Learning Analytics: Student Perception across Scottish Higher Education Institutions

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Niklas Bals, Robert Gordon University
Laura Bryce, University of Stirling
Diego Rates, University of Edinburgh
Jason Sell, University of St Andrews

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Executive summary

The Scottish higher education sector is working its current Enhancement Theme around the use of evidence by institutions for the enhancement of the student experience. One area of special interest is learning analytics - using students' digital data to improve their learning. In this context, a critical matter which remains unexplored are the views, expectations and concerns, which students from Scottish institutions have about how their institutions may use and police their data. The results discussed in this report are derived from a series of student-led focus groups with a range of undergraduate and postgraduate students. This report provides an initial synthesis of how student perspectives from different Scottish institutions report an overall positive stance towards learning analytics but reflect upon ethical issues, which may go along with the implementation of advanced analysis of their data. Some of the findings in this report allude to:

- the expectation of learning analytics providing reflective tools to improve student performance through a hybrid of personalised, automated feedback and individual face-to-face support
- the suggestion of using past student cohort experiences to develop and enhance current/future student experiences; and to provide staff accountability
- the desire for learning analytics to identify and support academically-struggling students and mitigate the risk of them dropping out
- learning analytics being desired to advance institutions' performance with regard to student wellbeing and their professional development
- a need for transparent use of learning analytics and continuous conversation with the student body about the regulation and expectation of how learning analytics is used to enhance student experiences
- the growing student concern of the misuse of student data to support other agendas - other than the sole purpose of enhancing the student experience
- the probable disapproval of learning analytics if used unethically from the student's perspective.

This report is expected to allow the relevant stakeholders from universities and sector agencies to access a first reference of the views of students about the topic at a national level. While it is expected to allow Scottish universities to be better positioned to build sector-wide agreements (standards/foundation) about the best ways to use students' data to improve their learning and experience in the future, the report suggests additional research with additional universities to further validate this first representation of the student voice.

1   Introduction

The Quality Assurance Agency Scotland (QAA) oversees the quality and enhancement activities for Scottish higher education institutions (HEIs). Part of their activity is an Enhancement Theme, a project with a specific theme in which all Scottish (HEIs) participate, to improve strategy, policy and practice in that area. The current Enhancement Theme - Evidence for Enhancement: Improving Student Experience - is a three-year theme which began in September 2017. An aspect of the Theme is the collaborative clusters, in which a number of institutions explore a common interest, which fits within the overall Theme. As such, 13 HEIs declared an interest in exploring learning analytics, led by the University of Strathclyde. After a successful funding bid with QAA in year 1 for exploratory workshops to shape and define sector needs in this area, funding was awarded in year 2, again by QAA, to pursue this project - to conduct a series of sector-wide student focus groups to explore student perceptions of learning analytics.

Learning analytics refers to the measurement, collection, analysis, and reporting of data about students and their academic environment. In other words, it refers to the use of digital data to enhance student learning. The usage of data must be particularly promising in predicting and identifying trends in learning; however, as this report will demonstrate, there also represents a degree of sensitivity regarding how this data is collected and used.

This report documents the investigation into students' perceptions of potential adoption of learning analytics within Scottish HEIs, as it pertains to their overall student experience. This represents a critical area because students' views, expectations and concerns about the collection and reporting of data is an unexplored and understudied area. Therefore, the aim of this report is to provide a student voice from a cross-institutional perspective that can better inform decision-making across the higher education sector.

This report is the product of multiple focus groups conducted across six Scottish HEIs, by four student interns based at Robert Gordon University, University of Stirling, University of Edinburgh and University of St Andrews. This work supplements the pre-existing literature on learning analytics by providing a bottom-up analysis from the perspective of the students regarding the implementation and policing of learning analytics. This empirical work can be used as a foundation for institutions to base their implementation of learning analytics within their institutional framework. In particular, it alludes to specific themes/focus areas where faculty and administration should be ethically cautious and devote close attention to the human subjects involved.

2   Methods

In order to gather the views of students across Scottish HEIs on the use of their data in a learning analytics system, this study conducted focus groups with students from several institutions and completed a cross-institutional analysis of the students' responses. The participant institutions, data collection, and analysis procedures are described in the following sub-sections.

