Leiden. 25th - 28th August 2019

Internal Quality Management Systems: 'baby cribs' for learning analytics approaches?

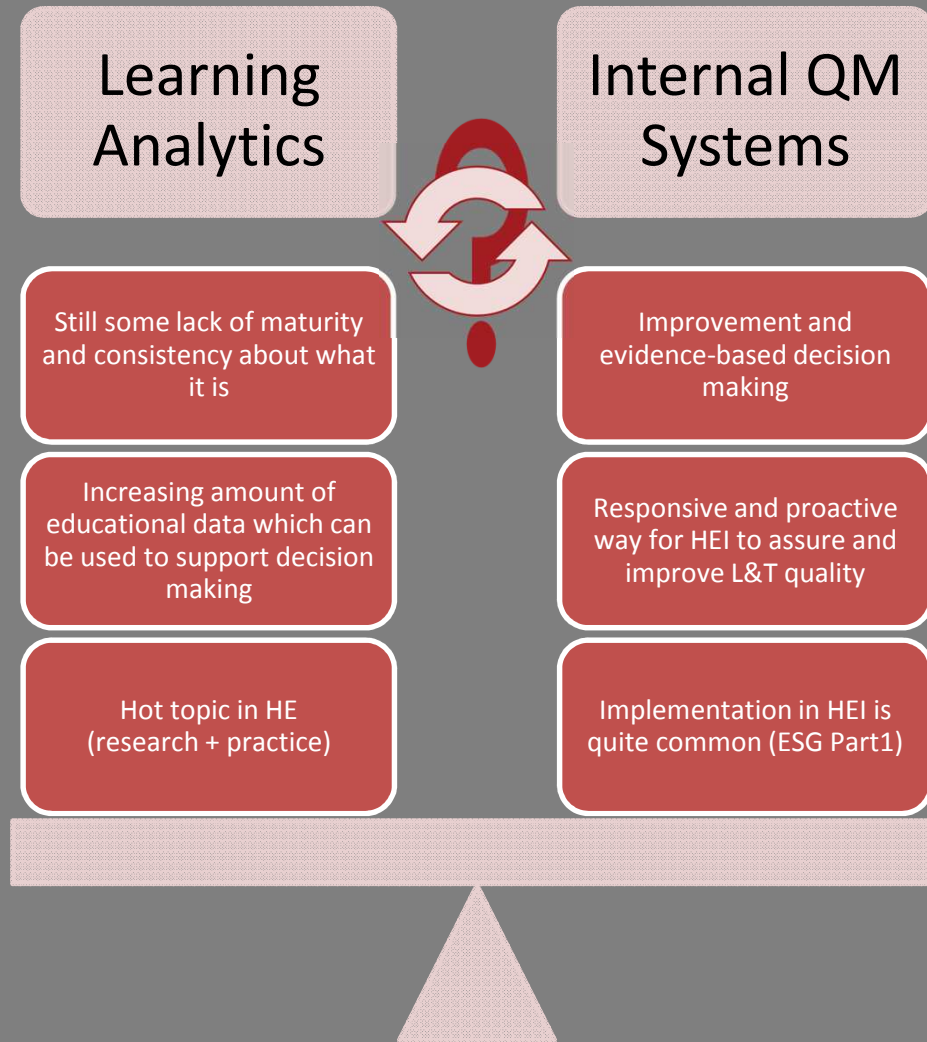**Maria J. Rosa, Sofia Bruckmann, José Alberto Rafael, Daniela Costa**

EAIR 41st Annual Forum
Responsibility of Higher Education Systems: What? Why? How?

Topics to Cover

- **Introduction**

- **Background**

  - **Learning Analytics (LA)**

  - **Internal QM systems and the possible link with LA**

  - **The University of Aveiro (UA) and its internal QM system**

- **Research Methods**

- **Main Results**

- **Concluding Remarks**

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Learning Analytics

Still some lack of maturity and consistency about what it is

Increasing amount of educational data which can be used to support decision making

Hot topic in HE (research + practice)

Internal QM Systems

Improvement and evidence-based decision making

Responsive and proactive way for HEI to assure and improve L&T quality

Implementation in HEI is quite common (ESG Part1)

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?

