Using Student Data for Educational Analytics

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Department Responsible for maintenance & review	Academic Registry, Quality and Teaching Excellence - in collaboration with Educational Analytics Project Executive
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1. Introduction

1.1. Rationale

1.1.1.   Northumbria University has collected and analysed student data as a means of providing information relating to student support and retention for many years. The changing landscape of higher education has seen the rapid expansion of uses for student data. A report from The Higher Education Commission[1] suggests that Educational Analytics has the potential to transform higher education and encourages institutions in the UK to make the most of opportunities in this area. Northumbria University, in common with many other higher education institutions, is now looking at its use of Educational Analytics.

1.1.2.   In the context of Northumbria University, Educational Analytics is the use of raw and aggregated student data to proactively identify interventions which aim to support students in achieving their study goals. Such interventions may be designed to support individual students and/or the entire cohort. This is in line with the Northumbria University Strategy 2018-2023: we will deliver 'Outstanding student and stakeholder experiences and outcomes' and a key element of this is 'a University-wide implementation of Educational Analytics, learner analytics and attendance management to support ownership of learning … [which] will improve retention and attainment, and support personalised, adaptive and self-regulated learning

1.1.3.   The use of an Educational Analytics approach to drive student support within the University is relatively new. There is a need to establish guiding principles which help provide a clear framework for the ethical application of Educational Analytics.

1.2. Problem statement

1.2.1.   All data captured as a result of the University's interaction with the student has the potential to provide evidence for Educational Analytics. Data will, however, only be used for Educational Analytics where it is anticipated that there will be an expected benefit to students' learning. This reduces the likelihood of processing data unnecessarily. This will be in accordance with Northumbria's Student and Applicant Privacy Notice.

1.2.2.   The techniques used in Educational Analytics are based on standard statistical methods, but typically involve the development of complex models, the full working of which will only be apparent to those familiar with the data and with the statistical methods employed. It is likely, however, that staff and students will want to understand how the models produce the outcomes which they then deploy. Students will want to understand why they have been selected for an intervention and, in some cases, may want to challenge the basis for their selection. A potential conflict exists therefore between creating models which provide the most reliable outcomes and those which work in ways that can be made transparent to staff and students. The University is working on an

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[1]   "From Bricks to Clicks: the potential of data and analytics in higher education", Higher Education Commission, January 2016

engagement and communication strategy to explain how individual students are affected by specific applications of Educational Analytics, in order to off-set this complexity.

1.2.3. In order to make the new policy of practical use, staff will need support to facilitate their understanding of how the policy applies in practice. This will be provided separately in the form of guidance notes aimed at different staff roles, providing practical examples of the uses to which data may be put and the ethical considerations. Access to student data is determined by staff permission levels and most staff will have permissions to access a wide range of student data.

1.2.4. This policy does not in itself attempt to define how different categories of staff will engage with data however, informed by the current 2018/19 pilot, a review of existing policy and guidance will be undertaken prior to full implementation.

1.2.5. Educational Analytics can be applied to individual students as well as to defined groups of students (as a result of identifying a student via combinations of characteristics and/or study behaviours), and to whole cohorts of students (as a result of amending the assessment regime on a module following observed behaviours and/or results, for example). The policy and principles created apply in all cases.

1.2.6. The use of student data in new ways will necessarily impact on current practice. As such, a number of existing policies relating and referring to potential uses of student data require review, informed by the current 2018/19 pilot – e.g. the University's Personal Tutoring policy and other items noted below.

1.2.7. This Policy is informed by ongoing consultation with the sector including JISC, a review of existing policies and practice in other higher education institutions and existing literature on the subject.

1.2.8. The success of any Educational Analytics approach is dependent on a reasonably complete and up to date dataset. As is already the case, the responsibility is on the student to ensure that their data reflects their current circumstances. Guidance relating to this is provided in the student handbook. The university maintains a responsibility to ensure that data is recorded accurately.

1.2.9. Any use made by the University of data regarding individual students must be compliant with the General Data Protection Regulation. More specifically, data must be handled (processed) in accordance with the data protection principles. In order to assure best practice and to reduce the risk of non-compliance with the General Data Protection Regulation, a Data Processing Impact Assessment has been conducted. Should any risks be identified the resulting actions required to eliminate or mitigate these risks will be recorded with the University's Information and Records Manager

1.3. Definitions

1.3.1. The following definitions are intended to provide clarity about terms used throughout this Policy and the scope of Educational Analytics at Northumbria.

