



SQELT PROJECT

SUSTAINABLE QUALITY ENHANCEMENT IN HIGHER EDUCATION LEARNING AND TEACHING. Integrative Core Dataset and Performance Data Analytics



Co-funded by the
Erasmus+ Programme
of the European Union

Key Action: **Cooperation for innovation and the exchange of good practices**
Action Type: **Strategic Partnerships for higher education**

Partners: evaluation Agency Baden-Wuerttemberg, UNIVERSIDADE DE AVEIRO, BIRMINGHAM CITY UNIVERSITY, UNIVERSITEIT GENT, UNIWERSYTET JAGIELLONSKI, UNIVERSITÄT FÜR WEITERBILDUNG KREMS, UNIVERSITEIT LEIDEN, UNIVERSITÀ DEGLI STUDI DI MILANO, UNIVERSITETET I OSLO, Centro de Investigação de Políticas do Ensino Superior

<https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/b8a93e06-2000-4a82-9fac-90b3bcacadec>

<https://www.evalag.de/en/research/sqelt/the-project/>

Intellectual Output 3:

Baseline Report on Project Partner HEIs' Performance Data Management Models

The Case of the University of Aveiro (UA)

Maria João Rosa

José Alberto Rafael

Sofia Serrano Bruckmann

26th of February, 2019

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Table of contents

List of acronyms	3
Executive summary	4
Introduction	6
Sample, time schedule and data types of the baseline case study	8
Stakeholders' assessment of core data, performance indicators and quality evaluation instruments	12
Core data	12
Stakeholders' assessment.....	12
Additional assessments by active SQELT project participants	15
Performance indicators	19
Stakeholders' assessment.....	19
Additional assessments by active SQELT project participants	22
Quality evaluation instruments	28
Stakeholders' assessment.....	28
Additional assessments by active SQELT project participants	30
Stakeholders' assessment of Learning Analytics	32
Students' assessment.....	33
Teachers' assessment.....	35
Quality management staff's assessment	36
Science and Engineering Education (SEE) group members' assessment.....	38
Leadership's assessment.....	40
Active SQELT project participants' assessment.....	44
Conclusions and recommendations	47
Conclusions	47
Recommendations	48
References.....	50

List of acronyms

CC – Scientific Council

CD – Core Data

FICA – Integrated program for the reception, guidance, and monitoring of students and support for teachers

HEI – Higher education Institution

L&T – Learning and Teaching

LA – Learning Analytics

PACO – Online Academic Portal

PADUA – Teaching Staff Evaluation Platform

PC – Pedagogical Council

PDRLA – Personalized Data Required for Learning Analytics

PI – Performance Indicator

PMCA – Academic Cycle Monitoring Programme

QA – Quality Assurance

QEI – Quality Evaluation Instrument

QM – Quality Management

SCIRP – Communication, Image, and Public Relations Services

SGA – Academic Management Services

SGQ_Teaching – Teaching Quality Assurance System

SIUA – University of Aveiro Information System

STIC – Information and Communication Technologies Services

SubGQ_Curso – Study Cycles Quality Assurance Subsystem

SubGQ_PD – Doctoral Programmes Quality Assurance Subsystem

SubGQ_UC – Course Unit Quality Assurance Subsystem

TBDE – To Be Determined by Evaluation

Executive summary

The present report intends to contribute to Output 3 - “Baseline Report on Project Partners HEIs’ Performance Data Management Models” - of the SQELT project, by focusing on the answer to two main questions: 1) At present, how does a set of UA stakeholders assess a list of possible core data (CD), performance indicators (PI) and quality evaluation instruments (QEI), regarding their usefulness and degree of collection for learning and teaching (L&T) quality monitoring and improvement at the university? 2) How do different groups of stakeholders perceive the way Learning Analytics (LA) is put into practice at the UA?

The construction of the UA baseline case study started with the selection of the sample of respondents. Initially four focus groups (FG) were defined, each one corresponding to a different type of stakeholders. For each group, the respondents’ selection took into account the need to have a balance between stakeholders from different study cycles (1st, 2nd and 3rd), different sub-systems (university and polytechnic) and different scientific areas (engineering, exact sciences, humanities and social sciences). A fifth focus group emerged at this point and resulted from the willingness to participate expressed by a group of teaching staff. This group has been specifically working on engineering education improvement at the university – the Science and Engineering Education (SEE) group.

Focus groups were used to discuss a set of open questions regarding the extent to which LA is put into practice at the university. Participants were further asked to individually answer a structured questionnaire, rating a list of CD, PIs and QEIs regarding their usefulness and degree of collection at the UA. Twenty-three completed questionnaires have been received; the data collected was treated applying descriptive statistics appropriate for ordinal data: frequencies distribution plus means and modes calculation.

The following conclusions can be drawn from the study. All stakeholders’ groups consider that LA is put into practice at the university to a certain extent. They were also able to identify a series of already existing mechanisms and structures that allow a LA approach – most of them directly connected to UA’s internal QA system. Furthermore, they stressed that data and information on L&T is collected, treated and analysed and leads to concrete actions and decision-making. Nevertheless, the

UA still needs to deepen its capacity of “optimising learning and the environment in which it occurs”. A LA approach, capable of effectively contributing to L&T quality improvement, has to be built with people; and people need to clearly understand their role and act with responsibility and in a proactive manner.

Overall the answers obtained to the questionnaire’s closed questions showed that all CD, PIs and QEIs were considered to be indispensable or at least useful by the majority of the stakeholders. Regarding their degree of collection, the panorama is rather positive for CD, where from the 25 listed items only 5 are not collected (despite being considered as useful). On the contrary, for the PIs and QEIs, a significant number of them was considered as not being collected: 16 out of 31 PIs (5 useful and 11 indispensable) and 9 out of 15 QEIs (8 useful and 1 indispensable). Moreover, it must be noticed that at least for some of the items, the number of answers “Do not know” was quite significant in relation to the stakeholders’ views on the degree of collection by the UA. This result was somehow expected because not all the participants in the baseline study have management positions at the university, and as such are not totally aware of the data and information the university collects, analyses and uses to support decision making.

Based on the baseline study main results, UA’s SQELT team was able to define some recommendations meant to improve a learning analytics approach at the UA. These range from collection of some indicators considered as useful/indispensable and that are presently not collected or at least not collected on a regular basis, to a better and broader dissemination of LA mechanisms to all stakeholders as their involvement is crucial in achieving better learning outcomes through the use of a LA approach.

Introduction

The University of Aveiro was created in 1973, and quickly became one of the most dynamic and innovative universities in Portugal. It is now a public foundation under private law, and continues to develop and implement its mission to provide undergraduate and postgraduate education, to generate research and promote cooperation with society.

The UA is attended by about 15,000 students in undergraduate and postgraduate programs, and has achieved a significant position amongst HEIs in Portugal, being one of the top universities regarding the quality of its infrastructures, the strength of its research and the excellence of its staff.

The UA is a highly regarded institution of research led education, constituted by 16 departments, 19 research units, four polytechnic schools, interface units, and a vocational education network. Its integrated structure permits the articulation and harmonisation of the teaching and research environments, and enables the construction of individual educational paths, from post-secondary technological specialisation programs to doctoral degrees. Teaching activities are developed in a research-based environment, and throughout the academic year, dozens of national and international conferences are organised, generating a dynamic and multicultural atmosphere for students and staff.

The University of Aveiro offers a wide range of degree programs in various areas of knowledge which reflect its multidisciplinary and innovative character and are designed to build student competences in scientific and technical areas that meet the emerging needs of business, industry and society. The University's degree programs are delivered in an atmosphere of research, precision and quality and are organised in three cycles: the 1st cycle lasts three years and results in a *Licenciatura* degree; the 2nd cycle requires two years to complete a Master's degree; and the 3rd cycle takes between three and five years to obtain a Doctorate. In the Engineering fields, the UA offers integrated 1st and 2nd cycle programs called Integrated Masters.

Excellence in research is one of the hallmarks of the University: nine of its 19 research units were classified 'excellent' by international panels under the sponsorship of the Portuguese National Science Foundation in its most recent round

of assessments. Research at the UA promotes innovative products and solutions, contributing to the advance of science and technology.

It is a privileged partner for companies and other national and international organisations with which it cooperates on numerous projects and for which it provides important services. As a quality research institution, the University of Aveiro develops solutions and innovative products that contribute to technological, scientific, cultural and social improvement.

The present report intends to contribute to Output O3 (“Baseline Report on Project Partners HEIs’ Performance Data Management Models”) of the SQELT project. We start by presenting the sample, time schedule and data types used for the UA baseline case study. Then, the main results obtained from the university stakeholders’ answers to the *Questionnaires for Stocktaking and Change Analysis of Quality Monitoring in Learning and Teaching and Learning Analytics* (SQELT Output O20) will be presented. These include stakeholders’ assessment of core data (CD), performance indicators (PIs) and quality evaluation instruments (QEIs), as well as their perceptions on learning analytics (LA) and how it is put into practice at the UA. Furthermore, the assessments of these issues by the UA SQELT project participants will also be presented. The report ends with the major conclusions derived from this (primarily exploratory) case study plus some recommendations on how to improve the learning analytics approach actually in place in the institution.

Sample, time schedule and data types of the baseline case study

The construction of the UA baseline case study started with the selection of the sample of respondents. Overall, and under the framework of the SQELT project, the goal was to collect and analyse the perceptions of different types of stakeholders (students; teaching staff; quality management staff; and leadership) on core data, performance indicators and quality evaluation instruments that can be used for quality monitoring and improvement in learning and teaching (L&T) – the structured part of the *questionnaire* developed for data collection. Furthermore, the views of these stakeholders on how learning analytics is put into place at the UA were also envisaged – *questionnaire* open questions.

Initially four focus groups (FGs) were defined, each one corresponding to a different type of stakeholders. For each group, the respondents' selection took into account the need to have a balance between stakeholders from different study cycles (1st, 2nd and 3rd), different sub-systems (university and polytechnic) and different scientific areas (engineering, exact sciences, humanities and social sciences). A fifth focus group was defined afterwards, resulting from the willingness of a group of teaching staff to participate. This group has been specifically working on engineering education improvement at the university – the *Science and Engineering Education* (SEE) group.

After defining the FG composition, an email was sent to the different stakeholders inviting them to participate in the baseline case study (32 people). All but two accepted to participate. Unfortunately, due to agenda issues, among those who accepted there were three that could not be present at the meetings. Therefore, the final sample was constituted by 27 stakeholders (see Table 1).

