



UNIVERSITÀ
DEGLI STUDI
DI MILANO

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/eplu-project-details/#project/b8a93e06-2000-4a82-9fac-90b3bcacade>

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Intellectual Output 3:

Baseline Report on Project Partner HEIs' Performance Data Management Models

The Case of Università degli studi di Milano (UNIMI)

Giovanni Barbato

Manuela Milani

Chiara Guglielmetti

Roberto Cerbino

9th of July 2019

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List of acronyms

HEI – Higher education institution

LA – Learning Analytics

L&T – Learning and teaching

PDRLA – Personalized data required for Learning Analytics

PI – Performance indicator

QA – Quality assurance

QEI – Quality evaluation instrument

QM – Quality management

TBDE – To be determined by evaluation

UNIMI – Università degli studi di Milano

Executive summary

19 stakeholders, representing the stakeholder groups of students, teachers, QA management and HEI leadership, evaluated the list of core data, PIs and QEIs based on their usefulness and their use within UNIMI. The items on “Teaching competences” and “Learning outcomes” were judged as the most useful according to all approached stakeholders. The assessment of the use revealed instead several gaps in the current performance data model of UNIM, especially on the QEIs, and entire areas of the “Learning and Teaching competences”. Several gaps were also identified in relation to Learning Analytics (LA) which are not fully implemented within UNIMI since some data on learners and their environments is collected but not used systematically to improve the quality of the same. Finally, the open discussions underlined that a low and unstable commitment from UNIMI’s governance along with a general environment which does not provide any incentives to invest on teaching activities are the two major threats for improving UNIMI’s performance data management model in L&T.

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

24 stakeholders were asked to participate in this phase of the SQELT project and 80% of them (19 out of 24) agreed to join it. All the 24 potential respondents were contacted by an official email sent by one of the active SQELT project participants for UNIMI. Two main criteria have been employed in order to select the potential respondents. The first was to have the most representative sample according to a complex reality as UNIMI. Since UNIMI is a generalist university with more than 30 departments in almost all the disciplines, stakeholders were selected in order to represent as much as possible different disciplinary communities. Moreover, the sample is heterogeneous in terms of gender and age of respondents as well as teachers’ academic level (ordinary professors, associates and researchers). Finally, for both the “QA management staff” and the “Leadership”, the stakeholders were chosen according to different roles played within these groups. For example, within the “QA management staff” that are members of the Internal Evaluation Unit as well as programme directors which present different duties concerning QA within UNIMI.

The second criterion used to select the potential respondents was to involve the most informed and knowledgeable people in terms of Quality Assurance (QA) of teaching practices within UNIMI, in other words, people that have already experienced and participate in developing and implementing of QA practices. For example, students have been selected among those who either usually participate in the annual and cyclical self-evaluation process of each degree programme or participate in the collegial bodies of the governance of UNIMI. This criterion should have prevented, in our view, a too high number of ‘do not know’ answers.

Finally, pragmatic choices influenced the selection of the potential respondents. Since a new Rector was elected in June and a new senior management team appointed only in November, we decided to selected stakeholders from the previous governance (from 2013 to June’s 2018) due to their higher knowledge of UNIMI’s process and experience concerning the topic of the

project. To sum up, the sample of 19 respondents is distributed according to the 4 stakeholders' groups as follows:

- **Students:** six participants (focus group)
- **Teachers:** five participants (focus group)
- **QA management staff:** five participants (face-to-face interview)
- **Leadership:** three participants (face-to-face interview)

Concerning the empirical methods used to gather the quantitative and qualitative information from the questionnaires, the 19 stakeholders were asked to participate in either a face-to-face interview or a focus group in order to fill the short version of the questionnaire and having an open discussion on the proposed items as well as on learning analytics within UNIMI. The reason of employing two different methods is merely pragmatic since it would have been very difficult to organize a focus group with the stakeholders from both "QA management staff" and with the "Leadership" due to their busy agenda. For both "Students" and "Teachers", a focus group was instead carried out. The focus groups' discussion and the interview were not recorded while notes were taken by one or more active members of SQELT for UNIMI. During the focus groups and the face-to-face interviews, the same procedure was followed. First of all, after having introduced the main SQELT project goals, the respondents filled the questionnaires guided by one active member of SQELT for UNIMI. During this part of the interview/focus group, each comment on the clarity of the items or other suggestions to improve the same were gathered. This part of the interviews/focus groups lasted around 45 minutes. The respondents were then asked to answer to an open question ("which attributes do define the quality of L&T environment / Teaching competences / Learning competences / Learning outcomes, in your opinion?"), and to identify not more than three items for each category and to rank them based on their importance. From this discussion, a transcript was developed in order to highlight which were the most important attributes that define the quality of teaching for each respondent within each category (L&T environment / Teaching competences / Learning competences / Learning outcomes). The main rationale behind the open question was to stimulate furtherly a critical discussion on which are the main attributes that contribute to define the quality of teaching and how to assess it. We retained also that this was a way to enhance the robustness of the quantitative information gathered through the filling of the questionnaires.

Lastly, concerning the timing of this work, the two focus groups were carried out in the last days of October while the face-to-face interviews during November and concluded on the 10th of December.