Participants

For this study, the student interns contacted 15 HEIs, of which five facilitated the recruitment of students for the focus groups: Robert Gordon University; Edinburgh Napier University; University of St Andrews; University of Stirling; and the University of Edinburgh. 29 students from across these institutions participated in the focus groups. The participants were a mix of undergraduate and postgraduate students, and they varied in age and background.

Additionally, the University of Aberdeen provided the results obtained in a similar study it had conducted recently within its own institution. There were nine institutions which were contacted but did not participate. Of these, five institutions declined to help recruit students, mainly due to the difficult time of the year to recruit students, as it was during the examination period. Four institutions did not reply to our contact.

Procedure

This study was designed and conducted by four student interns, studying across various programmes and study levels. A review of similar studies such as the SHEILA Project, which investigated stakeholders' views and concerns about learning analytics, was used to inform and define specific topics of interest for this study. Focus groups were identified as the best data collection method to gather the opinions and views of students on these topics. One common protocol was designed so all focus groups, delivered in different institutions, by different student intern facilitators, would cover the same topics of interest and allow a cross-institution analysis. The analysis of the focus groups' data was done collaboratively by the students working on the project and identified the common responses and themes, which appeared across institutions. Results of this analysis are presented in the next sections.

3   Findings

From the analysis of the data derived from the focus groups, several key themes were identified as being of particular interest as they were recurring throughout the focus group sessions and were highlighted across several institutions. The topics which emerged from the data were as follows:

- the purpose of learning analytics' data collection and the potential benefits to students
- students' awareness of, and consent to, the collection of their learning analytics data
- the format and structure of the feedback provided by institutions to their students
- the ethical considerations and potential risks associated with the collection of learning analytics data.

Below are the aggregated findings of these discussions, reflecting the general student voice within the focus groups.

Purpose and perceived benefits

This subsection of the report summarises the focus group discussions regarding the purpose of data collection and perceived benefits of learning analytics in Scotland's higher education sector.

Regarding the purpose and use of learning analytics' data for academic improvements, the student voice was clear that they would like to see the most use to mitigate circumstances in which students are 'at-risk' of failing, or when their academic performance is highlighted as problematic. Two reasons were indicative of the students' appreciation of potential learning analytics implementation. The first is that the students would like to see an overview of their academic results or performance in an '*easy to understand*' and '*intuitive manner*', which gives clear instructions on how to improve their work. The second is that the students would like to see learning analytics used to identify and support academically-struggling students. The participants also voiced concerns about the potential misuse of data to penalise and discriminate.

Almost all participants in the focus groups noted that the purpose of the data collection for non-academic purposes needed to be made clear. The students highlighted the topic of wellbeing as an important theme.

Students highlighted wellbeing as a commonly agreed upon theme where learning analytics could prove beneficial. Yet, there was great concern about the potential outsourcing of data to third-party agencies. In other words, students want their institution to be open and transparent about the purpose and usefulness of their data. They were vocal that this data should be used to enhance the student experience and provide professional development opportunities, but any usage beyond these motives suggests a breach of confidentiality. Students from multiple organisations suggested this may provide alternative uses for the professional development of students alongside the pure academic improvement. One student argued that: *'[personalised information could open] a lot of roads: [he] would like to receive recommendations [on] specialisations in my programme [that one] can major in. Another example would be to supplement [his] decision on a dissertation topic.'*

The students were excited about the potential benefits learning analytics can bring. They welcomed being able to view their academic path in an intuitive way with recommendations made for improving their overall performance. Furthermore, specific and automated feedback on academic work they handed in was mentioned to be a major reason they would agree to the use of learning analytics. It would also improve the turnaround time for coursework grading. Alongside this the students also mentioned that an indicative and

comprehensive layout of past student experiences in a subject/ module/ course could help the current students improve their performance as well. This may include an automated supplementary reading list created through past student's library checkouts/searches or even an improved way for the teacher to see what information or resource helped the students succeed by correlating a common online activity to successful grades. It was mentioned that while the use of data via an online database system may help remove the stigma of asking instructors for help, it could also serve as a tool for staff accountability, as inconsistent grading may become more obvious.