A doodle was created and sent to each focus group's members who had accepted to participate in the study in order to find a suitable date for a meeting. Additionally, each one of the participants received, prior to the meeting, the *Questionnaire for Stocktaking and Change Analysis of Quality Monitoring in Learning and Teaching and Learning Analytics*, as well as a reference scheme, based on the UA Performance Data Management Model, with the main purpose of helping to frame the FG discussions (Figure 1).

Table 1: Focus groups (FGs) composition (plus time schedule of the meetings held with each one of them)

FG 1 Teaching Staff	FG 2 Students	FG 3 QM Staff	FG 4*** Leadership	FG 5 SEE Members
TS1 (Social Sciences; Univ.) TS2 (Accountancy; Polyt.) TS3 and TS4 (Physics; Univ.) TS5 (Electronics, Telecommunications and Informatics; Univ.)	S1 (University Students' Association; Univ.)* S2 (Student representative at the PC; Univ.) S3 (Student representative at the PC; Univ.) S4 (Student representative at the study program commission; Polyt.)	QMS1 (QM office) QMS2 (Master program director; Univ.) QMS2 (Undergraduate program director; Univ.) QMS3 (Undergraduate program director; Polyt.) QMS4 (PhD program director; Univ.) QMS5 (Integrated Master program director; Univ.)**	L1 (Vice-rector) L2 (Vice-Rector) L3 (Teaching staff representative at the PC) L4 (Department Director; Polyt.) L5 (Department Director; Univ.) L6 (Department Director; Univ.)	SG1; SG2; SG3; SG4; SG5 (SEE; Univ.) SG6 (former member of the rectory)
16th October 2018, 14h30-16h	29th October 2018 16h30-18h	22nd October 2018 14h30-16h	13rd November 2018 16h30-18h + 22nd November 2018 11h30-13h	24th October 2018 11h30-13h

* Could not be present in the FG discussion; sent written answers.

** Could not be present in the FG discussion; was interviewed.

*** This FG was conducted in two sessions due to agenda difficulties.

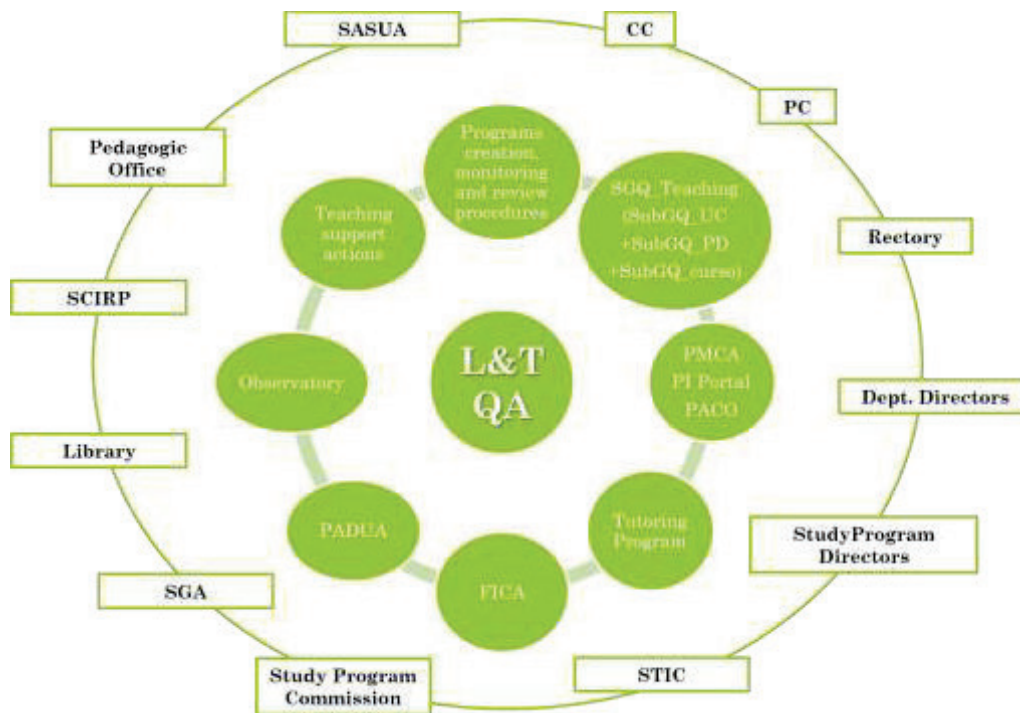


Figure 1: Reference Scheme sent to participants to frame the FG discussions

The focus groups took place according to the planned timetable (Table 1) and were used to discuss the open questions. A brief introduction to the SQELT project was done at the beginning of each meeting, with the purpose of contextualising the discussion. The FG meetings were tape recorded. Data collected was then transcribed for content analysis.

Regarding the structured part of the *questionnaire* (closed questions), participants were asked which of the following features apply to a set of core data, performance indicators and quality evaluation instruments for quality monitoring and improvement in L&T: “3-indispensable”, “2-useful”, “1-useless”, as well as “3-regularly collected in my HEI”, “2-occasionally collected in my HEI” and “1-not collected in my HEI”. Respondents also had the choice of answering “Do not know”. Moreover, respondents had the option of adding other CD, PIs or QEIs; they could also add any comments or make further suggestions.

Participants answered individually and returned the *questionnaires* to the SQELT team. Twenty-three completed questionnaires have been received; the data collected was treated applying descriptive statistics appropriate for ordinal data: frequencies distribution plus means and modes calculation.

Figure 2 presents an overview of the steps followed in the UA baseline case study.

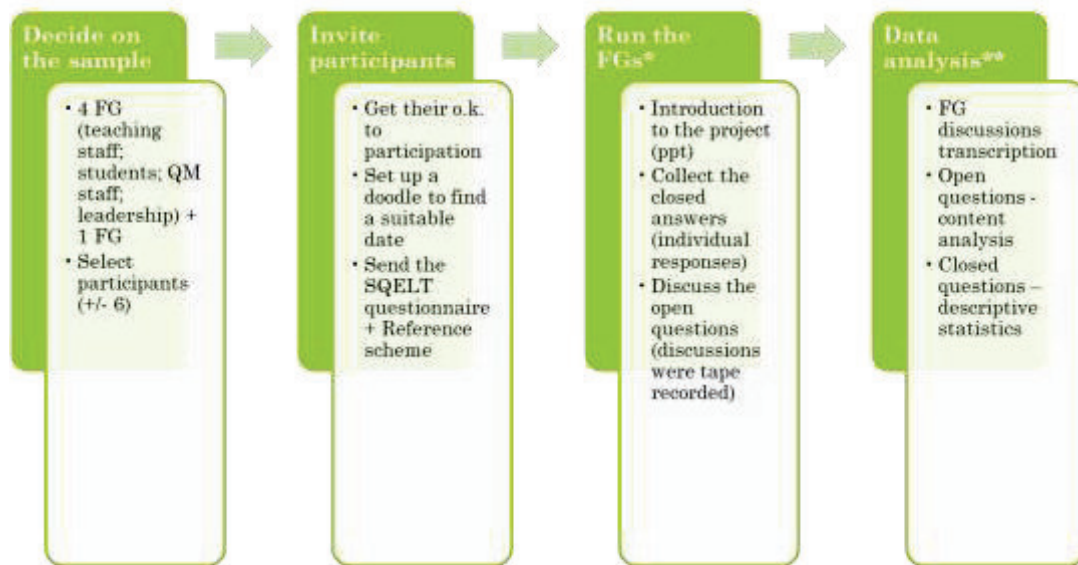


Figure 2: Overview of the steps followed in the UA baseline case study

Stakeholders' assessment of core data, performance indicators and quality evaluation instruments

As previously referred, the approached stakeholders were asked to fill in, individually, the structured part of the *questionnaire*, which is about university's core data and performance indicators that can be collected for quality monitoring and improvement in learning and teaching (L&T) as well as related quality evaluation instruments. More specifically, each respondent was asked to give his/her opinion on the usefulness of the data, indicators and instruments for quality monitoring and improvement of L&T, as well as on their degree of collection in the UA.

The main results obtained from the analysis of the data collected will now be presented. Although the initial idea was to present these results disaggregated by stakeholder's group, the limited number of answers led to the option of presenting only aggregated results.

Core data

Stakeholders' assessment

25 quantitative data ("core data") have been assessed by participants regarding their usefulness and degree of collection in the UA. Medians and modes have been computed for each one of the data under assessment (see Table 2). Furthermore, a matrix was built relating the usefulness of the data with its degree of collection at the university; the 25 quantitative data ("core data") were then classified in each one of the matrix quadrants according to their modes, in order to better understand their relevance for L&T quality monitoring and improvement at UA (Figure 3).

Degree of Collection	Regularly collected - 3	CD2; CD4; CD5; CD11; CD16	CD8; CD9; CD20
	Occasionally collected - 2	CD10; CD12	CD14; CD15; CD17; CD18; CD19; CD21; CD22; CD23; CD24; CD25
	Not collected - 1	CD1; CD3; CD6; CD7; CD13	
	Useless - 1	Useful - 2	Indispensable - 3
	Usefulness		

Figure 3: Classification matrix of the 25 core data (CD) under assessment by the UA stakeholders

The modes calculated allow concluding that all CD were considered to be useful (12 CD) or indispensable (13 CD) for the UA quality performance in L&T. Regarding the use of the CD in the university, it should be noticed that 5 CD were classified as not being collected despite the fact they were considered to be useful for the university quality performance in L&T as assessed by the stakeholders.

It should also be noticed that the number of answers “Do not know” is higher regarding stakeholders’ opinions on the degree of collection of the CD in the university. This result was somehow expected since not all stakeholders hold management positions within the UA and as such their degree of knowledge about data used by the university to support decision making tends to be lower.