- **How far are LA and QM systems related?**

- **How far do they contribute to each other's development?**

- **Can QM systems act as 'baby cribs' for LA?**

Assumptions:
- ✓ Both approaches can be seen as mechanisms for HEI to assume their responsibility for quality
- ✓ Implementing a LA approach implies the establishment of a relationship with existing roles and functions within HEI (Zilvinskis et al., 2017) – QM as one of those functions

The **University of Aveiro** as a case study

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Background:
Learning Analytics (LA)

➢ HE students "are leaving data footprint behind in their course of study, which tells us about their learning and experiences at university". It is then up to the universities to develop adequate approaches "to understand how students learn and optimise the student experience at the university. This is called Learning Analytics" (HEC, 2016: ii)

➢ "the process of using living data collected to predict student success, promote intervention or support based on those predictions, and monitor the influence of that action." (Zilvinskis et al., 2017: 10)

➢ "measuring and understanding learner's performance on an individual basis and how it impacts on the institute's overall conduct" (Daniel, 2017; Romero and Ventura, 2010)

➢ **"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" (HEC, 2016)**

DATA (Zilvinskis et al., 2017; HEC, 2016)

TRADITIONAL (e.g. students' records, answers to different types of surveys, staff data, financial data or estates data)

From **TRANSACTIONAL SYSTEMS** (e.g. learning management systems, online course platforms, social networks, e-books or online journals downloads or log-ins to the virtual learning environments)

- But… **data in itself is not decision making**.

- So, and despite **technology** being a **key factor in LA**, **human factors** are still **paramount** to its successful implementation and long-term use.

Collection of students' data

Brings ethical and legal issues – consent, data protection and confidentiality. Any LA approach needs to be well organised, legally transparent and respect ethical standards

The **Delicate Checklist** (Drachsler and Greller, 2016)

D – **Determination** – Why you want to apply learning analytics?

E – **Explain** – Be open about your intentions and objectives

L – **Legitimate** – Why you are allowed to have data?

I – **Involve** – Involve all stakeholders and the data subjects

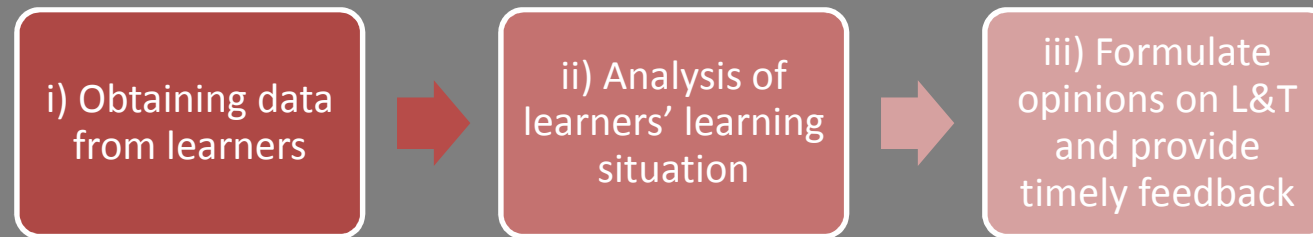C – **Consent** – Make a contract with the data subjects

A – **Anonymise** – Make the individual not retrievable

T – **Technical** – Procedures to guarantee privacy

E – **External** – If you work with external providers

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Background:
Learning Analytics (LA)

The three steps of a LA approach (Pinantoan, 2013)

i) Obtaining data from learners ➡ ii) Analysis of learners' learning situation ➡ iii) Formulate opinions on L&T and provide timely feedback

LA contributes to adjust teaching methodologies and course contents

Different uses of LA (Mustafina et al., 2018):

✓ **Descriptive** approach
  ✓ data is used to understand past or current events and support decision making

✓ **Prognostic** approach
  ✓ uses historical data and constructs models that allow to predict future outcomes (very often students in risk of failing)

✓ **Prescriptive** approach
  ✓ students are provided with information about resources and/or activities that most likely will help them improving learning effectiveness

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LA can be used by **different actors** and contribute to achieve **different purposes**

(Mustafina et al., 2018):

➢ allow teachers identifying what resources their students use and how active they are

➢ helping students to conduct self-assessment exercises of how much they have learned

➢ give teachers and students real time information, so they can act timely

➢ help design better curricula for courses and study programmes

➢ identify patterns of learning activity that potentiate academic performance

➢ identify students that have changed their learning process, allowing the identification of possible causes for that and providing targeted support

But LA is just a tool for answering questions and providing information on learners and their learning process!! A "broader, more effective and action-oriented methodology" is needed to really improve L&T!