As can be seen below, the applied questionnaires and key questions can be used to generate nominal and ordinal data, but not genuinely metric data. Methodologically, for nominal data only information about frequencies and shares can justifiably be extracted from the data. In addition, ordinal data have a 'natural' order and mathematical comparison operations such as 'larger than' are properly defined. Only with genuinely metric characteristics, however, all arithmetic operations can be carried out in a meaningful way, for example calculating average values, correlations or regressions. Metric data are therefore also the basis for the application of the 'normal distribution' (Gaussian distribution).

However, often pseudo-metric scaling is applied to ordinal data, i.e. numerical values are ‘arbitrarily’ assigned to the (discrete) ordinal scale, which results in a ‘rating scale’. Then, some metric methodologies like those mentioned above can be applied, though with restricted methodological justification, i.e. results are to be interpreted with caution (specifically when the sample sizes are small).

Particularly, computations of averages, standard deviations, and the normal distribution are now also possible, although it is not a metric scale. For example, such averages are therefore not ‘real’ averages, since no measured values are defined on a pseudo-metric scale between the discrete defined measured values; nevertheless such averages etc. can still be informative in descriptive statistics.

Against that backdrop, in this case study nominal, ordinal and pseudo-metric ordinal data are used, since metric data are not available.

Stakeholders’ assessment of core data

Structured survey about core data

The approached stakeholders were asked to discuss in either focus groups or face-to-face interviews certain issues and fill in a questionnaire (Table 1a), which is about university data that can be collected for quality monitoring and improvement in learning and teaching (L&T). For example, such data may be included in mandatory or non-obligatory quality reporting requirements, target agreements, rankings, etc.

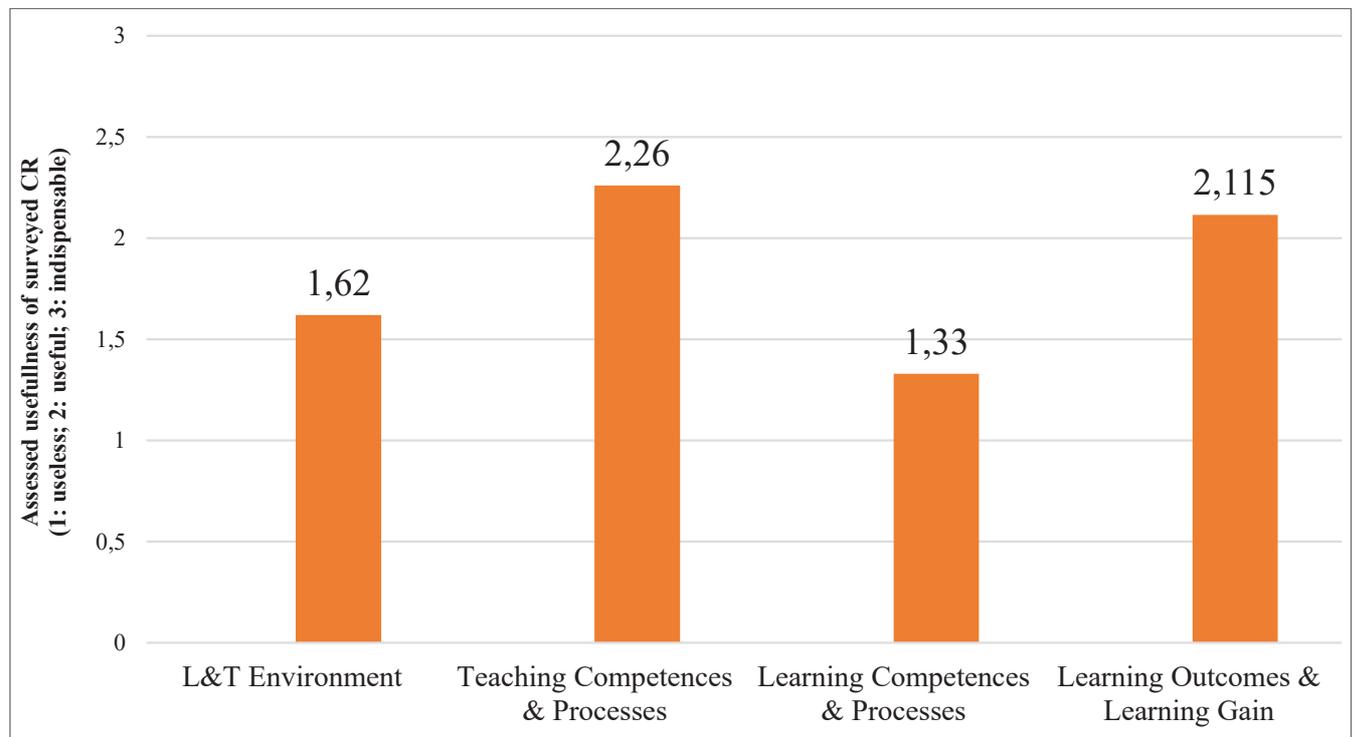
Particularly, representatives of the stakeholder groups of students, teaching staff, quality management (QM) staff, and higher education institution (HEI) leadership were asked which of the following features apply to the 25 presented quantitative data (“core data”), which are listed in Table 1a: “indispensable”, “useful”, “useless” as well as “regularly collected in my HEI”, “occasionally collected in my HEI” and “not collected in my HEI”. Respondents also had the choice of answering “do not know”. Moreover, respondents had an option to give open answers and add any comments or make further suggestions.