Table 2: Surveyed “core data” items

Core data, selection of “the more uncommon or less widespread or novel items” from a more comprehensive set of core data		Usefulness			Degree of Collection		
L&T Environment		Median	Mode	Do not know	Median	Mode	Do not know
Student interactions	CD1: N° & duration of student interactions with student admission system (SAS) (PDRLA)	2	2	0	2	1	10
	CD2: N° & duration of student interactions with student information system (SIS) (PDRLA)	2	2	1	2	3	11
	CD3: N° & duration of student interactions with students (e.g. via the HEI's learning management system - LMS) (PDRLA)	2	2	2	2	1	11
Attraction of master & doctorate students	CD4: N° of master students who graduated at another institution	2	2	1	2	3	6
	CD5: N° of doctorate students who graduated at another institution	2	2	1	2	3	7
Teaching Competences & Processes							
Quality of teaching staff	CD6: N° of teaching staff who participated in formal pedagogical training	2	2	0	1.5	1	5
	CD7: N° of teaching staff who were awarded for their outstanding engagement in teaching based on a merit system	2	2	0	2	1	6
	CD8: N° of refereed publications during a certain period of time [TBD] per full time equivalent members of teaching staff	2.5	3	1	3	3	5
	CD9: N° of papers or reports presented at academic conferences during a certain period of time [TBD] per full time equivalent members of teaching staff	2	3	1	3	3	5
Learning Competences & Processes							
Quality learning & student engagement	CD10: N° & duration of student interactions with course activities (e.g. solution of exercises, watching videos, listening to lecture, participation in working groups, etc.) (e.g. via the HEI's LMS) (PDRLA)	2	2	0	2	2	4
	CD11: N° & duration of student interactions with course contents (e.g. via the HEI's LMS) (PDRLA)	2	2	0	2	3	7
	CD12: N° of repetitive visits to learning contents (e.g. during online learning) (PDRLA)	2	2	0	2	2	6
Learning Outcomes & Learning Gain & their Assessment							
Assessment of learning outcomes	CD13: Percentage of credits given in service-learning activities (e.g. students in community service activities & social work), in relation to total number of credits	2	2	3	1.5	1	9
Contact with work environment	CD14: N° of Bachelor degree theses made in cooperation with industry/external organisations	2,5	3	1	2	2	4
	CD15: N° of Master degree theses made in cooperation with industry/external organisations	3	3	1	2	2	3
Gender balance in the transition from students to doctorate graduates	CD16: Ratio of female to male students who complete a doctorate	2	2	3	3	3	6
Employability	CD17: N° of Bachelor graduates who within a period of time [TBD] after graduation are unemployed	3	3	0	2	2	2
	CD18: N° of Bachelor graduates who found their first job (after graduation) in the region where the HEI is located	3	3	0	2	2	4
	CD19: N° of Bachelor graduates who within a period of time [TBD] after graduation are enrolled in further study	3	3	0	2	2	4
	CD20: N° of Master graduates who within a period of time [TBD] after graduation are unemployed	3	3	1	3	3	4
	CD21: N° of Master graduates who found their first job (after graduation) in the region where the HEI is located	3	3	1	2	2	5
	CD22: N° of Master graduates who within a period of time [TBD] after graduation are enrolled in further study	3	3	1	2	2	5
	CD23: N° of doctorate graduates who within a period of time [TBD] after doctorate are unemployed	3	3	1	2	2	7
	CD24: N° of doctorate graduates who found their first job (after doctorate) in the region where the HEI is located	3	3	1	2	2	7
	CD25: Number of doctorate graduates who within a period of time [TBD] after doctorate are enrolled in further study	3	3	1	2	2	7

Additional assessments by active SQELT project participants

In addition to the items presented in Table 2, the active SQELT project participants were asked for their assessment on further core data, which are depicted in Table 3. Overall, as presented in Figures 4 and 5, the UA SQELT team found most of the “core data” as indispensable (74 CD considered as such, which corresponds to 73% of all CD under analysis); it also considered that the university regularly collects most of the “core data” (78 CD are regularly collected, which corresponds to 76% of all CD under analysis).

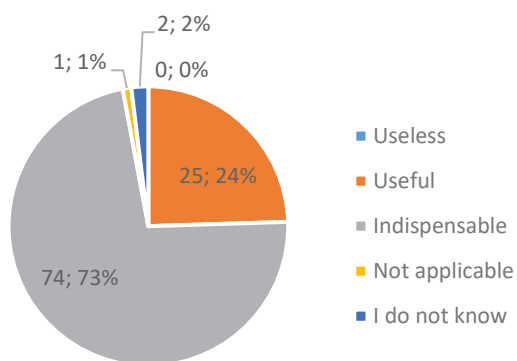


Figure 4: UA SQELT team classification of the further “core data” usefulness

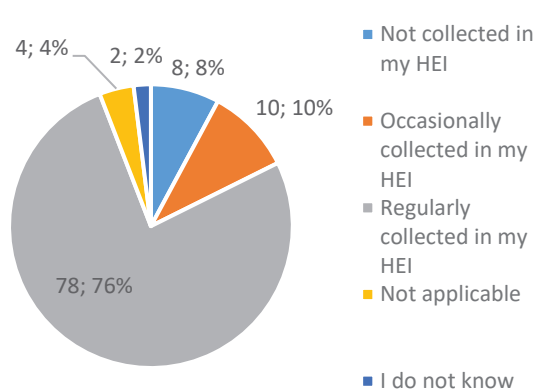


Figure 5: UA SQELT team classification of the further “core data” degree of collection

Table 3: Further surveyed performance data items (“core data”) as assessed by active SQELT project participants (supplementing those in Table 2)

Further surveyed “core data” to build a comprehensive set		Usefulness	Degree of Collection
L&T Environment			
Learning resources	Number of book titles held in library	3	3
	Number of periodical print subscriptions held in library	3	3
	Number of periodical online subscriptions held in library	3	3
	Number of student workplaces held in library	3	3
	Number & duration of student interactions with library	2	Do not know
	Average processing time of a library orders	3	Do not know
Teaching resources	Number of Bachelor programs offered	3	3
	Number of Bachelor programs that are offered in a foreign language	3	3
	Number of joint/dual degree Bachelor programs	3	3
	Number of Master programs offered	3	3
	Number of Master programs that are offered in a foreign language	3	3
	Number of joint/dual degree Master programs	3	3
	Ratio of teaching staff number to student number	3	3
	Number of female teaching staff	3	3
	Number of teaching staff with foreign citizenship	3	3
	Number of teaching staff with verified doctorate qualifications (PhD or equivalent)	3	3
	Number of teaching staff with verified teaching qualifications	3	3
	Number of teaching staff participating in professional development activities	3	2
	Number of broad educational subject fields (ISCED97/2011) in which students have graduated in the latest year (disciplinary diversity)	2	3
	Number of beds available for teaching in university hospital & affiliated hospitals per 100 students (medicine)	3	3
Facilities & equipment	Number of students allowed to enrol in a subject/subject field	3	3
	Total institutional expenditure (per full-time student) on ICT for L&T	2	3
	Accessible internet bandwidth per student user	2	3
	Total institutional expenditure on laboratory resources	2	3
	Ratio of students to administrative staff	2	3
Financial income & investment	Percentage of total institutional expenditure dedicated to L&T activities (core education expenditure)	2	3
	Percentage of total institutional expenditure dedicated to the provision of student services (other than accommodation & student allowance)	2	2
	Percentage of total institutional expenditure dedicated to student accommodation & allowance	2	2
	Amount of third party funding/extra funding income in L&T per student (e.g. funded research projects for the advancement of L&T)	2	Not applicable
Student composition & special support	Number of Bachelor students enrolled	3	3
	Number of Master students enrolled	3	3
	Number of female (& male) Bachelor students enrolled	3	3
	Number of female (& male) Master students enrolled	3	3
	Number of female postgraduate students	3	3
	Number of male postgraduate students	3	3
	Number of full-time students	3	3
	Number of part-time students	3	3
	Number of international students	3	3
	Number of international incoming exchange student	3	3
	Number of international outgoing exchange students	3	3
	Number of students in international joint degree programmes	3	3
Number of students with certain social origins [TBD]	3	3	

Further surveyed “core data” to build a comprehensive set		Usefulness	Degree of Collection
Supportive environment	Number of students who need special access offerings (e.g. because of physical handicaps, dyslexia, autism, visual deficits, ...) (personalized data required for Learning Analytics – PDRLA)	3	3
	Number of students who need support for minorities (PDRLA)	3	3
	Number of students who use official HEI network options that meet their social, cultural, study interests (PDRLA)	2	3
	Number of students who use official HEI network options for linking to community/collaborating with the world of work (e.g. internships) (PDRLA)	2	3
Student interactions	Number & duration of student interactions with student admission system (SAS) (PDRLA)	2	3
	Number & duration of student interactions with student information system (SIS) (PDRLA)	2	3
	Number & duration of student interactions with students (e.g. via the HEI’s learning management system - LMS) (PDRLA)	2	3
Quality of incoming students	Grades of student entrance score/secondary school grades (PDRLA)	3	3
	Grades of university admission tests (PDRLA)	3	3
	Grades of introductory courses/examinations (e.g. in mathematics) (PDRLA)	Not applicable	Not applicable
Attraction of master & doctorate students	Number of master students who graduated at another institution	2	2
	Number of doctorate students who graduated at another institution	2	2
Teaching Competences & Processes			
Quality of teaching staff	Number of teaching staff who participated in formal pedagogical training	3	2
	Number of teaching staff who participated in support activities for their adaptation of technology-enhanced L&T	3	2
	Number of teaching staff who participated in peer support systems for teaching staff/teaching observation	2	Not applicable
	Number of teaching staff who were awarded for their outstanding engagement in teaching based on a merit system	2	Not applicable
	Number of refereed publications during a certain period of time [TBD] per full time equivalent members of teaching staff	3	3
	Number of papers or reports presented at academic conferences during a certain period of time [TBD] per full time equivalent members of teaching staff	3	3
Learning Competences & Processes			
Quality learning & student engagement	Number & duration of student interactions with course activities (e.g. solution of exercises, watching videos, listening to lecture, participation in working groups, etc.) (e.g. via the HEI’s LMS) (PDRLA)	2	2
	Number & duration of student interactions with course contents (e.g. via the HEI’s LMS) (PDRLA)	2	2
	Number of repetitive visits to learning contents (e.g. during online learning) (PDRLA)	2	2