The topic of learning analytics was appreciated overall as a tool for improving their academic and personal experiences throughout their studies. The students see many benefits in the use of learning analytics and were excited to see future implementation - as long as the institutions engage in a transparent conversation with the students and gain their consent to the use of learning analytics. The notion of consent is discussed further in the following section.

Awareness and consent

This subsection focuses on the data collection methods employed by various institutions, and highlights the fact that students feel a general lack of awareness regarding (a) what data is being collected, and (b) the purpose behind collecting certain types of data. Most importantly, students were vocal that institutions frequently overlook the notion of clear and informed consent with regard to the collection and usage of their data. Almost all participants in our analysis suggested that institutions should implement an 'opt-in/opt-out' system that fully informs students of the methods and purpose behind the collection of data.

Students alluded frequently to the sensitivity of using data for non-academic purposes, such as the monitoring of student health, with a focus on mental health. While they noted that this can be useful, students were adamant about the importance of obtaining explicit consent and clearly informing students that their data was being collected. One participant stated that: *'other than academic data, pretty much everything else should be out-of-bounds'*. In fact, most students supported the notion that data collection regarding students' private/extra-curricular life is a delicate matter. As one student noted: *'this is where we should work more to define the boundaries'*. Institutions may not be able to offer complete opt-in/opt-out preferences because there might be a necessity to gather data to coordinate activities, services, or other legal requirements. When data collection is necessary, a transparent approach to educating about the need for data collection will be required. In the focus groups, it became obvious that not every student knew their current rights, and that there is data that institutions must collect for specific purposes, such as statutory data returns to the Higher Education Statistics Agency, for which they cannot opt-out. Therefore, institutions could use this opportunity to inform the student about their personal privacy rights.

At the same time, the use of data to enhance overall student wellbeing, beyond academics, was deemed a useful tactic. While it is also certainly a sensitive area, some students suggested that the use of health-related data was a meaningful way of ensuring student wellbeing. One student stated: *'when student services contacted me, this was the only time I thought the University was actually doing something with my data'*. Therefore, the use of this type of data monitoring can be regarded as having both negative and positive aspects, and warrants more attention at an institutional level.

Overall, almost every student agreed that there exists unclear intentionality regarding data collection at the institutional level. This is especially pertinent in the area of informed consent: students unanimously agreed that there needs to be a higher degree of attention dedicated to this matter. Students reiterated that institutions should be both informative and

transparent with regard to the collection of data. Current methods suggest a subtle breach of confidentiality and nuanced coercion. Consequently, implementing a system of informed consent (opt-in/opt-out) should be of the utmost importance to institutions.

Feedback: format and structure

The following section will focus upon the students' perspectives regarding the way in which they would like to receive feedback on their learning through the analysis of their learning analytics' data. It was deemed necessary to discuss students' preferences in receiving feedback, as it was clear from prior research that feedback mechanisms regarding learning and academic performance was a priority for students. However, through the focus groups, it became apparent that a clear preference in feedback format remains ambiguous.

The following question was asked in order to obtain the student perspective on this: *'How would you like to see feedback from the analysis of your data - for example, peer comparison, automated system, in person?'* The prompts were provided for this question in order to spark conversation.

Across all participants and institutions, it was clear that students were not in favour of peer-to-peer comparison. Most participants stated that they could envisage self-comparison with others causing feelings of embarrassment, stress and reduced confidence, potentially leading to a further decrease in performance. Several participants, who reported having stronger academic performances than their peers, were more open towards the concept of peer-to-peer comparison as they were less likely to feel embarrassed by their performance when compared to others. This discussion highlighted the importance of discussing students' concerns regarding feedback mechanisms. From these findings, institutions, which engage in transparent conversation about the topic of feedback mechanisms, may find improved student engagement in learning analytics.

Whether students would prefer face-to-face or automated feedback remains unclear from the data gathered as there was a mixed response. Those who stated they would prefer feedback to be communicated face-to-face gave reasons such as that this approach would prevent any negative feedback being received as 'cold' and impersonal. One participant commented: *'I would prefer if [the feedback] came from a teaching team, if it would be an automated email, I would consider it useless and would not check it'.*

When discussing the preference of face-to-face feedback, it was raised frequently across all institutions that face-to-face feedback could allow causal factors of poor performance to be adequately addressed, while allowing staff to be alerted to any issues surrounding potential extenuating circumstances. This method would also allow the students to be pointed towards student support services should it be required.