- Learning/ Learner analytics has been defined as the collection and analysis of data generated during the student journey and learning process which is then utilised by the University (potentially via a third party contractor) to improve the quality of learning and teaching (see 1.3.3 Existing Relationships with External Suppliers)

- Student refers to individuals enrolled to study on a module or qualification at Northumbria. This does not include enquirers or informal learners.
- Cohort is used to describe a set of students linked by one or more characteristics such as studying on a common programme or at a common location
- Intervention is any action taken based on the outcomes or information derived from an Educational Analytics approach. This may refer to information, advice or guidance directed from University staff to one or more students in class or tutorials. Educational Analytics at a module or qualification level may be used to inform changes to teaching and learning design.
- Data used for Educational Analytics typically falls into one of two categories: the data captured at registration or at later points as a result of the student supplying information to the University (typically labelled as Student characteristic data), and that derived from ways in which the student engages with University systems as a result of their ongoing study (typically summarised as Student engagement data). Access to this data is governed by existing policies such as the Student and Applicant Privacy Notice.
- Special category data: The General Data Protection Regulation defines Special category data and generally requires an individual's permission to collect and use Special category data for a specified purpose. Special category data is not used for Educational Analytics at Northumbria.
- Consent: In the context of this policy, informed consent refers to the process whereby the student is made aware of the purposes to which some or all of their data may be used for Educational Analytics and provides consent. Informed consent applies at the point of enrolment at the beginning of the programme and year of study. In the initial pilot phase of Educational Analytics this will be restricted to a specific pilot population in September 2018. This policy will be updated post pilot to reflect wider application. Requests to students to participate in any educational research will follow existing university practices including the Fair Processing Notice.

1.3.2. The following existing University policies, which consider the use and storage of student data, may require review and amendment in light of the development of this policy:
- o Data Protection: Policy
- o Data Protection: Guidance for Staff (see Internal web pages)
- o Student and Applicant Privacy Notice.

1.3.3. The University currently has a relationship with an external supplier who, within the scope of this policy, will be given access to data in order to perform Educational Analytics services. This organisation is:

Civitas Learning International

WeWork – Finsbury Pavement

131 Finsbury Pavement – 02-114

London EC2A 1NT

2. Scope

2.1. Northumbria University's approach to the utilisation of Educational Analytics is directly linked to the University Strategy – see 1.1.2.

2.2. In the future, the use of Educational Analytics may be extended to personalised learning paths, adaptive learning, personalised feedback, visualisations of study journey, intelligent e- tutoring, intelligent peer support, etc. Furthermore, new technological innovations might allow for more targeted, measured approaches.

2.3. The following data, which is currently captured by the University, is initially in scope for Educational Analytics:

- personal information provided by the student at registration, but excluding Special Category data
- student level study records held by the University including assessment marks
- details of a student's assigned Personal Tutor
- system-generated data from Blackboard, such as the date and frequency of accessing pages
- student attendance data
- library borrowing logs
- smart card activity log on Campus
- Northumbria gym membership

This data will be used in line with the University's Student and Applicant Privacy Notice.

2.4. All other data points and sources are currently out of scope, which includes Special Category Information – including ethnicity and disability. In future, as the University develops Educational Analytics, it is envisaged that the scope of data included may widen and therefore this policy should be updated to reflect the inclusion of new data sources.

2.5. Informed by the pilot, a set of guidance notes will be produced for students, Associate Lecturers and other staff setting out the purpose and boundaries of the University's Educational Analytics approach. These guidance notes may be updated as the scope changes in the future. The notes will include, where feasible, examples of ethical and unethical practice in order to make the principles on which the policy is built more meaningful. The guidance notes will be used as part of planned communications to stakeholder groups.

2.6. Applications to use student data for the purposes of research will need to be made in accordance with the standard processes in place currently, (refer to the Student and Applicant Privacy Notice . Bodies considering applications for research using Educational Analytics should assess if the projects comply with this policy. The bodies, within the remit of their own terms of reference, may approve research proposals that test the boundaries of this policy. If the outcomes of that research may then be applied to operationally targeting individuals or groups of students, further alignment with this policy will be required.

3. Policy statement

3.1. This policy clarifies how Northumbria University will use student data in an ethical way in order to shape the student support provided. This document and any subsequently produced guidelines are not regulatory in nature but are intended to inform and guide the ethical use of student data.

3.2. The policy is based around eight "Principles for Use of Student Data" – these are adopted from a sector best practice model, the Open University's Policy on Educational Analytics;

- Principle 1: Educational Analytics is an ethical practice that should align with core organisational principles, such as pastoral and academic support for all students

- Principle 2: Northumbria has a responsibility to all stakeholders to explore insightful relationships in student data for the benefit of students where feasible.