Further surveyed “core data” to build a comprehensive set		Usefulness	Degree of Collection
Learning Outcomes & Learning Gain & their Assessment			
Student success	Coursework marks (PDRLA)	3	3
	Number of students who do not complete the program modules they had started (PDRLA)	3	3
	Number of students who do not successfully complete the first year of study (PDRLA)	3	3
	Number of students who do not successfully complete undergraduate programs (Bachelor graduation) (PDRLA)	3	3
	Number of students who do not successfully complete undergraduate programs within the planned program duration (Bachelor graduation on time) (PDRLA)	3	3
	Number of students who do not successfully complete graduate programs (Master graduation) (PDRLA)	3	3
	Number of students who do not successfully complete graduate programs within the planned program duration (Master graduation on time) (PDRLA)	3	3
	Number of students who do not successfully complete their long first degree (long first degree graduation) (PDRLA)	3	3
	Number of students who do not successfully complete their long first degree within the planned program duration (long first degree graduation on time) (PDRLA)	3	3
	Number of students who do not successfully complete postgraduate programs (postgraduate graduation) (PDRLA)	3	3
	Number of students who do not successfully complete postgraduate programs within the planned program duration (postgraduate graduation on time) (PDRLA)	3	3
	Number of students who exit HEI per year (PDRLA)	3	3
	Number of students who exit HEI per year to change to another HEI (PDRLA)	3	1
Assessment of learning outcomes	Percentage of examinations (e.g. in medical doctor training programmes) which use innovative forms of assessment (e.g. assessment of practical work by faculty & structured clinical cases)	2	1
	Examination marks (PDRLA)	3	3
	Grades of students' final examinations (PDRLA)	3	3
	Number of Bachelor degrees awarded	3	3
	Number of Master degrees awarded	3	3
	Number of doctorate degrees (PhD or equivalent) awarded	3	3
	Number of doctorate degrees that are awarded to international doctorate candidates	2	3
Percentage of credits given in service-learning activities (e.g. students in community service activities & social work), in relation to total number of credits	2	1	
Contact with work environment	Number of Bachelor students actually doing an internship (PDRLA)	3	3
	Number of Master students actually doing an internship (PDRLA)	3	3
	Number of Bachelor teaching practitioners from outside the HEI departments	3	3
	Number of Master teaching practitioners from outside the HEI departments	3	3
	Number of Bachelor degree theses made in cooperation with industry/external organisations	3	3
Number of Master degree theses made in cooperation with industry/external organisations	3	3	

Further surveyed “core data” to build a comprehensive set		Usefulness	Degree of Collection
Gender balance in the transition from students to doctorate graduates	Ratio of female to male students who complete a doctorate	3	3
Employability	Number of Bachelor graduates who within a period of time [TBD] after graduation are unemployed	3	3
	Number of Bachelor graduates who found their first job (after graduation) in the region where the HEI is located	3	1
	Number of Bachelor graduates who within a period of time [TBD] after graduation are enrolled in further study	3	3
	Number of Master graduates who within a period of time [TBD] after graduation are unemployed	3	3
	Number of Master graduates who found their first job (after graduation) in the region where the HEI is located	3	1
	Number of Master graduates who within a period of time [TBD] after graduation are enrolled in further study	3	3
	Number of Master graduates who within a period of time [TBD] after their long first degree graduation are unemployed	Do not know	1
	Number of Master graduates who within a period of time [TBD] after their long first degree graduation are enrolled in further study	Do not know	1
	Number of doctorate graduates who within a period of time [TBD] after doctorate are unemployed	3	3
	Number of doctorate graduates who found their first job (after doctorate) in the region where the HEI is located	3	1
	Number of doctorate graduates who within a period of time [TBD] after doctorate are enrolled in further study	3	3

Performance indicators

Stakeholders’ assessment

In the *questionnaires* underlying the case study, stakeholders were also asked to give their opinions on a set of university performance indicators (PIs), broadly construed, that can be reported for quality monitoring and improvement in L&T. This set was a selection of “the more uncommon or less widespread or novel items” from a more comprehensive set of performance indicators. These PIs may be included in mandatory or non-obligatory quality reporting requirements, target agreements, rankings, etc.

Following the same logic used for “core data”, participants in the study were inquired about the usefulness and degree of collection of the 31 PIs that are listed in Table 4. Medians and modes have been computed for each one of the PI under assessment:

The number of respondents who have answered “I do not know” has also been counted. Again a matrix was built relating the usefulness of the PI with its degree of collection at the university; the 31 PIs were then classified in each one of the matrix quadrants according to their calculated mode, in order to better understand their relevance for L&T quality monitoring and improvement at UA (Figure 6).

Degree of Collection	Regularly collected - 3			P11; P12; P18; P9; P112; P122
	Occasionally collected - 2			P17; P113; P114; P119; P120; P121; P123; P124; P131
	Not collected - 3		P13; P15; P111; P116; P117	P14; P16; P110; P115; P118; P125; P126; P127; P128; P129; P130
		Useless - 1	Useful - 2	Indispensable - 3
		Usefulness		

Figure 6: Classification matrix of the 31 PIs under assessment by the UA stakeholders.

According to the obtained modes, almost all PIs were considered to be indispensable (26 out of 31) for L&T quality monitoring and improvement. Nevertheless, it should be noticed that from these only six were thought to be regularly collected at the university whilst eleven were classified as not being collected at all.

Again the number of answers “Do not know” tends to be higher regarding stakeholders’ opinions on the degree of collection, which again is in line with what was expected for this type of survey.

Table 4: Surveyed performance indicators (PIs), broadly construed

Surveyed Performance Indicators		Usefulness			Degree of collection		
L&T Environment		Median	Mode	Do not know	Median	Mode	Do not know
Learning resources	PI1: Learning diversity offered with respect to course structures to do justice to different learner types & learning processes (PDRLA)	3	3	0	2	3	5
Student interactions	PI2: Student interactions with academic advisors (TBDBE)	3	3	0	2	3	4
	PI3: Student interactions with faculty (e.g. communication, work) outside of class & coursework (TBDBE)	2	2	0	2	1	5
Further education & lifelong learning	PI4: Compatibility of studies & work (e.g. flexible models for adapting study times to working hours) (TBDBE)	3	3	0	2	1	6
	PI5: Recognition of non-academic achievements (TBDBE)	2	2	1	1	1	7
Stakeholder participation in L&T quality development & evaluation	PI6: Student participation in curriculum development	3	3	0	2	1	2
	PI7: Employer participation in curriculum development	3	3	1	2	2	3
Teaching Competences & Processes							
Quality teaching & teaching staff engagement	PI8: Teaching staff subject-matter competences (TBDBE)	3	3	0	2	3	4
	PI9: Teaching staff methodological competences (TBDBE)	3	3	0	2	3	4
	PI10: Teaching staff encouraging students' autonomous thinking & acting (TBDBE)	3	3	0	1	1	5
	PI11: Fostering sustainability values (social, ecological, economical) (TBDBE)	2	2	0	1	1	6
	PI12: Teaching staff feedback to students (e.g. on work in progress, test, completed assignments) (TBDBE)	3	3	1	2	3	4
Learning Competences & Processes							
Quality learning & student engagement	PI13: Student workload (TBDBE)	3	3	0	2	2	3
	PI14: Activity learning offers (e.g. problem-based learning; research-based learning; internships) (TBDBE)	3	3	0	2	2	4
	PI15: Provision of training in study skills & self-regulated learning techniques (TBDBE)	3	3	0	1	1	4
	PI16: Quality flexible learning (flexibility in the requirements, time & location of study, teaching, assessment & certification) (TBDBE)	2	2	1	1	1	6
	PI17: Quality mobile learning (learning across multiple contexts, through social & content interactions, using personal electronic devices) (TBDBE)	2	2	1	1	1	6
	PI18: Quality personal (bespoke) learning (TBDBE) (PDRLA)	2	3	5	1	1	8
Learning Outcomes & Learning Gain & their Assessment							
Constructive alignment of programs/ courses	PI19: Design & adjustment of teaching & assessments/examinations to defined intended learning outcomes (TBDBE)	3	3	0	2	2	4
Study experience satisfaction	PI20: Freshman satisfaction with study experience (TBDBE) (PDRLA)	3	3	0	2	2	4
	PI21: Undergraduate satisfaction with study experience (TBDBE) (PDRLA)	3	3	0	2	2	4
	PI22: Graduate satisfaction with study experience (TBDBE) (PDRLA)	2	2	1	2	3	4
	PI23: Postgraduate satisfaction with study experience (TBDBE) (PDRLA)	2	2	1	2	2	4
	PI24: Alumni satisfaction with study experience/student life cycle (TBDBE)	2	3	5	2	2	5

Surveyed Performance Indicators		Usefulness			Degree of collection		
		Median	Mode	Do not know	Median	Mode	Do not know
Learning gain	PI25: Student learning gain in subject-matter competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3	0	1	1	5
	PI26: Student learning gain in methodological competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3	0	1	1	5
	PI27: Student learning gain in learning strategies (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3	0	1	1	5
	PI28: Student learning gain in social competences (e.g. team, communication & leadership competences; empathy; ability to cooperate; ability to solve conflicts) (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3	0	1	1	5
	PI29: Student learning gain in self-competences (e.g. self-determination; capability of decision & learning; flexibility of action; ability to reflect; sovereignty) (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3	0	1	1	5
Employability	PI30: Possibility of inclusion of work experience & elements related to work practice (TBDBE)	3	3	0	1	1	6
	PI31: Employer satisfaction with graduates (TBDBE)	3	3	1	2	2	6

Additional assessments by active SQELT project participants

In addition to the items presented in Table 4, the active SQELT project participants were asked for their assessments on further performance indicators, which are depicted in Table 5.

Overall, as presented in Figures 7 and 8, the UA SQELT team found most of the PIs as indispensable (63 PIs are regularly collected, which corresponds to 69% of all PIs under analysis); it also considered that the university regularly collects the majority of the PIs (58 PIs are regularly collected, which corresponds to 64% of all PIs under analysis), although in this case the percentage of PIs not collected is also significant (29%).