Those reporting a preference for automated feedback tended to be those who reported stronger academic performances as they were confident a face-to-face approach was not necessary. Those who would prefer automated feedback reasoned that arranging an appropriate time for face-to-face feedback, which suited both the student and the staff member, may be problematic because it can be too time consuming and also impractical for those with other, external commitments such as part-time employment or childcare. Regarding the difference in the appreciation of automated feedback, one student mentioned: *'Just an email would be fine for me. Speaking for myself personally, when I get feedback it is good, but I don't go into it too much. Just a look at what I did well and what I can improve is enough. Then I can move on to looking at what I need to do next'.*

Others, preferring automated feedback, stated that they may feel 'interrogated' by staff if their performance proves to be below average. In those cases, receiving face-to-face

feedback may lead to them feeling 'forced' to discuss reasons for this with staff, which they may not feel comfortable in doing.

Some of the suggestions put forth by the participants, stated that they would find numerical data, for example, in the form of average grades from previous cohorts, useful as it would allow them to put their own feedback/results into perspective. Additionally, some participants reported that they would prefer a combination of both automated feedback - for example, through email - and an additional option to arrange a face-to-face meeting should the student deem it necessary. This was highlighted by most students as a preference. They would not feel obliged to meet a staff member but would still have the option of being welcome to attend to face-to-face meetings, which would stifle potential anxiety around this.

Ethics and risks

One aspect that this study attempted to explore initially was students' views about ethical, or even legal, concerns related to the use of learning analytics. Although these issues permeate through the study's findings, this section provides a synthesis of what students discussed and points out ethical concerns and potential risks that must be considered when implementing learning analytics.

Students perceived potential ethical and legal issues related to institutions' use of students' data to improve learning: *'I don't have any in my head, but I'm sure there [are]'.* The first topic discussed regarded the collection of different types of data. There is non-academic data, which is sensitive and necessitates special care and transparency in handling such as students' health records, information about disabilities, ethnic background, religion and, amongst others, political positions. While some of this data is protected by existing regulations - and therefore, institutions cannot use it without explicit informed consent - students argued that, if it were used, it should still be handled with special care, and only when there is a clear benefit for the student. The second issue was about the purpose - data should only be used when the benefits outweigh any potential negative impacts for students. Both issues, types and purposes of data, were linked by students to different risks related to misuse of the data, which are described next.

Students expressed that, even with the best intentions, using students' data can carry risks, and, therefore, should be mitigated. Some students pointed out the potential for discrimination based on staff's 'personal bias': *'[it's] hard to make sure that they are not discriminating, don't judging people straight away'.* Students also pointed to risks related to unnecessary intrusion into personal information regarding an *'invasion of privacy'.* Additionally, students discussed the risk of failure interpreting the data: *'People don't have time [to] familiarise [themselves] with data, so [people] could get wrong remarks [from data]'.* Finally, students noted that there are risks related to sharing students' data with other third parties: *'data has monetary value, there should be red lines. That University [may] share [the data] for educational purposes, but not to sell it to other [third parties]'.* Mitigating the mentioned and other risks is vital to students. Therefore, some students proposed the necessity for guidelines or policies: *'It will be very difficult that everyone agrees, but we need something'.* Furthermore, students pointed to the need of these guidelines and regulations to be accessible and clear: *'[guidelines or policies] that you understand them, you know the extent of the data they would have'.* And finally, some students explained that these guidelines or policies would provide them with adequate reassurances: *'[With guidelines or policies], I would feel more safe [sic.]'.*

4   Conclusions

Limitations and recommendations

It is important to consider that the findings of this study are subject to a number of limitations. First, due to the complexity of a cross-institutional project, the recruitment of participants coincided with the student's examination period, considerably decreasing the number of institutions which were willing to participate. Secondly, related to the first point, although this study gathered views of students from several Scottish institutions, it did not cover all institutions. There was no great variation observed between student opinions from different HEIs.