Table 1a: Surveyed performance data items (“core data”)

Core data, selection of “the more uncommon or less widespread or novel items” from a more comprehensive set of core data	
L&T Environment	
Student interactions	Number & duration of student interactions with student admission system (SAS) (PDRLA)
	Number & duration of student interactions with student information system (SIS) (PDRLA)
	Number & duration of student interactions with students (e.g. via the HEI’s learning management system - LMS) (PDRLA)
Attraction of master & doctorate students	Number of master students who graduated at another institution
	Number of doctorate students who graduated at another institution
Teaching Competences & Processes	
Quality of teaching staff	Number of teaching staff who participated in formal pedagogical training
	Number of teaching staff who were awarded for their outstanding engagement in teaching based on a merit system
	Number of refereed publications during a certain period of time [TBD] per full time equivalent members of teaching staff
	Number of papers or reports presented at academic conferences during a certain period of time [TBD] per full time equivalent members of teaching staff
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)
	Number & duration of student interactions with course contents (e.g. via the HEI’s LMS) (PDRLA)
	Number of repetitive visits to learning contents (e.g. during online learning) (PDRLA)
Learning Outcomes & Learning Gain & their Assessment	
Assessment of learning outcomes	Percentage of credits given in service-learning activities (e.g. students in community service activities & social work), in relation to total number of credits
Contact with work environment	Number of Bachelor degree theses made in cooperation with industry/external organisations
	Number of Master degree theses made in cooperation with industry/external organisations
Gender balance in the transition from students to doctorate graduates	Ratio of female to male students who complete a doctorate
Employability	Number of Bachelor graduates who within a period of time [TBD] after graduation are unemployed
	Number of Bachelor graduates who found their first job (after graduation) in the region where the HEI is located
	Number of Bachelor graduates who within a period of time [TBD] after graduation are enrolled in further study
	Number of Master graduates who within a period of time [TBD] after graduation are unemployed
	Number of Master graduates who found their first job (after graduation) in the region where the HEI is located
	Number of Master graduates who within a period of time [TBD] after graduation are enrolled in further study
	Number of doctorate graduates who within a period of time [TBD] after doctorate are unemployed
	Number of doctorate graduates who found their first job (after doctorate) in the region where the HEI is located
Number of doctorate graduates who within a period of time [TBD] after doctorate are enrolled in further study	
Space for additions and comments	
Other, namely	

Students' assessment

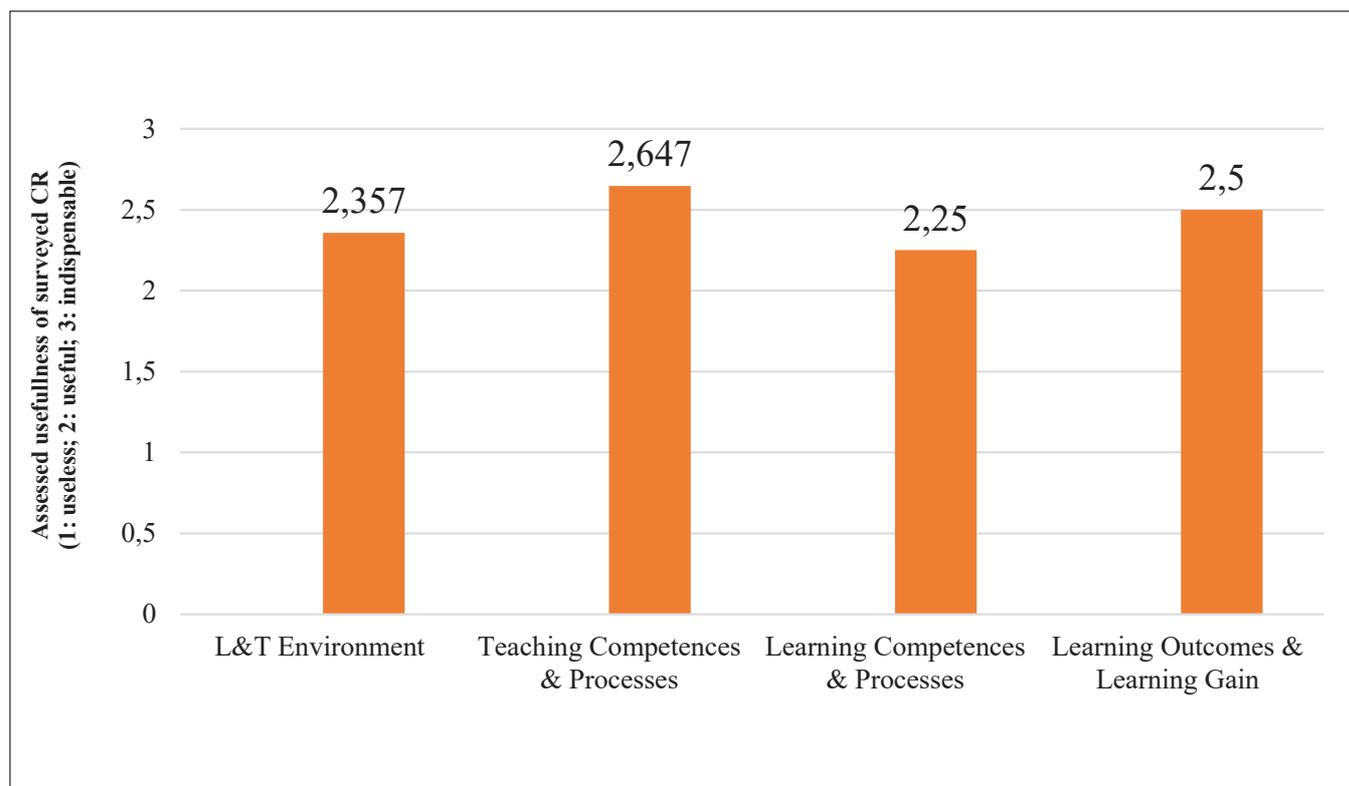
Figure 1. Usefulness of data (“core data”) related to university quality performance in L&T as assessed by students