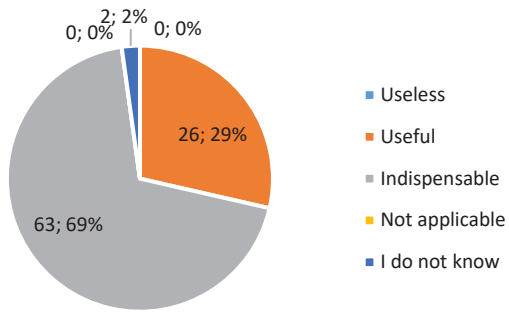


Figure 7: UA SQELT team classification of the further PIs usefulness

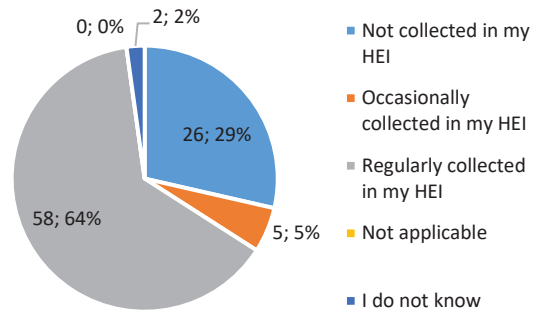


Figure 8: UA SQELT team classification of the further PIs degree of collection

Table 5: Further surveyed performance indicators (PIs), broadly construed, as assessed by active SQELT project participants

Further surveyed performance indicators		Usefulness	Degree of monitoring
L&T Environment			
Learning resources	Quality of library services (TBDBE)	3	3
	Diversity of courses offered (with respect to topics, class options & sizes, time, place, lecturers, etc.) to guarantee that the study programs can be completed within the regular time period (TBDBE)	3	3
	Quality organization of study programs (e.g. transparency of entrance requirements/admission regulations, access to classes, average class size, completeness of courses offered compared to the study guide, transparency of the examination system) (TBDBE)	3	3
	Learning diversity offered with respect to course structures to do justice to different learner types & learning processes (PDRLA)	3	1
	Opportunity offers for studying abroad (TBDBE) (PDRLA)	3	3
Teaching resources	Possibility of inclusion of Bachelor study periods abroad	3	3
	Possibility of inclusion of Master study periods abroad	3	3
Facilities & equipment	Quality of lecture halls & seminar rooms (TBDBE)	3	3
	Quality of IT services (TBDBE)	3	3
	Quality of laboratory facilities (TBDBE)	3	3
Supportive environment	Provision of student support to succeed academically (TBDBE)	3	3
	Quality of learning support services (e.g. tutoring services, writing centre, student exchange centre, learning management system) (TBDBE) (PDRLA)	3	3
	Measures of encouraging contact among students from different backgrounds (social, ethnic, religious, etc.)	3	1
	Provision of opportunities for students to be involved socially (TBDBE)	3	1
	Provision of student support for managing non-academic responsibilities (e.g. work, family, etc.) (TBDBE)	3	1
	Provision of student support for overall well-being (e.g. recreation, health care, sports, counselling, etc.) (TBDBE)	3	3
	Quality offer of campus activities & events for students (e.g. performing arts, sports events, etc.) (TBDBE)	2	1
	Quality offer for students to attend events that address important social, economic, sustainability, or political issues (TBDBE) (PDRLA)	2	1
	Equity student support (TBDBE)	3	1
Student interactions	Institutional recognition of teaching (TBDBE)	3	3
	Student interactions with students (TBDBE)	2	1
	Student interactions with academic advisors (TBDBE)	2	3
	Student interactions with faculty (e.g. communication, work) outside of class & coursework (TBDBE)	2	3
	Student interactions with student services staff (e.g. career services, student activities, housing, etc.) (TBDBE)	2	3
	Student interactions with other administrative staff & offices (e.g. registrar, financial aid, etc.) (TBDBE)	2	3
Further education & lifelong learning	Student experience in discussions with diverse others (TBDBE)	2	1
	Compatibility of studies & work (e.g. flexible models for adapting study times to working hours) (TBDBE)	3	2
	Recognition of non-academic achievements (TBDBE)	3	3
	Mediation of motivation for lifelong learning (TBDBE)	Do not know	Do not know

Further surveyed performance indicators		Usefulness	Degree of collection
Stakeholder participation in L&T quality development & evaluation	Student participation in student evaluations of courses & teaching (SECT)	3	3
	Student participation in decision-making related to student evaluations of courses & teaching	3	3
	Teaching staff participation in student evaluations of courses & teaching	3	3
	Teaching staff participation in decision-making related to student evaluations of courses & teaching	3	3
	Student participation in curriculum development	3	3
	Employer participation in curriculum development	2	2
Teaching Competences & Processes			
Teaching staff workload	Teaching workload of teaching staff (TBDBE)	3	3
Quality teaching & teaching staff engagement	Teaching quality in general (TBDBE)	3	3
	Teaching staff subject-matter competences (TBDBE)	3	3
	Teaching staff methodological competences (TBDBE)	3	3
	Quality organization of course sessions (TBDBE)	3	3
	Teaching staff respect & interest for students (TBDBE)	3	3
	Teaching staff encouraging students' autonomous thinking & acting (TBDBE)	3	3
	Teaching staff pedagogical knowledge & skills (e.g. knowledge of teaching models & learning processes) (TBDBE)	3	3
	Teaching staff sensitivity to class level & progress (TBDBE)	3	3
	Teaching staff social competences (e.g. team, communication & leadership competences) (TBDBE)	3	3
	Fostering sustainability values (social, ecological, economical) (TBDBE)	3	2
	Teaching staff feedback to students (e.g. on work in progress, test, completed assignments) (TBDBE)	3	3
	Bedside teaching (medicine) (e.g. concerning mentoring, suitability of rooms & variety of diagnostic techniques applied) (TBDBE)	3	3
	Integration of pre-clinical/theoretical & clinical courses (medicine) (TBDBE)	3	3
	Quality skills labs & training centres (e.g. maintenance, accessibility, technical facilities, mentoring) (medicine) (TBDBE)	3	3
Teaching staff satisfaction with teaching quality (TBDBE)	3	3	

Further surveyed performance indicators	Usefulness	Degree of collection	
Learning Competences & Processes			
Quality learning & student engagement	Student workload (TBDBE)	3	3
	Course quality (TBDBE)	3	3
	Activity learning offers (e.g. problem-based learning; research-based learning; internships) (TBDBE)	3	3
	Training offers to reflect upon student learning approaches (TBDBE)	2	1
	Student experience of learning quality in general (TBDBE)	Do not know	Do not know
	Provision of training in study skills & self-regulated learning techniques (TBDBE)	2	1
	Development of student competences of self-learning (TBDBE)	3	1
	Teaching staff assistance in organising peer learning activities (TBDBE)	2	1
	Integration of practical experience with patient contact into the study program (medicine) (TBDBE)	3	3
	Quality flexible learning (flexibility in the requirements, time & location of study, teaching, assessment & certification) (TBDBE)	2	1
	Quality mobile learning (learning across multiple contexts, through social & content interactions, using personal electronic devices) (TBDBE)	2	1
	Quality personal (bespoke) learning (TBDBE) (PDRLA)	2	1
	Student engagement in general (TBDBE)	2	2
	Learning Outcomes & Learning Gain & their Assessment		
Constructive alignment of programs/ courses	Clearly formulated intended learning outcomes (e.g. goals of study modules & courses) (TBDBE)	3	3
	Teaching staff awareness of existing intended learning outcomes (TBDBE)	3	3
	Design & adjustment of teaching & assessments/examinations to defined intended learning outcomes (TBDBE)	3	3
Study experience satisfaction	Freshman satisfaction with study experience (TBDBE) (PDRLA)	3	3
	Undergraduate satisfaction with study experience (TBDBE) (PDRLA)	3	3
	Graduate satisfaction with study experience (TBDBE) (PDRLA)	3	3
	Postgraduate satisfaction with study experience (TBDBE) (PDRLA)	3	3
	Alumni satisfaction with study experience/student life cycle (TBDBE)	3	3

Further surveyed performance indicators		Usefulness	Degree of collection
Learning gain	Student learning gain in subject-matter competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	3	3
	Student learning gain in methodological competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in higher-order learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in reflective & integrative learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in learning strategies (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in quantitative reasoning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in collaborative learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in interdisciplinarity (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases)	2	1
	Student learning gain in transdisciplinarity (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases)	2	1
	Student learning gain in social competences (e.g. team, communication & leadership competences; empathy; ability to cooperate; ability to solve conflicts) (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Student learning gain in self-competences (e.g. self-determination; capability of decision & learning; flexibility of action; ability to reflect; sovereignty) (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)	2	1
	Assessment quality	Fairness of assessments/examinations	3
Timeliness of assessments/examinations		3	3
Quality of assessment/examination formats (TBDBE)		3	3
Contact with work environment	Possibility of inclusion of internships/ phases of practical experience or external projects in the Bachelor curriculum	3	3
	Possibility of inclusion of internships/ phases of practical experience or external projects in the Master curriculum	3	3
Employability	Possibility of inclusion of work experience & elements related to work practice (TBDBE)	3	3
	Academic & career counselling for students (TBDBE)	3	3
	Employer satisfaction with graduates (TBDBE)	3	2

Quality evaluation instruments

Stakeholders' assessment

In a third section of the *questionnaires*, stakeholders were asked to give their opinions on a set of 15 quality evaluation instruments (QEIs) that can be used for quality monitoring and improvement in L&T (Table 6). These were selected from “the more uncommon or less widespread or novel items” from a more comprehensive set of QEIs. Again, participants' opinions were given regarding the usefulness and degree of collection at the university of these QEIs. Medians and modes have been calculated from the answers of all stakeholders to the 15 QEIs; as in the cases of the core data and the PIs, a matrix was also built relating the usefulness and the degree of collection of the QEIs and each QEI was later classified in the respective quadrant according to the calculated mode (Figure 9).

Degree of Collection	Regularly applied - 3		QEI1; QEI2; QEI14; QEI15
	Occasionally applied - 2		QEI4; QEI9
	Not applied - 1		QEI3; QEI5; QEI6; QEI7; QEI8; QEI10; QEI11; QEI13 QEI12
	Useless - 1	Useful - 2	Indispensable - 3
	Usefulness		

Figure 9: Classification matrix of the 15 QEIs under assessment by the UA stakeholders.

In the case of the QEIs it is interesting to note that only five out of the 15 were considered as indispensable by stakeholders, the remaining ones being classified as useful. Furthermore, a significant number of these QEIs were classified as not being collected by the university (9 out of 15). Interestingly though all the QEIs considered being regularly applied were classified as indispensable. Again, the number of “Do not know” answers is higher regarding the QEI degree of application.