While participants were representative of the general student body, as undergraduates and postgraduates were part of the focus groups, the number of participants from each institution represent only a small fraction of their student body and so cannot be seen as wholly representative. Therefore, the findings from this study cannot be simply generalised to the voice of students from Scottish institutions, but must be considered as an initial reference, which should be used to drive further research and validation about students' views.

It is hoped that this report can provide a foundation for future research and an initial insight into the student voice for the Scottish higher education sector regarding both the policing and practical use of learning analytics. In the research conducted with the five institutions - the University of Edinburgh, Edinburgh Napier University, University of St Andrews, Robert Gordon University, and the University of Stirling - and with the recognition of the existing research from University of Aberdeen, the final condensed appreciation of student insight gathered with the focus groups aims to shed light on the student perspectives regarding learning analytics, ready to be shared with the sector. Though it lacks the broad spectrum of participation of other Scottish institutions, which was aimed for at the beginning of the project, it is hoped that this data can contribute to a growing body of work in this area. A summary list of the main points found in the study are as follows:

- The expectation of learning analytics providing reflective tools to improve students' performance through a hybrid of personalised, automated feedback and individual face-to-face support.

- The suggestion of using past student cohort experiences to develop and enhance current/future student experiences; and to provide staff accountability.

- The desire for learning analytics to identify and support academically-struggling students and mitigate the risk of them dropping out.

- Learning analytics being desired to help advance institutions' performance with regard to student wellbeing and students' professional development.

- A need for transparent use of learning analytics and continuous conversation with the student body about the regulation and expectation of how learning analytics are used to enhance student experiences.

- The growing student concern of the misuse of student data to support other agendas - other than the sole purpose of enhancing the student experience.

- The probable disapproval of learning analytics if used unethically from the student's perspective.

The report discusses the data gathered from students and reflects the generally positive stance of students in the Scottish institutions towards the practical use of learning analytics. However, the consideration and mitigation of ethical and legal risks involved in the use of learning analytics is vitally important for students. While some sub-themes of the four main topics were heavily discussed in the focus groups and deserve more recognition and research in future projects, for example, the policing of consent and feedback mechanisms, students appreciated the effort to improve their learning experience and look forward to a more elaborate explanation and implementation of learning analytics in their institutions, given that the policy framework is adequate.

Future implications

With the students appreciating the idea of learning analytics and the potential improvements deriving from it, the institutions seeking to implement it need to ensure the transparency of what they are doing and what they hope to achieve in doing so. Almost all focus group participants agreed that some form of comprehensive but straightforward opt-in/opt-out mechanism needed to be established for them to accept the implementation of learning analytics. Therefore, adequate, transparent and simple policing is vital to the agreement of students to learning analytics.

As throughout all institutions, the barriers to private or sensitive data, and the sharing of it, were a delicate subject; the ethical boundaries of gathering, analysing and sharing of certain types of data deserve more research.

Appendix

Focus Group questions

Intro questions

1   Are you aware that your university potentially has the ability to collect and analyse data about your actions in various learning environments (for example, virtual learning environments, lecture attendance, library accesses)?

2   In your opinion, are there any types of data that the university should **not** collect?

3   Is there clear information available to you on the *purposes* of collecting your data?

Purpose

4   What ways do you see yourself benefitting from personalised data about your own learning?

5   If data about your learning was available, how would you use it (for example, academically/personally)?

6   How would you like to see feedback from the analysis of your data?

    a   peer comparison
    b   automated system
    c   in person
    d   other

7   Here are some examples of ways the university could use your background and educational data to support your learning. Which of these uses of your data would you prefer?

    a   to improve your relationships with teaching staff or tutors
    b   to improve your overall learning experience and wellbeing
    c   to identify weaknesses in your learning and suggest ways to improve upon this
    d   to alert teaching staff early if you are at risk of failing a module or if you could improve your learning
    e   to identify the optimum pathway through your studies
    f   to present you with a complete profile of your learning in each and every module

8   How should academic staff approach the analysis of your data (for example, anonymous data, individual feedback)?

Ethics

9   Do you consider there to be any ethical or legal issues concerning the use of data about your learning? (if so, *why*?)

10   Do you think the university should allow you to opt-out of data collection at any time?