➢ External and internal QA mechanisms have been implemented in European HE since the mid-80s

➢ Internal QM systems are becoming a reality in HEIs – under the assumption that the responsibility for quality assurance ultimately lies with institutions

➢ ESG Part1 – set of guidelines of internal QM systems. But other guidelines can be used by institutions in line with their goals and mission

➢ Why do HEIs decide to implement an internal QM system?

   ➢ Accountability vs Improvement

   ➢ Answer to external QA systems and as a way to internally assure and improve their own quality as organisations and that of their processes

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Some issues on QM systems...

➢ One strong motivation for implementing a QM system is L&T quality enhancement

➢ QM systems implementation relies in the principle of "evidence-based decision making (ISO 9001:2015) + "information management" standard (ESG Part1)

➢ QM systems call for all stakeholders' involvement, with a special relevance for teachers and students

LA is about:

✓ Enhancing L&T

✓ Collecting and analysing data about learners and their contexts with the goal of optimising the learning process

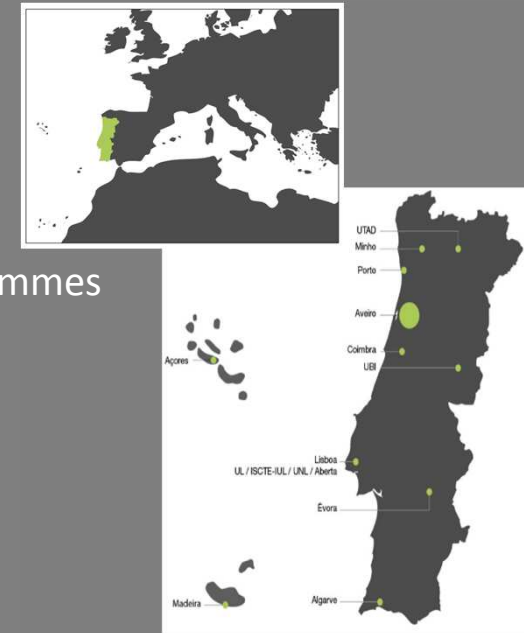✓ To be effective it needs to rely on people's engagement, since only people can take decisions

So they are intertwined and may tend to support each other!!!

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SIGQ_UA – the UA internal QM system (certified in 2017)

- set of processes that guarantee the quality of the activity in the institution's mission areas
- processes organised in three levels: strategic; core and support
- L&T is the most well-developed area

A set of interrelated mechanism assure the quality of L&T

- ✓ procedures for creating, monitoring and reviewing study cycles
- ✓ internal QA subsystems for the courses; study cycles and doctoral programmes
- ✓ the platforms ACMP, Data Portal and PACO
- ✓ the Tutoring Programme and the FICA
- ✓ teaching support mechanisms

The UA Performance Data Management Model for L&T

co-operation

promotion of science

creativity on an amazing campus

booming internationalisation

inter-disciplinary instruction

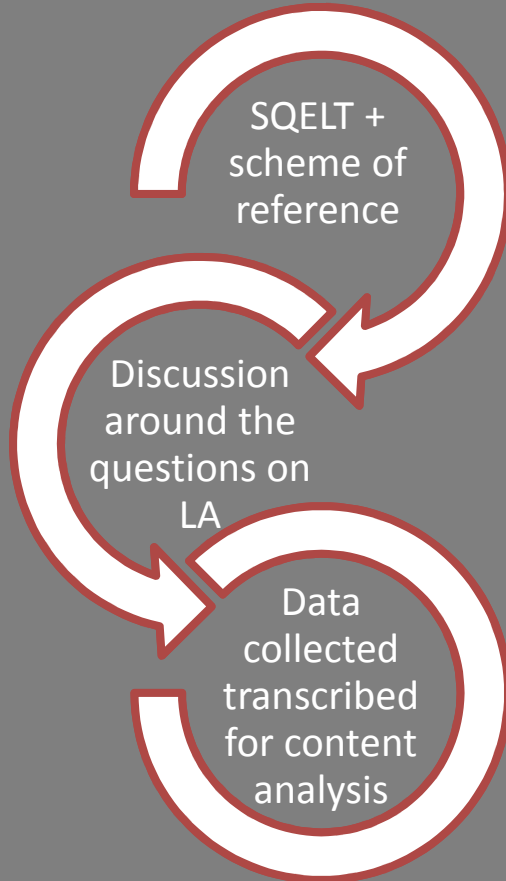a vast network

a research university

Empirical data collected through **focus groups** conducted at the UA, under the scope of the **SQELT Project** – *Sustainable Quality Enhancement in Higher Education Learning and Teaching. Integrative Core Dataset and Performance Data Analytics*.