Table 6: Surveyed quality evaluation instruments (QEIs)

Surveyed quality evaluation instruments		Usefulness			Degree of application		
Teaching Competences & Processes		Median	Mode	Do not know	Median	Mode	Do not know
Quality teaching & teaching staff engagement	QE11: Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for lecturers & associate professors	3	3	0	2	3	2
	QE12: Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for full professors	3	3	0	2	3	2
	QE13: Teaching staff peer review or participating observation of courses	2	2	2	1	1	6
Learning Competences & Processes							
Quality learning & student engagement	QE14: Reports generated from Learning Analytics tools such as BlackBoard, Moodle, Desire2Learn (e.g. individual user tracking, course based) (PDLRA)	2	2	0	2	2	4
	QE15: Social network analysis generated from Learning Analytics tools such as SNAPP (Social Networks Adapting Pedagogical Practice) (e.g. visualization of student relationships established through participation in LMS discussions) (PDLRA)	2	2	4	1	1	10
	QE16: Individual & group monitoring generated from Learning Analytics tools such as GLASS (Gradient's Learning Analytics System) (e.g. visualization of student & group online event activity) (PDLRA)	2	2	5	1	1	11
	QE17: Discourse analysis generated from Learning Analytics tools such as COHERE (e.g. visualization of social & conceptual networks & connections) (PDLRA)	2	2	7	1	1	12
	QE18: Student self-reports on their dispositions, values & attitudes towards learning, i.e. collection of learner data & pedagogical descriptors (e.g. students' ability in deactivating negative learning emotions, students' learning strategies) (PDLRA)	2	2	1	1.5	1	7
Learning Outcomes & Learning Gain & their Assessment						2	2
Learning gain	QE19: Student dashboards & monitoring generated from Learning Analytics tools such as Student Activity Meter (e.g. visualization of student activity for promotion of self-regulated learning processes) (PDLRA)	2	2	3	2	2	10
	QE10: Learning content interaction generated from Learning Analytics tools such as LOCO-Analyst (e.g. providing insight into individual & group interactions with the learning content) (PDLRA)	2	2	4	1	1	13
Assessment quality	QE11: Student evaluation of assessments/examinations (peer grading)	2	2	3	2	1	6
Prediction of student success	QE12: Predictive models for student performance	2	2	4	1	1	8
	QE13: Predictive models for student attrition	2	2	3	1	1	7
Accreditation	QE14: Accreditation (external) of study programs	2	2	4	3	3	3
	QE15: Institutional accreditation (external) of QMS in L&T (program accreditation carried out by HEIs themselves)	2	2	3	3	3	4

Additional assessments by active SQELT project participants

The active SQELT project participants were also asked for their assessments on the same list of QEIs which were presented to the university's respondents (Table 7).

Table 7: Surveyed quality evaluation instruments (QEIs) as assessed by active SQELT project participants

Surveyed quality evaluation instruments		Usefulness	Degree of application
Teaching Competences & Processes			
Quality teaching & teaching staff engagement	Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for lecturers & associate professors	3	3
	Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for full professors	3	3
	Teaching staff peer review or participating observation of courses	2	1
Learning Competences & Processes			
Quality learning & student engagement	Reports generated from Learning Analytics tools such as BlackBoard, Moodle, Desire2Learn (e.g. individual user tracking, course based) (PDRLA)	2	1
	Social network analysis generated from Learning Analytics tools such as SNAPP (Social Networks Adapting Pedagogical Practice) (e.g. visualization of student relationships established through participation in LMS discussions) (PDRLA)	2	1
	Individual & group monitoring generated from Learning Analytics tools such as GLASS (Gradient's Learning Analytics System) (e.g. visualization of student & group online event activity) (PDRLA)	2	1
	Discourse analysis generated from Learning Analytics tools such as COHERE (e.g. visualization of social & conceptual networks & connections) (PDRLA)	2	1
	Student self-reports on their dispositions, values & attitudes towards learning, i.e. collection of learner data & pedagogical descriptors (e.g. students' ability in deactivating negative learning emotions, students' learning strategies) (PDRLA)	2	1
Learning Outcomes & Learning Gain & their Assessment			
Learning gain	Student dashboards & monitoring generated from Learning Analytics tools such as Student Activity Meter (e.g. visualization of student activity for promotion of self-regulated learning processes) (PDRLA)	2	1
	Learning content interaction generated from Learning Analytics tools such as LOCO-Analyst (e.g. providing insight into individual & group interactions with the learning content) (PDRLA)	2	1
Assessment quality	Student evaluation of assessments/examinations (peer grading)	2	2
	Peer review or participating observation of student assessments/examinations	2	2
	Peer evaluation of assessment/examination protocols	2	1
Prediction of student success	Predictive models for student performance	2	2
	Predictive models for student attrition	2	2
Accreditation	Accreditation (external) of study programs	3	3
	Institutional accreditation (external) of QMS in L&T (program accreditation carried out by HEIs themselves)	Do not know	Do not know

Overall, as presented in Figures 10 and 11, the UA SQELT team found most of the QEIs to be useful (13 QEIs are regularly collected, which corresponds to 76% of all QEIs under analysis); in this case, however, the percentage of these QEIs that are not applied in the university is quite significant (53%); in fact, only three of the proposed QEIs are regularly applied, while four are occasionally applied.

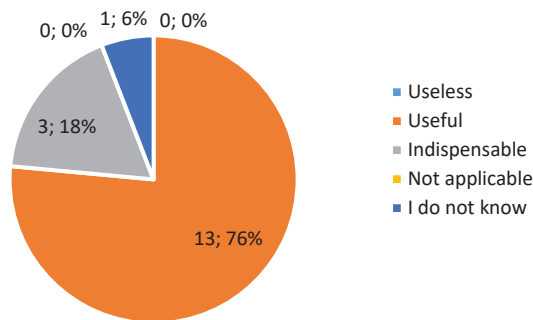


Figure 10: UA SQELT team classification of the QEI usefulness

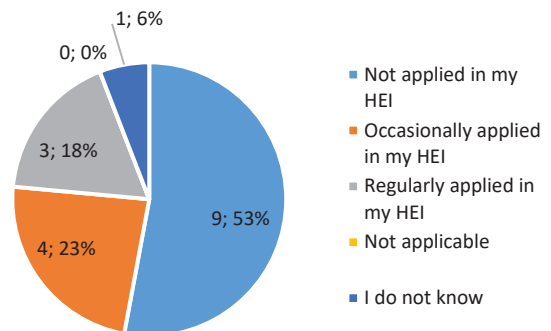


Figure 11: UA SQELT team classification of the QEI degree of application

Stakeholders' assessment of Learning Analytics

Participants in the focus groups were presented the commonly used definition of learning analytics: *'Learning Analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environment in which it occurs'* (Siemens 2011a; HEC 2016, p. 4).

Then, respondents were firstly asked whether Learning Analytics (LA) is put into practice at the UA. The answer options were "Yes", "Yes, to a certain extent", "No", and "Cannot answer, because ...". All the participants in the study referred that LA is put into practice at the university to a certain extent.

Further questions about Learning Analytics were then presented to the participants and vivid discussions took place around the different issues under analysis, including learning analytics functions and a preliminary SWOT analysis for LA (Table 8).

Table 8: Surveyed topics about Learning Analytics

Functions of learning analytics, which are realized in the UA
Supporting concrete pedagogical decisions as actionable results
Supporting the study of learning-related emotions such as enjoyment, curiosity, frustration, or anxiety, & their interactions
Supporting the quality improvement of courses
Supporting the improvement of course design
Supporting the verification of student workload
Supporting the monitoring of students learning progress (stages)
Supporting the prediction of student learning effectiveness/success
Supporting the identification of students failures of study
Supporting the identification of deficits in learning support for students
Supporting the identification of deficits in environment support for students
Supporting the targeted counselling of individual students
Supporting the improvement of admission & recruitment practices
Other, namely.....
Functions of Learning Analytics at UA
In which ways could/can you participate in the development of Learning Analytics?
Which ethical framework or policy for Learning Analytics is available at your HEI (e.g. referring to data privacy, data reliability, control of data access)?
How are appropriate data access controls ensured for different stakeholders?
Learning Analytics SWOT Analysis
What are, in your view, strengths of Learning Analytics?
What are, in your view, weaknesses of Learning Analytics?
What are, in your view, opportunities of Learning Analytics?
What are, in your view, threats of Learning Analytics?
What ideas do you have using the strengths to overcome the weaknesses?
What ideas do you have using the strengths to exploit the opportunities?
What ideas do you have using the strengths to avoid the threats?

A summary of the main ideas discussed in the focus groups will now be presented, according to the stakeholders' group addressed in the study.

Students' assessment

Students considered Learning Analytics is put into practice at the UA to a certain extent. Different mechanisms are referred by them through which the university collects and analyses data *about learners and their contexts* with the goal of improving L&T. The SubGQ_UC is the most referred mechanism, and within it the pedagogic surveys students have to answer every semester about each course and each teacher. Special relevance is also given to the study cycle's commission, constituted by teachers and students, that meets every semester to analyse courses, detecting good practices and problematic situations that need to be overcome. Both the surveys and the commission's meetings allow collecting data and information on L&T and when problems arise within a particular course, a mandatory improvement plan needs to be drafted by the teacher in charge of that course to tackle the identified problem(s). This, in principle, would imply that LA actually supports concrete pedagogical decisions about courses, teachers and study programmes, the quality improvement of courses and the verification of study workload (pedagogic surveys do ask students about the amount of time they dedicate to each course).

However, the main problem is that students do not always see evident consequences of the existing monitoring mechanisms at the UA. Specifically, students are not aware of reports addressing the results of the pedagogic surveys or of any L&T improvements arising from the answers to those surveys. Nevertheless, one of the students mentioned that graduates from his study cycle have reported to the actual students the fact that changes have occurred in the curricular structure due to their feedback. And it was also referred that feedback is better if the students who participate in the study cycle's commission are really committed to the SubGQ_UC.

In fact, the role of the study cycle's commission is referred by the students as paramount for the collection, analysis and discussion of important information about the study cycle's functioning. As such, its role should be more valued by all

stakeholders and meetings should occur not only at the end of each semester but also during the semester, so that problems would be tackled earlier and solved in time for the students reporting them.

Students also refer that every continuous assessment moment within each course is in a way LA, since it provides information both to teachers and students about students' performance allowing to improve academic success.

Additionally, they also mention the proximity that characterises the relationship between teachers and students in the university, which makes it easy for students to discuss with the study cycle director or with specific teachers their own problems, both academic and personal ones.

The Mentoring Program (which addresses first year students) is referred as one mechanism that may help to support the study of learning-related emotions, although students see them as relevant only during the first month of the academic year. After that period first year students are already integrated in the university's life and they do not care that much about the program.

Overall students do not feel as abusive or intrusive the data the university collects about them, although they mention that only treated and aggregated data (and not raw data about each individual student) should be available to support L&T improvement. They do think the UA has an ethical approach regarding LA and that it is concerned with putting into practice the new regulation for data protection on the campus.