Students assessed as more useful the core data within the categories “Teaching competences” and “Learning outcomes”. This difference is quite strong in numerical terms. On the contrary, the evaluation of core data within the “L&T environment” and “Learning competences” is closer to the value useless. Core data that were judged as indispensable from all the students are for instance “*Number of refereed publications per full time equivalent members of teaching staff*” and the “*the Number of Bachelor graduates who within a period of time after graduation are unemployed*”. On the contrary, examples of Core data that were judged equally as useless are “*Number & duration of student interactions with students*”, “*Percentage of credits given in service-learning activities in relation to total number of credits*” and the “*Ratio of female to male students who complete a doctorate*”, just to mention a few. From a qualitative viewpoint, several students did not fully understand the difference between “Teaching competences” and “Learning competences”. This could have altered the result favouring the former instead of the latter. In addition, several items were not understandable without the explanation provided by who carried out the focus group.

Concerning the assessment on the use of core data within UNIMI, for a total of 150 answers (25 items and 6 participants) only 15 present something different from “do not know”. This data mainly tells us about a low awareness on this topic though these students took part regularly in the annual processes of QA within UNIMI. The only core data that were assessed with a different value (in this case ‘regularly collected’) are those used during the annual self-evaluation process of each degree programme, that students regularly attend it.

