee, S. (2012). Student information systems - implementation challenges and the road ahead. *Journal of Higher Education Policy and Management*, 34(1), p51-60.
[doi:10.1080/1360080X.2012.642332](https://doi.org/10.1080/1360080X.2012.642332)

Appendix F: Change Communications Checklist

The following checklist should be used in conjunction with the Change Management Plan. Use this checklist to identify your stakeholders, messages and channels.

- Identify the objectives and purpose of your student dashboard communication change plan.
- Identify your target and secondary audiences for communications on the student dashboard eg: academic staff, students, support units, management.
- Identify reason for communication and what the audience will do or know as a result of communication on the dashboard eg: access the dashboard, provide advice, seek further information
- Identify when and how frequently messages should be communicated. Repeat key messages. Reinforce complex messages over time.
- Identify risks of communication and how to minimize misinterpretation or negative perceptions.
- Identify who will be responsible for creating the messages, approving the messages and delivering the messages eg: ICT, student administration, learning and teaching unit, project team
- Identify channel/s or network for the messages. Will they be formal or informal? Which channels work best for different audiences.
- Create varied communication with differing levels of details for different audiences. Make sure communication is written in clear language free from technical jargon.
- Provide key people with tools and information that will help reinforce the communications.
- Provide feedback channels for your audience and adjust your communication accordingly.
- Evaluate your communication channels to ensure your messages are reaching their intended audience.

Appendix G: User stories

The table below represents a summary of the consolidated user story of 'I want to' 'so that I can statements'.

Table 6 As a student I want to <some goal> so that I can <some reason>

As a student I want to <some goal>	So that I can <some reason>
See my grades compared to others in the class	Be given a wakeup call to improve and understand if I can slow down or focus
See how much I am accessing the LMS	See what I have done and if I am on track or need to progress/change by spending more time on learning
Be given information about additional materials (readings; resources) I might like to access based on an assessment I have coming up	See the suggestions about additional materials concerning the assessment activity
Be given information about additional materials (readings; resources) I might like to access based on a LOW grade received on an assignment/quiz	Be aware that I can access additional information and change my performance to achieve a passing grade
Be given information about additional materials (readings; resources) I might like to access based on ANY grade received on an assignment/quiz	Be aware that I can access additional information and change my performance
Be given information about additional materials (e.g. academic writing support; library) I might like to access based on an assessment I have coming up	See the suggestions about additional materials concerning the assessment activity

As a student I want to <some goal>	So that I can <some reason>
Be given information about additional materials (e.g. academic writing support; library) I might like to access based on a LOW grade received on an assignment/quiz.	Be aware that I can access additional information and change my performance
Be given information about additional materials (e.g. academic writing support; library) I might like to access based on ANY grade received on an assignment/quiz	See the suggestions about additional materials concerning the assessment activity
Be given information that suggests that I will need to change my study behaviours in order to achieve a higher grade	See what I'm lacking, and what I could improve to help achieve a higher grade
Be given information that suggests that I will need to change my study behaviours in order to achieve a passing grade	See that I need to change my study now rather than failing the subject Be aware that I can access additional information and change my performance to achieve a passing grade
See my progression through subject material.	See if I am on track
Be given a projection of my likely final grade.	Gain a good understanding of what are the key areas that I need to work on. And it can be beneficial also for in terms of university staffing and resources, so they know where to dedicate their time
Have my information displayed in a dashboard that I can turn on and turn off	I have the choice to view the dashboard or not
Be notified about the university's policy and practice on student data collection and use at the beginning of each academic year	Reminded that the university is collecting this information and what they are doing with it

Table 7 in Appendix C summarises the type of concerns that arise for students in relation to the key data types based on the aggregate results of the survey questions and the focus groups.

Table 7 As a student I have concerns about <some issue> because <some reason>

As a student I have concerns about <some issue>	Because <some reason>
My demographic information (e.g. age; gender; address)	<ul style="list-style-type: none"> • When you ask about age and gender. People can be hesitant about sharing that information • It starts to feel a bit more personal like the university is going to take your data and use that for something and not just your use of the LMS • I would be concerned if data was collected about my religion and my sexuality. I wouldn't understand how that relates to what I'm currently studying or - how they're going to use that information to help me as a student. • People are being put in a category, segregating, profiling, stereotyping • Determining risk via categories is concerning especially when attached to the individual
Location data from my mobile device	<ul style="list-style-type: none"> • There are some things I would want to keep to myself. Like, when I'm coming to University or why or whether I've attended class • When you're logging on, why does it matter where you are? I just think it's too intrusive • You just start to feel a bit like being watched • I don't mind if you know what I'm doing in the LMS, but maybe I don't want everything else tracked, you don't need to know that. • It feels like you are being spied on • How do you draw the line between collecting data that helps me as a student? And just collecting data from my location • Infringing on my privacy • For some people being largely 'off the grid' is important for personal reasons • It's like big brother is watching me. So, it starts to feel like that.

As a student I have concerns about <some issue>	Because <some reason>
My data from University social media groups	<ul style="list-style-type: none"> • I don't like anyone stalking my profile and sort of getting a wrong picture about me • What you see in social media might not be the exact thing or might not be the sort of behaviour that the person has in the real world • I kind of try to keep my personal life and my professional life separate • Social media falls outside of learning, even if it is being used, you know, I feel that it's separate, a separate thing. You do behave differently • Social media crosses over between the professional and personal (e.g. using a Facebook account could show some personal information that you wouldn't want used) • It would be uncomfortable if that was used to collect views on the students who were in that social media group, to represent them, because it really doesn't • I can relate to a friend on social media, but it's going to be very hard for me to relate to a professor who has three degrees and I'm just in my first one.
My data from University Wireless Network device usage	<ul style="list-style-type: none"> • It's too personal • I don't think anyone would be happy with that • I am concerned about how this data is being stored and who can see it • I wonder if it is it about making sure students are behaving properly or in the way that the university wants them to • It is related to tracking
My data from mobile app services	<ul style="list-style-type: none"> • It depends to what extent that data is being collected and what it is collected for • I am concerned about how secure the data is and how that is connected to the university • I wonder how much of the information are they taking that is personal and is this useful and why • There's a very thin line in deciding what I'm comfortable with and what I'm not comfortable with
My access to employment services	<ul style="list-style-type: none"> • Centrelink connection is problematic • Some details are okay but not income related (e.g. salary levels) • How is the data being used?

Table 8 presents the one case that stood out as requiring an alignment with international students.

Table 8 As an International student I have concerns about <some issue> because <some reason>

As an INTERNATIONAL student I have concerns about <some issue>	Because <some reason>
Use of location data from my mobile device	If it tracks class attendance, some concerns of being sent home or something like that