As for the SWOT analysis of the UA Learning Analytics approach, students identified the following strengths, weaknesses, opportunities and threats:

Strengths

- The existent mechanisms, which are already sufficient and allow identifying students' academic path, are helping to prevent failures.

Weaknesses

- Students' participation in the university's monitoring mechanisms is rather low.
- The practical consequences of the existent monitoring mechanisms are not experienced by students.

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

Opportunities

- Better and updated information about the consequences of pedagogic surveys' results should be given to students to increase their participation.

Threats

- Teachers' performance appraisal is based almost entirely on their research and not on their teaching skills.

Teachers' assessment

Participants in this focus group reported some difficulty answering the questionnaire's closed questions due to lack of knowledge about the kind of information the university collects and for what purpose. They also referred to the time they spend filling in the university's various data platforms and questioned (have doubts on) the usefulness of the information collected through them.

However, this group of stakeholders agreed that LA is put into practice at the university to a certain extent. Performance indicators do exist but, in their opinion, they are not being used as they could/should. In fact, they feel the existent LA approach is used more at the level of individual teaching staff than on the institutional level of the university. Furthermore, they acknowledged the existence of performance indicators and analysis mechanisms, but they also evidenced lack of global knowledge about what results from the process. In addition, they referred that their own daily practice is very useful for improvement plans – sometimes more than the university's collected indicators.

As for the functions of LA at UA, and particularly regarding their participation in LA development, this group rated as very important to raise awareness among teachers about the importance of "core data" and performance indicators. They also agreed that the UA has the necessary ethical framework for a LA approach.

Finally, this group identified the following strengths and threats of the university's LA approach:

Strengths

- The LA approach may help to identify patterns, create solutions and thereby solve serious issues (e.g. finding the reasons behind the lack of success in a given course to prevent its recurrence).
- The LA approach at UA is perceived to enable this already.

Threats

- The great amount of data collected on all university community members might be too intrusive, although it is perceived as very useful in many ways.

Quality management staff's assessment

For the QM staff group, LA is put into practice to a certain extent at the UA. Participants perceive the optimisation phase of LA as not enough developed since it depends on the behaviour and responsibility of each L&T quality manager and on how s/he sees her/his job (e.g. study cycle director, department director, etc.). The system also does not give the adequate feedback information to allow those actors to perform better.

Different internal QA mechanisms and structures were pointed out by this group of stakeholders that contribute to LA and allow pedagogical concrete actions to be taken: SGQ_Teaching; analysis' commissions; surveys; reports; mandatory improvement plans; PADUA; FICA; Tutoring program. Indeed, they think a significant number of information is collected, treated, analysed and used at institutional level (for strategy and management). Nevertheless, quality management staff acknowledged that sometimes these mechanisms and structures do not work as they should and refer to different underlying reasons for this to be the case, such as:

- lack of integration of platforms, processes and data which contribute to actors' work overload;
- not enough feedback on the results of the LA approach to students and teachers;
- access to SIUA data (PI, SGQ_Teaching, PACO, ...) is not available to a significant number of people (access should be broadened);

- a somehow deficient overview of the L&T learning analytics functioning by its stakeholders, which does not allow them to fully understand their individual contribution to the overall result;
- it is not clear enough to students that although they are not individually benefiting from their own contribution to improve the quality of L&T, they are already benefiting from the contribution of students who preceded them.

Regarding the functions of LA at the UA, quality management staff stressed that special attention should be given to the profiles of both the study cycle director and the department director, due to their roles in LA, which are probably the most relevant ones for it to actually include “optimizing learning and the environment in which it occurs”. Furthermore, they referred that all the participants in the LA approach need to appropriate the existent mechanisms and structures, otherwise these will not lead to L&T improvement.

The UA has regulations that enforce its ethical policies and also an Ethics Council that can be consulted on specific situations. There is now new legislation on personal data protection both within and outside the university. Also, the UA defines data access controls for each stakeholder, which is thought as being adequate: access to all performance data and information (in L&T) by any university member and stakeholder is not considered to be necessary, mainly because not everyone has decision-making powers to act upon the data.

When discussing a SWOT analysis for the LA approach at the university, this group stressed the following aspects:

Strengths

- There are already relevant processes in place and the university has accumulated experience.

Weaknesses

- There is the deficit of integration of information and data platforms and processes into the actual L&T work processes.
- The teachers’ work overload limits the formation of LA.

Opportunities

- The available LA mechanisms can be revised and deepened by taking into account the new data protection legislation.
- The communication about the LA importance to students and teachers should be emphasized.

Threats

- The new legislation on personal data protection may inhibit people's action.

Science and Engineering Education (SEE) group members' assessment

This "special" focus group provided a discussion of the different aspects of learning analytics that was quite similar to the one held by the QM staff group, maybe because half of the participants had already been involved in QM duties.

As all other stakeholders' groups, the SEE group also considered that LA is put into practice at the UA to a certain extent. In this group's view, LA exists more in a perspective of data analysis about learners and their contexts (results' centeredness) and less in terms of the quality of learning in its relationship with teaching, meaning what effectively contributes to learning improvement from the point of view of the students.

Different internal QA mechanisms and structures that exist at the university were referred as contributing to LA and allowing pedagogical concrete actions to be taken: SGQ_Teaching; analysis commissions; surveys; reports; mandatory improvement plans; PADUA; FICA; and the Tutoring program. These participants also stressed that a significant number of information is collected, treated, analysed and used at institutional level, both for strategy and management purposes.

However, and as the previous stakeholders' group, this one thinks that sometimes those mechanisms and structures do not work as they should, mainly because:

- actors do not act in a responsible way; they do not perform their roles (e.g. study cycle directors and department directors still do not take the actions needed as a follow up of the information collected and analysed);
- it is necessary to go behind monitoring and actually take actions as a consequence of it: what really happens from one academic year to the next in

the classroom? Is there any change or the problems persist even after being identified?

- some data is still missing (e.g. about students entering a course unit for the first time);
- performance information and data is not always available to everyone who is in charge (e.g. PI Portal; SGQ_Teaching reports are only accessible to certain groups within the university – rector; department directors; study programmes directors);
- the students' focus should be complemented with the teachers' focus about what L&T quality is and how it should be improved;
- there is information overload, which sometimes leads to fatigue and to an attitude of “not caring about it”;
- the university student should be considered more comprehensively, from high school prior to HE access until after s/he graduates (working life), in other words the complete student lifecycle should be considered.

Regarding LA development at UA, this group referred the need to pay attention to the profile of the study cycle director, as well as to the one of the department director, since their roles are probably the most relevant ones for LA to actually include “optimizing learning and the environment in which it occurs”. In this respect, this focus group's participants also mentioned that the different actors need to appropriate the above-mentioned existent mechanisms and structures otherwise these will not lead to L&T improvement. And they add that overall personal and informal contacts between teachers and students should not be forgotten, as they are quite important for L&T improvement; also, information about who are the students should be available to all their teachers.

According to the participants, there is an ethical framework and policy for LA at UA, based on new legislation on personal data protection, and that allows for transparency and dissemination of information, both within and outside the university. Furthermore, there are data access controls for different stakeholders, which in this groups' opinion makes sense since access to all performance data and

information (in L&T) by any university member and stakeholder is not necessary; also, controls should be defined by those with decision capacity.

As for the LA SWOT analysis, the participants referred the following aspects:

Strengths

- At UA, it is relatively easy of implement a LA approach.
- the actors' role when holding decision making responsibilities.

Weaknesses

- There is the danger of a loss of a direct relationship between the different actors in favour of an excessive fidelity to data and indicators.
- It is difficult to implement a fully-fledged LA approach because it is difficult to measure the outcomes of L&T – for example, how do graduates succeed in the labour market and what is their impact on society's development?

Opportunities

- A LA approach should also be focused on the teachers.
- A LA may contribute to more transparent and democratic decision making

Threats

- When data says “we are good”, the risk is that we stop trying to get better.
- There is the danger to overemphasise data and information and take them as the only measure of L&T quality.
- There is the danger to resort to the data and information which are easier to collect and analyse, irrespective of its relevance.

Leadership's assessment

As has happened with the previous groups of stakeholders, the leadership group also thinks LA is put into practice at the UA to a certain extent. Different mechanisms exist in the university, namely the SubGQ_UC, which allows monitoring and improving various aspects of L&T. As an example, students' feedback on L&T was mentioned as a way to have information about courses' quality, which is then used to improve it whenever shortcomings are identified. Also, students' grades in different

courses along their path may be used to improve their academic performance. In some departments, meetings with all teachers and researchers occur each semester to analyse the results of the SubGQ_UC and concrete pedagogical decisions are defined, as for example, pedagogic training actions for teachers, not putting a “not so good” teacher as the only responsible for one course or decreasing the number of students in each class. Additionally, there are departments that have created specific internal commissions (or groups) to deal with L&T quality.

On the other hand, not much data is collected on students’ soft skills acquisition, which is more and more relevant; nor data or indicators that can be used to explain students’ performance (such as data concerning emotions, integration in academic life, etc.), except for first year students under the FICA program (regarding this program, one of the participants referred that it would be good if its scope was broadened to include as well second and third year students, since these may also be in risk of dropout).

The Tutoring Program is also referred as a relevant mechanism to fight dropouts by improving first year students’ integration in the university life. And the PADUA, the teaching staff evaluation platform, is mentioned as another mechanism that, although indirectly, may contribute to L&T quality improvement since teachers’ performance evaluation includes teaching quality as assessed by students under the SubGQ_UC.

One of the problems identified regarding the LA approach lies in the appropriation by the university community of the internal benefits of such mechanisms since there is the perception that so far although stakeholders participate, they tend to see them as ways for the university to comply with external demands, namely study cycles and institutional accreditation. The monitoring consequences are not yet a reality and depend very much on each particular actor, namely teachers. Mandatory improvement plans are a result of the SubGQ_UC every time a problem is detected in one course, but since these have a negative halo, instead of being seen as an opportunity, most teachers tend to underestimate their potential for improving the way they teach and students learn. Furthermore, even if data is available for study cycles’ directors or departments’ directors, not all of them actually access the data and/or deal with it.

For this group of participants, most important than having a significant amount of data on L&T is to have the few right data, meaning the one that actually gives a picture of the L&T quality and allows for its monitoring and improvement. Also, the human factor is essential; automatizing data collection and treatment is of course very useful and interesting, but information on L&T quality should ultimately be analysed by the university's actors. In this respect, one of the participants referred that in his department, the director directly speaks with the teachers identified as having specific L&T problems and together with the study cycle director decides on actions to be taken to tackle those problems.