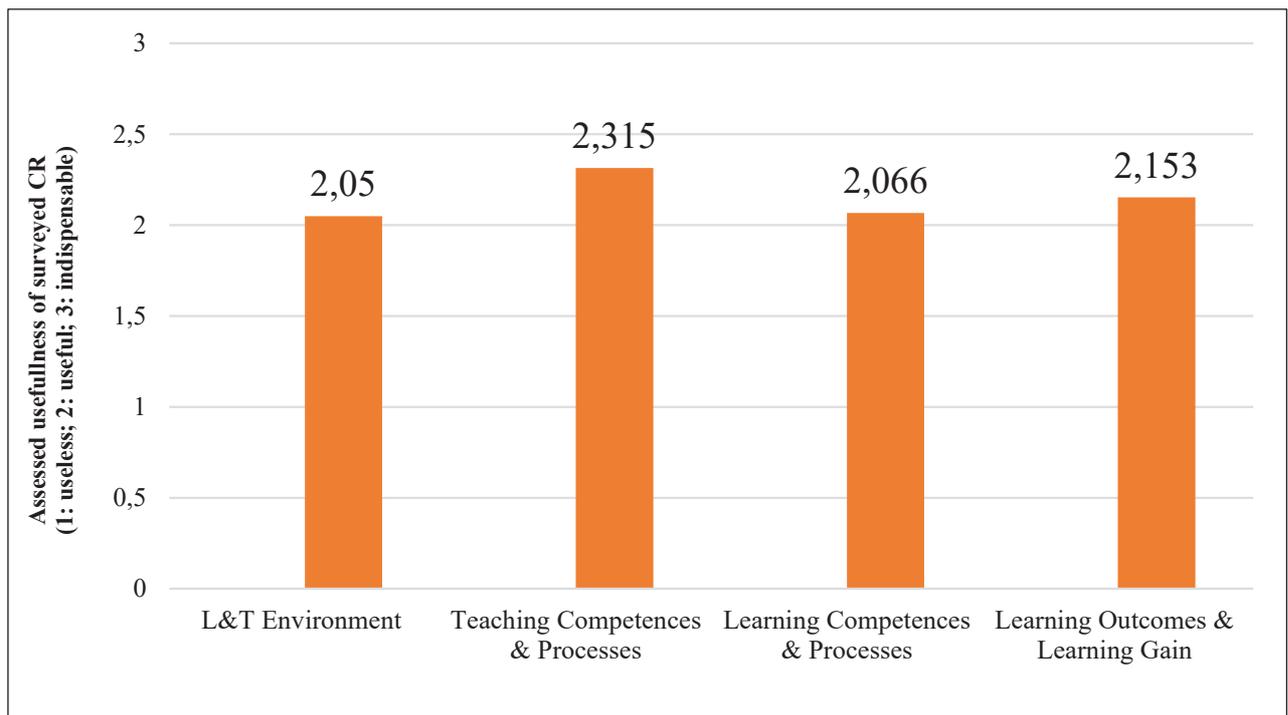
Teachers' assessment



Teachers ranked the usefulness of core data likewise students. The categories “Teaching competences” and “Learning outcomes” presents indeed the highest scores even if the difference between these and the other two is smaller compared with the students’ assessment. Examples of ‘indispensable’ core data are “*Number of teaching staff who participated in formal pedagogical training*” and “*Number of master degree theses made in cooperation with industry/external organisations*”, just to mention a few. From a qualitative viewpoint, 3 out of 5 teachers argued not only that several items were not understandable, but also that some items relevant for them are missing from the list. These are, for example, such as the size of the classroom (in terms of students) and the quality of all the infrastructures that support the teaching process. This consideration came out also clearly during the discussion of the focus group as illustrated later.

Lastly, regarding the evaluation of the use of core data within UNIMI, only 40% of the total answers is different from “do not know”. As students, this type of responses only suggests a low degree of awareness on how UNIMI assess teaching. As frequently underlined during the open discussion with Teachers, this lack of awareness is mainly due to a lack of incentives towards teaching given that academics are only evaluated based on their publications to progress in their careers.

Quality management staff's assessment

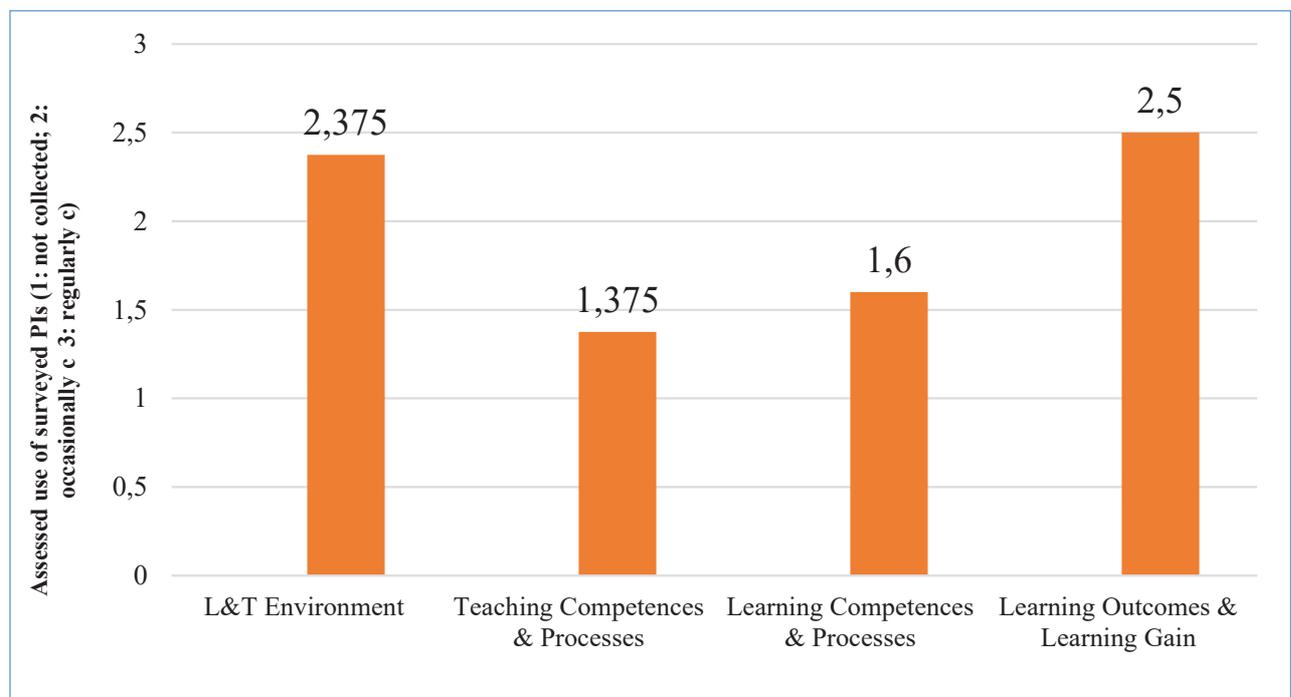


The five representatives of the QA management staff assessed the usefulness of core data likewise students and teachers with the categories “Teaching competences” and “Learning outcomes” presenting the highest assessment. Yet, the numerical value of the four columns is lower compared with the teachers’ one and more similar to that of students. In general, the difference of values between the four categories is not so strong and the core data within them classified as ‘useful’ on average. Core data that were judged as indispensable from almost all the QA representatives are for instance the “*Number of master students who graduated at another institution*” and the “*Number of Bachelor/Master graduates who within a period of time after graduation are unemployed*”. On the contrary, examples of Core data that were judged as useless are “*Percentage of credits given in service-learning activities*”, and the “*Ratio of female to male students who complete a doctorate*”, just to mention a few.

