



What data is available to institutions?

1. Introduction

This section gives an oversight of many of the data sources that are available for use in an LA strategy by institutions. It is a detailed but not exhaustive list as virtually any means by which students interact with their institution can provide invaluable insights.

Please note that it is the institution's responsibility to ensure that any such use of personal data is done in strict accordance with the requirements of the GDPR

2. What makes a 'good' data source?

There are a number of considerations that should be taken into account when selecting a data source. These include:

- **GDPR compliance**

It is critical that any data used is done so in compliance with the GDPR. The entire process by which data is used for Learning Analytics must be done so in accordance with the law. There may also be specific GDPR considerations about the data that is used. For example:

- Use of personal data must be transparent, so only data sources that have been identified to students as being in use for this purpose are eligible
- The data used must be relevant, meaning we cannot use data that is additional to the specific needs of the project

There are also many other conditions that must be met. HEIs must, therefore, include their DPO in any discussions about data use for learning analytics.

- **Operational suitability**

Learning Analytics is often characterized by its use as a dynamic, up-to-date tool. Data sources must be operationally compatible with the aims of the project. Data must be up-to-date, as dynamic as required, accessible and readily available.

- **Data Quality**

Only data that is complete and accurate will be capable of generating meaningful models or actionable information.

- **Compatibility with institutional ethos**

Institutions may resist using certain types of data because they are incompatible with the HEIs value. For example:

- There are some institutions that do not want to use attendance data because they believe that its use as a measure of engagement may clash with their explicit mission to develop autonomous, independent learners
- Some institutions will eschew the use of demographic data such as gender and socio-



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economic group in order to avoid any risk of pigeon-holing students or reinforcing stereotypes

- Although prior attainment data such as Leaving Cert results can be a very strong predictor of future performance, some institutions may not wish to use this data as it predates the institution's relationship with the student. Such institutions may have an ethos that asserts that the actions or behaviours of students prior to enrolment may not be reflective of their current or future commitments.

- **Possible Negative Perceptions**

As privacy is such a prevalent concern, some institutions may wish to avoid using certain types of data for fear that they may be perceived by students and staff as excessively surveillant or invasive. Obtaining attendance information from interactions between on-campus wifi and student devices is an example of such a data source. Institutions that use such data are strongly advised to maximise their efforts to ensure that students are aware that it is being done and that its use is strictly beneficent.

3. Layout

Individual data items are divided by their data source, so all of the data items from the VLE are together, all of the data items from the Student Information System are together and so on. The table also shows which of the questions below the data items can be used to explore. It functions as a guide rather than a rigid set of rules as the combinations of data-items and LA questions they can address are almost limitless.

- i. **At-Risk Students (AR)**

Data items with this flag may be useable to predictively identify students that may be at risk of underperforming and/or prematurely withdrawing from their studies, so that preventative supports can be put in place. The predictive identification would be done by searching for patterns in the data of previous students whose outcomes are known to identify data relationships that may be applicable to current students.

- ii. **Learning Design (LD)**

Data items with this flag can be used to provide instructors with a better understanding of their students' learning behaviours. This understanding can inform effective module learning design and enable the identification of learning resources that are compatible with students' needs.

- iii. **Student Engagement (SE)**

These data items can be used to identify students whose activity suggests that they are less engaged than their peers. Identifying such students early in the semester can enable the provision of targeted supports that can help to motivate students to re-engage.

- iv. **Student Welfare (SW)**

Low engagement or sudden changes in behaviour may be an indicator that students are struggling with non-academic challenges such as medical, social, financial or personal factors. Data items with this flag may assist student support staff in identify students that may be in



need of additional, specialised supports.

4. Virtual Learning Environment (VLE)

Data item	Description	AR	LD	SE	SW
Student hits	Count of student interactions with VLE	✓		✓	✓
Peer average hits	Average VLE interactions among students' peer groups	✓		✓	✓
Timing of activity	At what point students avail of the various learning resources in the VLE	✓	✓	✓	✓
Duration of activity	How long students spend using each VLE learning resource	✓	✓	✓	
Type of activity	Which learning resource(s) students use	✓	✓	✓	
Assignment Submissions	Identifies whether students have met their required submission deadlines	✓	✓	✓	✓
Discussion groups	How active students are in online discussion groups	✓	✓	✓	✓
Assignment/ CA grades	Students' grades for 'for-credit' assignments	✓	✓	✓	✓
Online test grades	Students' engagement with and grades in formative, 'not-for-credit' assignment	✓	✓	✓	✓

5. Student Information System (SIS)

Data item	Description	AR	LD	SE	SW
Peer group data	Identifying students' peer groups (such as Programme, major, year, status) to enable comparisons	✓		✓	
Demographic data	Demographic factors such as gender, age, nationality etc	✓			
Registration/ Workload	Students' module registrations and total workload (ie how many credits they are taking)	✓	✓		✓