- Principle 3: Students should not be wholly defined by their visible data or the outcomes of any Educational Analytics modelling nor by staff interpretation of the data. The role of Educational Analytics is to inform not to instruct.

- Principle 4: The purpose and the boundaries regarding the use of Educational Analytics should be well defined and visible to all stakeholders.

- Principle 5: The University is transparent regarding data collection, and will provide students with the opportunity to update their own data and consent agreements at regular intervals.

- Principle 6: Students should be engaged as active agents in the implementation of Educational Analytics (e.g. informed consent, personalised learning paths, interventions).

- Principle 7: Modelling and interventions based on analysis of data should be sound and free from bias.

- Principle 8: Adoption of Educational Analytics within Northumbria requires broad acceptance of the values and benefits into the organisational culture. This may require the development of appropriate skills across the organisation in order to be achieved.

Each of the above principles is linked to particular aspects of Educational Analytics.

3.3. Principles 1 and 2 bind together the responsibility that Northumbria has to improve the student journey with the accountability we have to comply with ethical and safe standards of practice. These principles align Educational Analytics to Northumbria's Core values such that:

3.3.1. Principle 1 enables us to understand how core institutional values can combine with ethical considerations to enable more effective use of data about individual students and their interactions with the University. Northumbria University is committed to raising educational aspirations and recruiting high quality students, regardless of background, through a fair and transparent admissions process. This ensures a vibrant and diverse student community. Educational Analytics provides Northumbria with the ability to understand and respond in a more targeted way to diverse student needs based on the data we collect as a part of our interaction with the student.

3.3.2. Principle 2 outlines that the University should

- adopt a responsible approach to using Educational Analytics by interpreting data derived from Educational Analytics in accordance with principles for ethical practice. At the same time, the University has a commitment to enhance the chances of student success and, further, to proactively support particular cohorts in line with broader strategic values and the approach taken should complement that.

- ensure that students have the information, advice, guidance and support needed to make appropriate choices and to complete their study successfully. In addition, the University has a defined approach to providing support for particular groups in line with agreed Office for Students arrangements. Educational Analytics offers the potential to enable more effective support of these groups of students

- act on data which indicates that there is potential for action to be taken which might better support students in achieving their study goals or in reaching their potential. For example, if there is evidence that a student is not engaging with essential learning activities, we should consider making an appropriate intervention. This should also represent effective use of resources: it is likely that the Educational Analytics pilot will identify many more potentially helpful interventions than can be reasonably resourced. In the context of resource available to deliver student support, priorities will need to be established. For both points is important to develop a strategy for interventions and ensure this is in line with the policy for personal tutoring. The strategy for interventions will set out the required confidence level of the models for interventions to take place. This is to reduce the risk of causing a negative, damaging or distressing impact on the student experience and also to prioritise resource.

3.4. Principles 3 and 4 provide the rationale for the investment in Educational Analytics as one of many means of providing effective and targeted student support. Northumbria has analysed data for many years in order to improve pedagogic practice whilst recognising that students are more than data or information, they are real and diverse individuals. The University places importance on driving the appropriate student support such that:

3.4.1. Principle 3 recognises that

- analysis based on the characteristics of individual students at the start of their study must not be used to limit the University's or the students' expectations of what they can achieve at the end of it

- Educational Analytics will generate data and insights which enable us to provide targeted and specific support to student groups with shared characteristics and/or behaviours.

- the system is limited to using historic data to predict what might happen in the future

- in its calculation of statistical error rates, it is accepted that there will always be individuals whose behaviours do not follow statistical patterns.

- caution needs to be exercised in the interpretation of data for a variety of reasons and guidance provided to staff will aim to support this. For example, individual members of staff may not have access to the full data set that is available to the University and may have an incomplete view of the student and their experience.

- there is a necessity to protect students from stereotyping. Data only forms part of the decision-making process. The university supports a process which

centres on staff applying local knowledge before staging any intervention with a student

the primary purpose of Northumbria's Educational Analytics project is to support students in achieving their study goals

3.4.2. Principle 4 outlines the need for a transparent approach to the primary purpose of Educational Analytics activity which is to

- improve the likelihood that a student will achieve his or her stated learning outcomes.