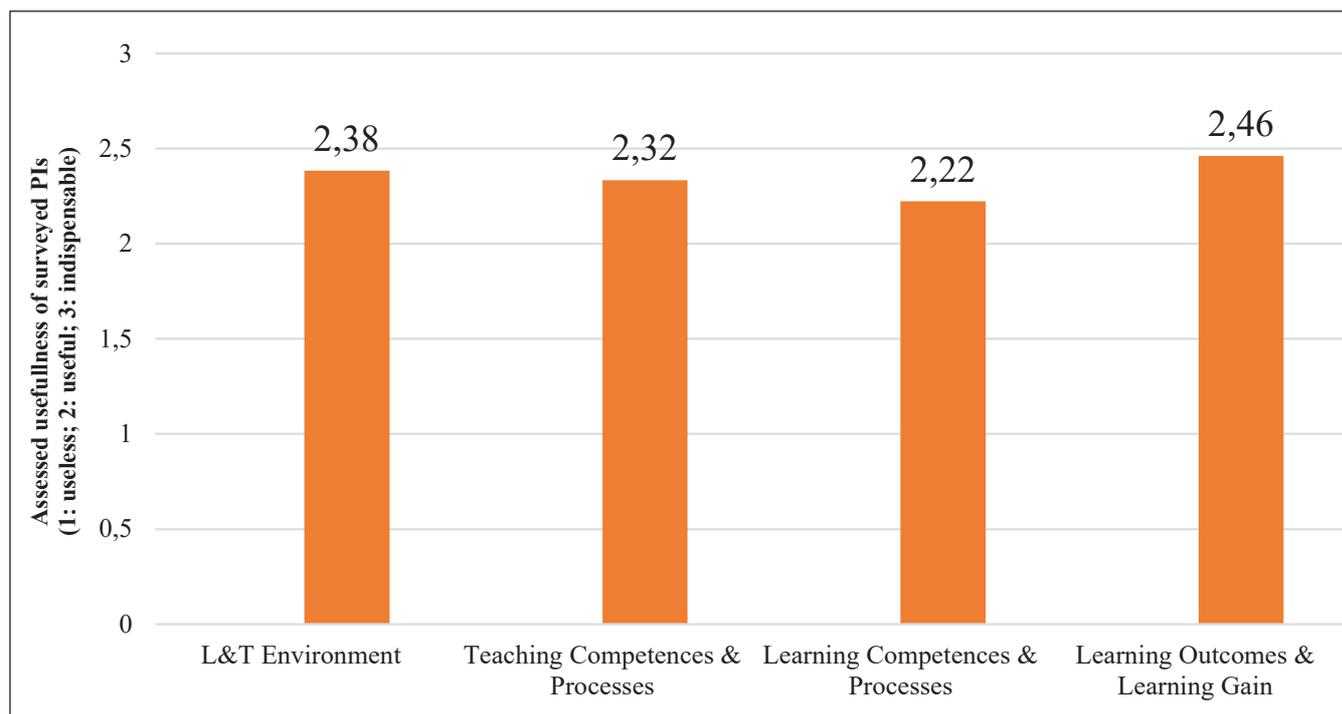
From a qualitative viewpoint, two main comments have been usually made on the proposed list of core data. First of all, some doubts arose on the exact meaning of some indicators. For the PI “*Number & duration of student interactions with student admission system*”, 3 out of 5 respondents asked what it means for ‘interaction’. Similarly, what does it mean exactly ‘*course contents*’? Should we intend only the online materials that are upload on the institutional website?. Secondly, some interviewees argued that some PIs cannot really measure the quality of the learning and teaching process. For the PI “*Number of Bachelor graduates who found their first job (after graduation) in the region where the HEI is located*” at least 2 respondents claimed why should be negative if students found a job in a different region. If this happens in which way is this linked with the quality of L&T in UNIMI?. Another example is related to the PI “*Number & duration of student interactions with course contents*” for which 3 interviewees asked the following question: Does the quality of a course increase with an increasing number

of interactions with the course contents?. Is not more important the quality of the contents uploaded online?.