Data item	Description	AR	LD	SE	SW
Fee compliance	Identifies whether students have met their minimum fee requirements	✓		✓	✓
Grades	Identifies how students are performing	✓	✓	✓	✓
Entry points	Students' incoming CAO points	✓			
Leaving cert subjects/grades	Identifies which subjects students studied for Leaving Cert and their performance in them	✓	✓		
CAO Preferences	Identifies how high the student's current programme was on their CAO application.	✓			✓
Student logins	How active students have been in their online record management for aspects such as registration and fee payment	✓		✓	✓
Online activity	Which aspects of their record students have managed online	✓		✓	
Length of commute	By using students term address/eircode, it is possible to estimate the length of their commute to/from the institution	✓			✓
Family support	Identifies whether students are living at home or in rented accommodation	✓			✓

6. Timetabling System

Data item	Description	AR	LD	SE	SW
Anticipated Schedule & Location	These two flags show where a student is expected to be during class times.	✓	✓	✓	✓

7. Swipe Card Logs (for enabling building access)

Data item	Description	AR	LD	SE	SW
Existence of records	Identifies that students were on campus	✓	✓	✓	✓



Data item	Description	AR	LD	SE	SW
Deviation from schedule	Identifies students' location at a given time (eg library, gym etc) when they have a scheduled event (eg lecture) in their timetable	✓	✓	✓	✓
Use of learning resources (eg library)	Use of swipe cards to access library etc	✓	✓	✓	✓
Use of campus resources	Use of swipe cards for non-academic campus facilities such as gym, student centre	✓	✓	✓	✓

8. Swipe Card Logs (for enabling on-campus purchases)

Data item	Description	AR	LD	SE	SW
Presence on campus	Identifies that students were on campus through identification of purchases made using an institutional swipe card	✓		✓	✓
Location/ Timing of purchases	Identifies students' location at a given time (eg shop, gym etc)	✓		✓	✓
Use of learning resources (eg printing)	Use of swipe cards to use printers, photocopiers etc	✓	✓	✓	✓
Co-academic behaviour	Use of swipe cards for non-academic campus facilities such as gym, student bar, coffee shops	✓		✓	✓

9. Library System

Data item	Description	AR	LD	SE	SW
Borrowings/ Borrowing history	Which books etc students have borrowed.		✓	✓	
Searches	Identifies the search patterns of logged-in students		✓		



Data item	Description	AR	LD	SE	SW
Group study bookings	Reservation of private study space for collaborative projects or study groups		✓	✓	
Equipment borrowing/hire	Borrowing of communal equipment/ resources		✓		
Librarian consultation	Have students scheduled and/or attended 1-to-1 or group librarian consultations to improve their research skills or information literacy	✓	✓	✓	✓
Library guides	Curated resources provided by librarians to support their subject areas or associated faculty		✓		

10. Attendance System

Data item	Description	AR	LD	SE	SW
Presence/Absence	Identifies, in conjunction with timetable, whether students attended their lectures/tutorials/labs etc	✓	✓	✓	✓

11. Wifi logs

Data item	Description	AR	LD	SE	SW
Presence on campus	By reviewing wifi logs, it is possible to identify the approximate location of students with smart devices while they are on the campus	✓	✓	✓	✓
Deviation from schedule	Identifies students' location at a given time (eg library, gym etc)	✓	✓	✓	✓
Identification of peer groups	Identifies student groups by identifying smart devices within a proximity outside formal gatherings (eg lectures)	✓		✓	✓
Socialisation/membership of institutional community	Use of wifi logs as above to identify students without an apparent social network within the institution	✓			✓



12. Self-declared data (eg Student surveys)

Data item	Description	AR	LD	SE	SW
Psychometric factors	Application of tests for personality, motivation & learning strategies	✓	✓	✓	✓
Socio-economic group	Surveying incoming students on socio-economic group	✓			✓
Goal-setting	Surveying incoming students on their goals for their time in Higher Education	✓			✓
Family HE history	Using surveys to identify students who are first-in-their-family higher education entrants	✓			✓
Satisfaction surveys	Satisfaction surveys administered to students at key points in their Higher Education lifespan	✓	✓	✓	✓

13. Customer Relationship Management system (CRM)

Data item	Description	AR	LD	SE	SW
Interactions with academic staff	CRM software can be used to track student interactions with academic staff	✓	✓	✓	✓
Interactions with pastoral staff	CRM software can be confidentially used to track student interactions with support staff (eg Student Advisers, Counsellors etc)	✓		✓	✓
Interactions with administrative staff	CRM software can be used to track student interactions with support staff (eg Fees Office, Examinations Office etc)	✓		✓	✓
Issue categories	Broad categories which show the kind of issues students are presenting with	✓	✓		✓
Agreed actions	It would be possible to record actions agreed between a student and an adviser/academic.	✓		✓	✓



14. Other Sources

Data item	Description	AR	LD	SE	SW
Authentication logs, lecture capture, ePortfolios, Office 365, Google Apps, Club/Society membership, School systems (eg ARC, APPEL), GIS/Geospatial data, Network logs	Various logs of student activity	✓	✓	✓	✓