One of the project's research questions relates to how **different groups of internal stakeholders** perceive the **way LA is put into practice at the institutions**, including LA functions and a preliminary SWOT analysis for LA

5 different focus groups: teaching staff; students; QM staff; leadership; SEE members (from different study cycles, subsystems and scientific areas)

SQELT + scheme of reference

Discussion around the questions on LA

Data collected transcribed for content analysis

Interview Guideline

i. Is LA put into practice in UA? If yes, which are the functions of LA performed in the university?

ii. In which ways could the different actors participate in the development of LA at UA?

iii. Is there an ethical framework or policy for LA at the university? (e.g.: data privacy, reliability and control)?

iv. Which are the strengths, weaknesses, opportunities and threats of the UA LA approach?
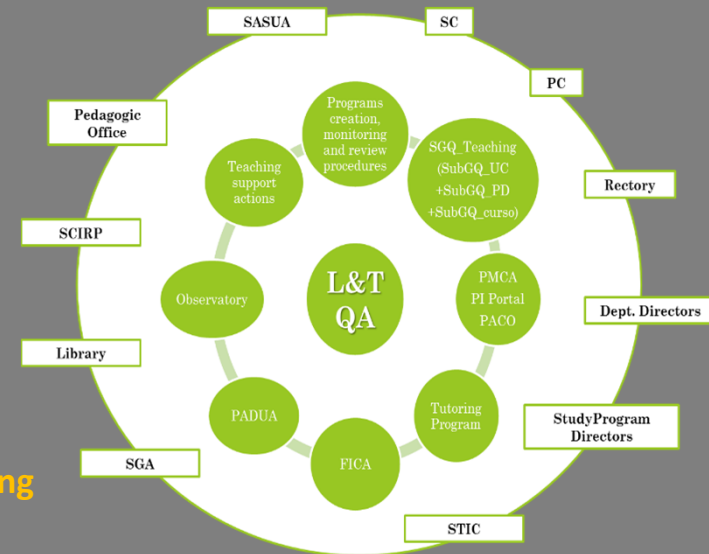
"The measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs" (HEC, 2016)

LA exists at UA... to a certain extent!

FG participants identified a **set of existent mechanisms and structures** that allow **collecting and analysing data** about learners and their contexts with the goal of improving L&T

SubGQ_UC is the **most referred mechanism** (pedagogic surveys; study cycles' commissions): collection of data on L&T to support concrete pedagogical decisions about courses, teachers and study cycles, the quality improvement of courses and the verification of study workload

FICA and **Tutoring Programme** are other mechanisms existent at the UA considered to be part of its LA approach – they help to support the study of learning-related emotions

Every **continuous assessment moment** and the **grades** students obtain along their path are also LA approaches

Relation of proximity between teachers and students: supports the study of learning-related emotions and the identification of learning failures in study and of learning deficits in learning and environment support for students

LA exists at UA... to a certain extent!

Significant **amount of information** is collected, treated, analysed and used at institutional level (for strategy and management), which is **in line with a LA approach**

But, there are also **some weaknesses in the actual LA approach**:

- - actors do not always act in a responsible way (do not perform their roles)
- - actors need to go beyond monitoring and actually take action
- - lack of integration of platforms, processes and data: work overload
- - access to data is only available to a small number of people
- - some data is missing but there is also some degree of information overload
- - students' focus should be complemented with teachers' focus
- - not all stakeholders are aware of the L&T LA functioning
- - the complete student lifecycle should be considered
- - not enough feedback on the LA mechanisms to students and teachers
- - not much data is collected on students' soft skills or on data/indicators that can be used to explain students' performance
- - the human factor is essential: ultimately data has to be analysed by people!

Actors need to appropriate the internal benefits of LA

Actors see LA mechanisms as ways to feed external demands for compliance (accreditation)

Monitoring consequences are not yet a reality and depend very much on each particular actor

Leadership sees as its role to motivate all university's actors to actively participate in the existing L&T quality monitoring and improvement mechanisms

L&T quality pivots should be identified in all departments and given responsibility to engage their colleagues

The few vital key indicators of L&T quality should be identified, making the LA approach as simple and effective as possible

Special attention should be given to the profiles of the study cycle and department directors since their roles are paramount for an effective LA approach

The informal component should not be forgotten: the proximity between all actors

UA has the necessary ethical framework for a LA approach

Concerns exist with privacy and anonymity regarding data collection and analysis

Regulation exist that enforce UA ethical policies and allow for transparency and dissemination of information; there is an Ethics Council