These stakeholders believe that the best way leadership (including the pedagogic council and the rectory) can participate in the development of LA is by motivating all university's actors to actively participate in the existent L&T quality monitoring and improvement mechanisms. Furthermore, this participation should not happen because it is a legal obligation, but due to the benefits for the university L&T quality improvement. Also, L&T quality pivots should be identified in each one of the university's departments, and they should be given responsibility to mobilise their colleagues to engage with the quality assurance system in place. And leadership should make an effort to identify the few vital key indicators of L&T quality, making the existent LA approach at the university as simple and effective as possible.

Other interesting issues in this respect include the idea that all the available information should be more explored and deeply analysed in each department. Namely, there should be a discussion and analysis of the mandatory improvement plans, to fully account for their consequences. The informal component should not be forgotten: the proximity between all actors (students, teachers, study cycle directors, department directors, study cycle commissions) is a very effective way to identify and solve quality problems in L&T.

In this respect, one of the FG participants also mentioned the relevance of the study cycle commissions (where students and teachers are represented) in L&T quality improvement, referring that in his department an effort is being done to make them more dynamic and proactive in the identification and resolution of quality issues – they are encouraged to meet along the year and not only at the end of both semesters. And another one referred the important role of the study cycle director, who should act as a pedagogical leader, taking concrete pedagogic actions

addressed to students and teachers to effectively improve individual courses and the whole study cycle.

At the UA there is a concern with privacy and anonymity concerning data collection and analysis, since this is considered to be a topic with clear ethical implications. As an example, information about students with special needs should be given to their teachers, but this needs to be previously agreed with students. The university has recently appointed one of its members as the person in charge of data protection for the whole institution, as well as data protection pivots in all departments. Access to data and information should depend on each particular stakeholder and her/his role in the university.

Finally, and regarding the SWOT analysis, the leadership group identified the following strengths, weaknesses, opportunities and threats:

Strengths

- LA allows students and teachers to make a self-analysis of their performance in L&T.
- The years of existence and the stability of the SubGQ_UC allow to establish profiles of courses and teachers.
- All existent L&T quality monitoring mechanisms are useful to support and legitimise decision-making.

Weaknesses

- Each person's self-analysis is based on a set of data and indicators that are decided by others (leadership) as being the relevant to monitor L&T quality (leadership).
- Some of the problems identified through the pedagogic surveys appear only at the end of the semester, which may be too late to adequately solve them.
- Students' representativeness could still be improved.
- It is still difficult to explain the reasons for some patterns since not enough data is collected regarding students emotional dimensions (e.g. reasons for dropouts or academic failure).

Opportunities

- Performance deficits can be used as inputs for self-improvement.

- Performance best practices can be used as examples for others.
- All the mechanisms existent in the university to monitor L&T are an opportunity for its quality improvement.

Threats

- There is a danger to reduce performance assessment to purely quantitative data.
- The results of the existent mechanisms to monitor and assess L&T quality may lead to the rise of conflicts between teachers themselves and/or teachers and students.

To conclude, and according to these stakeholders, not all L&T quality monitoring and improvement should be concentrated in the existent LA approach. There should be other forums to discuss quality problems as soon as they emerge, not being necessary to wait for the end of the semester or of the academic year. Also, the existent LA approach should be assessed and improved, if needed.

Active SQELT project participants' assessment

For the UA SQELT project team, LA is put into practice in the university to a certain extent. In fact, there are different internal quality assurance mechanisms and structures that contribute to carry out LA functions, the most relevant being:

- SGQ_Teaching and PI Portal – support pedagogical decisions (e.g. mandatory improvement plans);
- Tutoring Program – helps the integration of 1st year students (students' wellbeing);
- SGQ_Teaching, PI Portal and Study programs accreditation – allow to collect data on courses and programmes contributing to their quality improvement and the improvement of their design;
- SubGQ_UC – measure students' workload allowing for corrective actions;
- SGQ_Teaching – collect and analyse data on student's academic performance;

- FICA – allows the identification and prevention of dropout situations (1st year students), as well as targeted counselling of individual students (by study programs' directors);
- SGQ_Teaching, PI Portal and PACO – data on students' academic performance prior to university entrance plus along their academic path, which may be used to make predictions of student learning effectiveness/success;
- Pedagogical questionnaires, Student Support Office and Tutoring Program – support the identification of deficits in learning support and in environment support for students;
- PI Portal and PACO – data on university access and admission, allowing for its improvement.

So, overall, measurement, collection, analysis and report of data about learners and their contexts do exist at the UA for purposes of understanding and optimising learning. However, this is not always done in a complete and integrated way and it is not still totally calibrated and standardised to allow automatized decision-making.

As for the participation in LA development, it occurs mainly at the various competent bodies both at department and institutional levels (the Scientific Council and the Pedagogic Council play a very important role in this respect). Furthermore, and at a more informal level, personal contacts between the university actors (students and teachers) and their decision-making structures at different levels also contribute to L&T development.

The university has an Ethics Council, personal data protection regulations and decisions have been taken on who has access to which data and indicators (framing its use to each person's personal competences). So data access controls exist for different stakeholders, each one holding a login and password to access the university's different platforms; depending on the posts they occupy and their professional competence, each stakeholder accesses different data/information.

As for the SWOT analysis, the UA SQELT team identified the following strengths, weaknesses, opportunities and threats:

Strengths

- LA makes it possible to learn from data/information collected from different sources so as to improve students' experience along their academic path, as well as their academic success.

Weaknesses

- Excessive collection of data/information, or unreliable and unethical collection, may affect the ability to learn from it and limit their contribution to improve L&T quality.
- Just collecting data and information per se is not enough for improvement to happen: it is necessary to use the full potential of Learning Analytics to make effective decisions.

Opportunities

- There is 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

- An excessive control of the life and academic path of each individual student might be possibly unethical.

Furthermore, the team elaborated on ways to overcome the weaknesses, using the strengths to exploit the opportunities and to avoid the threats, as follows:

Overcoming the weaknesses by/through

- Using all the data collected, analysed and reported to effectively take decisions, so that contributions can be made to the success of students' paths in the institution, both academically and personally.
- Consider the whole LA process as a system that needs to be constantly tested: typology, accuracy and quality of the data and information collected, analysis methods that are used and consistency of the results obtained in order for the system to learn continuously and to keep calibrated.

Exploit the opportunities by/through

- Having on-time knowledge on how students learn makes it possible to improve learning while it is actually happening, by changing methodologies, contents, assessment methods, etc.

Avoid the threats by/through

- Assuring that all students know the kind of data and information the university collects about them, analyses and reports. Assure the students that all the data/information is used with the single purpose of improving their L&T experience at the institution.
- Make sure that all data/information collected is reliable, relevant and accurate and that all analysing procedures and statistical treatment are adequate for the purpose of improving L&T, enabling students' academic success.

Conclusions and recommendations

Conclusions

The empirical work conducted at the UA to produce the Intellectual Output O3 in the SQELT project – Baseline Report on Project Partner HEIs' Performance data Management Models – allowed obtaining quite interesting results regarding the two main aspects under analysis:

- i) how a set of university stakeholders assesses a list of possible core data (CD), performance indicators (PIs) and quality evaluation instruments (QEIs), regarding their usefulness and degree of collection and application for L&T quality monitoring and improvement in the UA;
- ii) the perceptions of different groups of stakeholders on how LA is put into practice at the UA.

Overall the answers obtained to the questionnaire closed questions – given individually by all participants in the baseline study – led to the calculation of medians and modes that allowed classifying the listed CD, PIs and QEIs according to their usefulness for the UA and their degree of collection and application at the UA. All CD, PIs and QEIs were considered to be indispensable or at least useful by

the majority of the stakeholders. Regarding their degree of collection, the panorama is rather positive for CD, where from the 25 listed items only five are not collected (despite being considered as useful). On the contrary, for the PIs and QEIs, a significant number of them was considered as not being collected or applied: 16 out of 31 PIs (five useful and eleven indispensable) and nine out of 15 QEL (eight useful and one indispensable). Furthermore, it must be noticed that at least for some of the items, the number of answers “Do not know” was quite significant in relation to the stakeholders’ views on the degree of collection by the UA. This result was somehow expected because not all the participants in the baseline study have management positions at the university, and therefore are not totally aware of the data and information the university collects, analyses and uses to support decision-making.

For all stakeholders’ groups LA is put into practice in the university to a certain extent. The UA has a series of mechanisms and structures that allow a LA approach – most of them directly connected to its internal QA system. Data and information on L&T is collected, treated and analysed and leads to concrete actions and decision-making. Nevertheless, the UA still needs to deepen its capacity of “optimising learning and the environment in which it occurs”; change needs to be clearly seen by all the university stakeholders.

A LA approach, capable of effectively contributing to L&T quality improvement, has to be built with people; and people need to clearly understand their role and act with responsibility and in a proactive manner. Furthermore, existent data and information about students and their learning environment should be available to more actors, namely teachers. But this needs to be counterbalanced with the identification of the few CD, PIs and QEIs that are really important for L&T quality monitoring and improvement, otherwise there is a risk of information overload.

Recommendations

Based on the baseline study’s main results, it is possible to put forward some recommendations for the UA learning analytics approach:

- A deep look into the CD, PIs and QEIs that were considered as not being collected despite their classification as indispensable for L&T quality

monitoring and improvement should be undertaken: has the university the possibility to start collecting and using them on a regular basis?

- Better and updated information to all stakeholders about the importance and the consequences of the LA mechanisms in place should be provided, to increase their participation and enhance their perceptions about this approach's usefulness and relevance for L&T quality improvement.
- The LA available mechanisms should be revised and deepened to take into account the new data protection legislation, and take into consideration its relevance for transparency and democracy.
- It should be made more clear to everyone that performance deficits can be used as inputs for self-improvement and that performance best practices can be used as examples for others; in fact, it should be turned visible that all the mechanisms existent at the university to monitor L&T are an opportunity for its quality improvement.

References

HEC [Higher Education Commission]. 2016. *From bricks to clicks. The potential of data and analytics in higher education*. London: Policy Connect.

Siemens, Georg. (2011) Call for Papers of the 1st International Conference on Learning Analytics & Knowledge (LAK 2011). Available at: <https://tekri.athabascau.ca/analytics/>; accessed 19 October 2018.