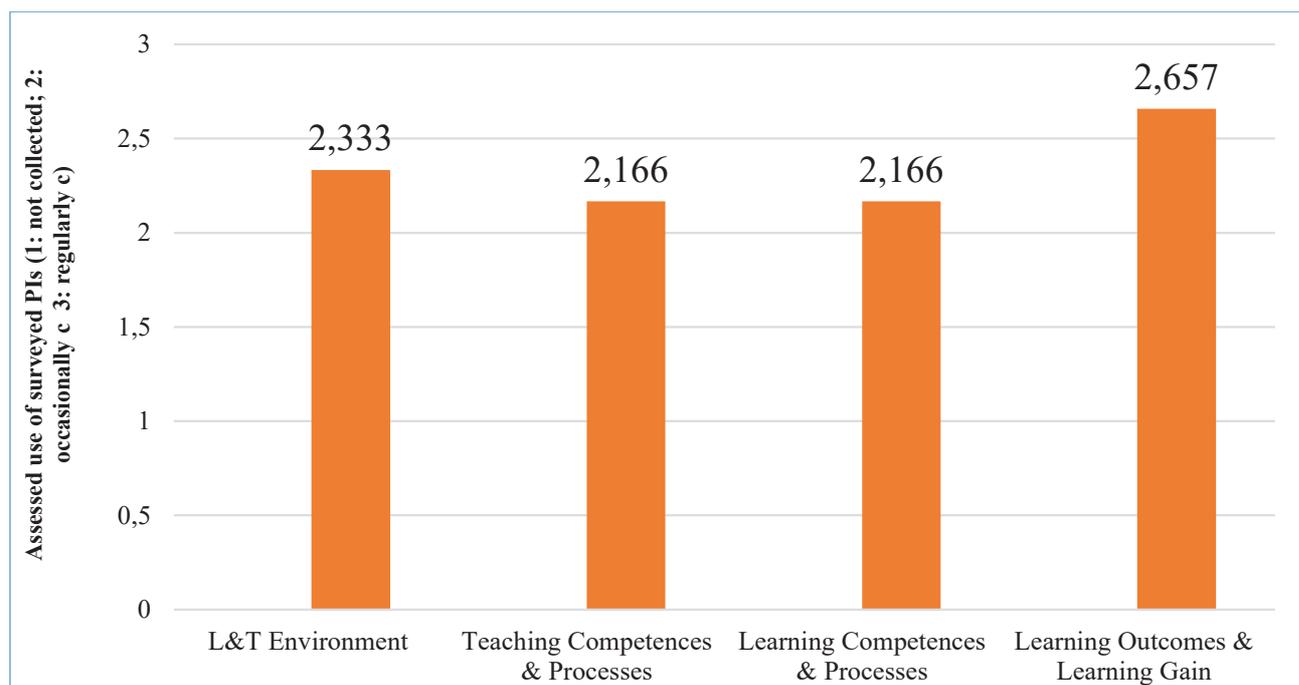
Lastly, the assessment of the use of core data within UNIMI illustrated in the graph below showed that the core data are more regularly collected in the “L&T environment” and the “Learning outcomes” areas. Yet, a high number of ‘do not know’ answers (10 out of 18 and 10 out of 15) in the other two categories, does not allow to take these scores to the letter. Moreover, if we cross these data with the assessment on the usefulness of core data it emerges that the QA management staff valued as the most useful the “Learning outcomes” that is also regularly collected within UNIMI. However, they also assessed as useful the core data of the “Teaching competences” that instead are not collected within UNIMI. As also emerged during the open discussion, almost all the interviewees underlined that the internal performance data management on L&T within UNIMI presents several gaps in areas that are crucial for understanding the real quality of the teaching activities such as the “Teaching competences”.



Leadership's assessment



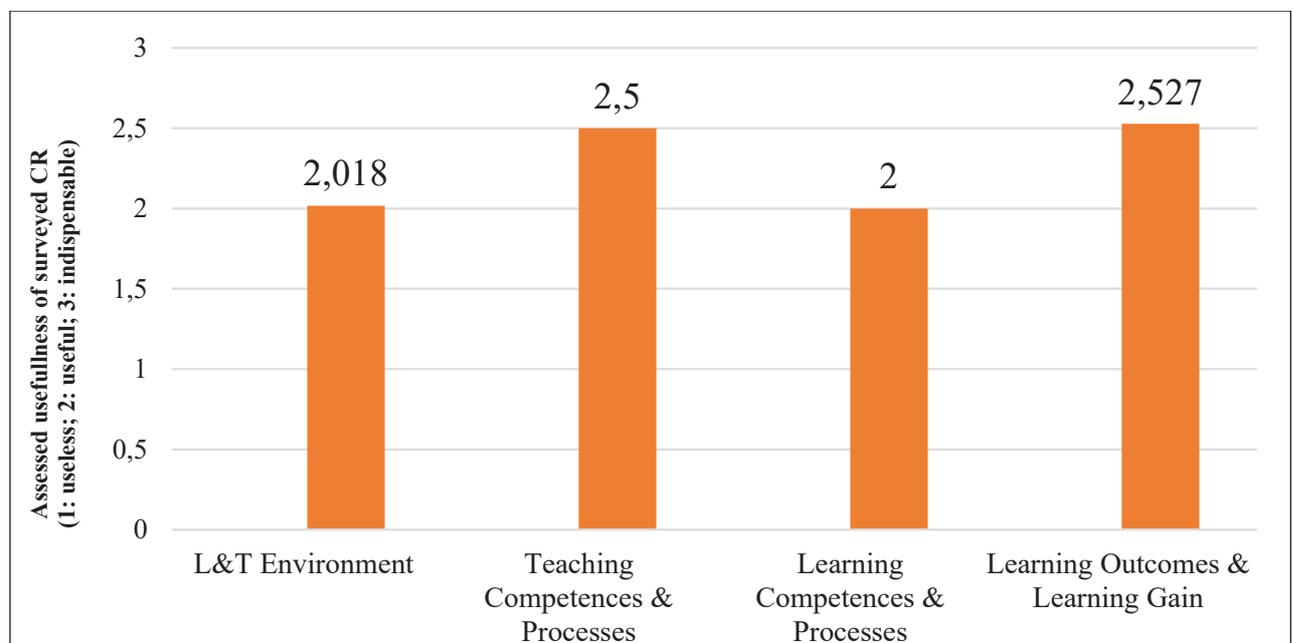
The Leadership group evaluated the core data in a slightly different way from the previous three stakeholders. The core data that received the highest assessment are indeed those within the “L&T environment” and “Learning Outcomes” categories. However, as shown in the results of the QA management staff, the difference of values between the four categories is not so strong and all the four categories were assessed, at least, as useful. From a qualitative viewpoint, there are no significant comments on the core data.