UA has a responsible person in charge of data protection for the whole institution and data protection pivots in each department – national legislation on personal data protection

Access controls for each stakeholder exist and are considered adequate by FG participants

Students do not feel as abusive or intrusive the data the university now collects about them but, refer that only treated and aggregated data on students should be available to support L&T improvement mechanisms

A LA SWOT analysis for the UA

Strengths

Relevant LA processes are in place and allow identifying students' academic path, helping to prevent failures

All existent L&T quality monitoring mechanisms are useful to support and legitimise decision-making

The SubGQ_UC allows to establish profiles of courses and teachers

The actors' role when holding decision making responsibilities

Weaknesses

Students' participation is still rather low and they do not fully experience the practical consequences of LA

Deficient perception of the relevance of data collection and analysis for managing the university

Deficit of integration of information and data platforms and processes into the actual L&T work processes

Still difficult to implement a fully-fledged LA approach: not enough data collected regarding students emotional dimensions nor graduates' success

Just collecting data and information per se is not enough for improvement to happen

Opportunities

Communication to students and teachers about LA importance and its results should be emphasized

Performance deficits and best practices can be used as inputs for self-improvement

Existent mechanisms in the university to monitor L&T are an opportunity for its quality improvement

LA provides the possibility of knowing in real time the student's academic path, being able to positively constrain their future path in order to promote academic success

Threats

Great amount of data collected on all university actors might be too intrusive, although perceived as very useful in many ways

Excessive control of the life and academic path of each individual student might be possibly unethical

When data says "we are good", the risk is that we stop trying to get better

Danger of overemphasising data and information and take them as the only measure of L&T quality

Danger to resort to the data and information which are easier to collect and analyse, irrespective of its relevance

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LA is put into practice in UA to a certain extent

There are a **series of mechanisms at UA that allow the measurement, collection, analysis and reporting of data** about learners and their contexts, **leading to concrete actions and decision making**.

The LA approach is **still too much focused on traditional data** and does not fully include the prediction of students' success based on their characteristics or pass history. Almost no fluid data is used.

The UA LA approach is **still in its first phase** and **very much intertwined with university's QM** approach.

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QM systems
- Reality in European HE systems
- Responsible ways for HEIs to act regarding L&T quality assurance and improvement

QM System
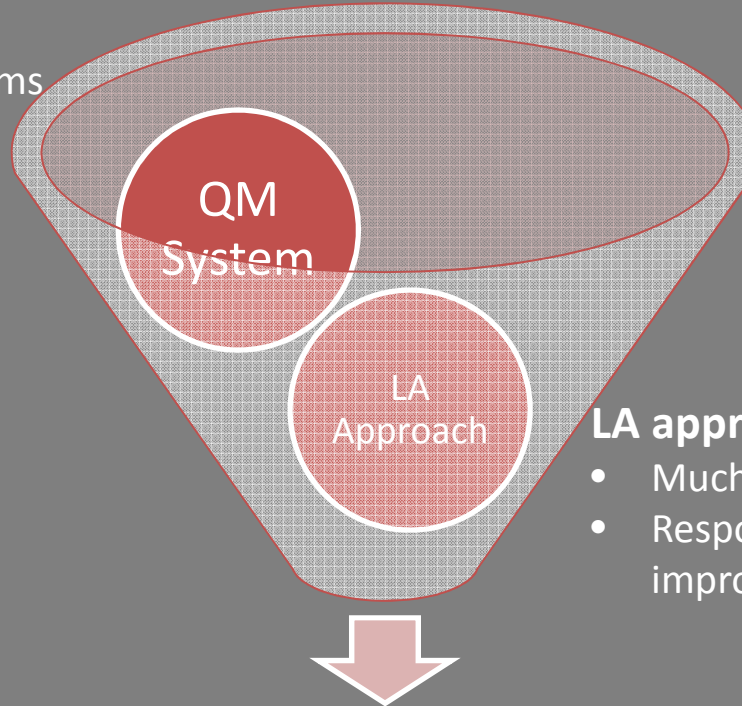
LA Approach

LA approach
- Much less widespread in Europe
- Responsible way for HEIs to improve students' success

'Baby Crib'?

- The UA case shows that the institutions' QM systems can lead to the implementation or further development of LA approaches
- But LA can also be a relevant contributor since students' success prediction can lead to the development of L&T innovative approaches

Thank You!

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