- identify ways of effectively supporting students to achieve their declared study goals using aspects of a student's record and engagement data and matching this to services to more closely meet student needs

- support the further development of our curriculum, policies and business processes including the delivery of Information, Advice and Guidance services to enquirers and students

3.5. Principles 5 and 6 reflect the shared responsibility of both the student and the University for student learning including the communication with students regarding their data

3.5.1. Principle 5 makes clear to students and staff that

- accurate and representative student data should not be the sole responsibility of the University. Students also have a duty to accurately maintain their personal data and to inform the University of any changes which might impact on their studies. The University must provide students with the opportunity to periodically update their records.

- the university has the responsibility to provide a clear plan to communicate with students about our approach to Educational Analytics:

  o in order that students understand our approach and feel reassured that data is used responsibly where we can share our interpretation of data with students we will do so unless there are good pedagogical reasons to do otherwise. It may, for instance, become good practice to highlight for students those avoidable factors such as late registration which analytics identify as increasing the likelihood that a student will fail to complete a module to support students in making informed decisions about their studies

  o to reassure that this is about enhancing support services in order to improve qualification completion which will benefit all students of the University

- data may not be reliable, nor reflect a student's current status, if it is not up to date.

- Students must have opportunities to check and update their personal data, including their consent to its use, at clearly defined intervals.

- In line with GDPR regulations the University has the right to undertake analytics on student data but a student must opt in to receive tailored support arising from that analysis.

3.5.2. Principle 6 reinforces the role of students in effective Educational Analytics by highlighting that

- students should be actively involved in helping the University to design and shape interventions that will support them.

- it is essential to engage students with the development of our approach to Educational Analytics, because this is likely to enable us to:
- ensure that students understand their responsibility for keeping personal information up to date and can give informed consent
- achieve a more accurate interpretation of data relating to student behaviours
- improve our understanding of what forms of intervention and support are most appropriate
- know how to communicate with students in general and individually about our approach
- understand how to tailor a student's learning journey to meet their needs, potentially as a personalised learning path
- produce outcomes that students will find useful and be able to respond positively to; this might include a decision to continue or discontinue with their studies.

3.6. Principles 7 and 8 ensure that student characteristic and engagement data is used wisely. This means that any interpretation or manipulation of data to extract meaning is based on sound technique which is subject to expert peer review and, if necessary, through advice and mentoring by those more experienced in techniques of quantitative data analysis. The principles address this by aiming to use the most appropriate models and by ensuring that members of staff using the data or information are best placed to do so, either via training and/or guidance documentation.

3.6.1. Principle 7 identifies the need for

- A set of best practise principles to be established for the development, maintenance, interpretation and review of the statistical models used for Educational Analytics to enable periodic internal audits.
- All information collected by the University is potentially available for the purposes of Educational Analytics, providing its use is consistent with these principles. Information selected for use in Educational Analytics should demonstrate its value in delivering the agreed outcomes. Analytical models should aim to be transparent, such that their method of working can be described to staff and students, they are based on standard statistical techniques, and they can be tested and audited to provide assurances that they use data which meet quality criteria, correctly apply that data and produce results that reach an agreed level of accuracy.

3.6.2. Principle 8 ensures that the university is committed to delivering

- Regular communications to staff which will ensure that they understand the approach to Educational Analytics; the underlying values linked to the University's mission and strategy; the anticipated benefits for students; the limitations of data and its interpretation; and guidelines for ethical practice.
- The necessary training and skills to make use of the data. Staff and student knowledge must be further developed as appropriate to their role. Some groups will need a higher level of technical expertise; others will need more focus on interpretative skills; and all staff will need some basic awareness and understanding of ethical considerations.

4. Implementation, Schedule and Review

4.1. The final timeline for implementation is dependent on ensuring that key stakeholders are informed of the need to ensure appropriate use of student data. A communications strategy has been developed which considers each of the key stakeholder groups, focusing on specific needs and responsibilities.

4.2. In addition to the creation of new policy, a number of systems changes are likely to be recommended. These are not within the scope of the policy per se, but have emerged as a result of consultation. It is hoped that any systems changes will be relatively minor and should not prevent the adoption of the new policy.

4.3. This policy informs the pilot Educational Analytics project in 2018/19. The policy is subject to annual review and a revised policy will be available for 2018/19, incorporating feedback obtained during the pilot..

4.4. The senior owner of this policy is the project sponsor for Educational Analytics. The policy owner is responsible for ensuring that the policy is up to date with current legislation and adhered to in light of any changes to scope.

5. Feedback on this Policy

Any data protection concerns can be raised with the University's Data Protection Officer: dp.officer@northumbria.ac.uk or call +44 (0)191 243 7357

Any other feedback or concerns can be raised with the Educational Analytics Project Manager: carly.foster@northumbria.ac.uk or call +44 (0191) 227 4252.