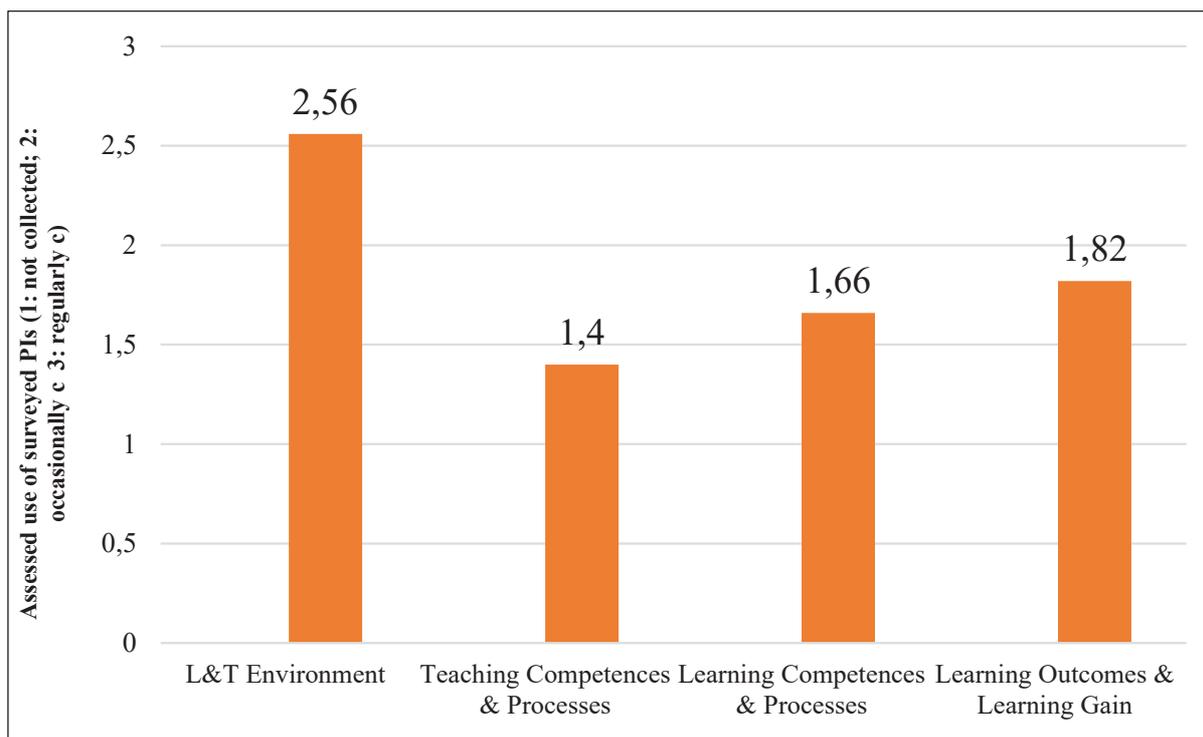
Lastly, the assessment of the use of core data within UNIMI illustrated in the graph below, showed that the core data are more regularly collected in the “L&T environment” and the “Learning outcomes” areas. However, the graph also showed relevant different scores on the other two categories between the Leadership and the QA management staff assessment. This incongruence cannot be explained by only looking at the graph. Moreover, the scores of the graph contradict also with the assessment of the active SQELT project participants that can be said to be the more reliable of the three graphs on this issue.

Additional assessments by active SQELT project participants

In addition to the items presented in Table 1a, the active SQELT project participants were asked for their assessments on further core data, which are depicted in Table 1b.



The active SQELT project participants’ assessment reveals more similarities than differences between the four stakeholders’ groups. “Teaching competences” and “Learning outcomes” are indeed the two areas with the highest score. All the core data display a value between useful and indispensable on average. Concerning the assessment of the use of core data within UNIMI (below), the graph shows that core data are regularly collected in the area of “L&T environment” while the other three are less covered by the UNIMI’s performance data management. Finally, if we cross the data on the usefulness with that of the use within UNIMI it emerges that 22 out of the 41 indispensable core data are regularly collected whereas 15 are not collected. These core data concentrates in the areas of “L&T environment” (e.g. data on finances and supportive environment) and “Learning outcomes” (e.g. data on student success and employability).



The qualitative comments on the set of core data are quite general and can be also referred to the whole list performance indicators (PIs) and quality evaluation instruments (QEIs). For this reason, they are illustrated here and not divided into the PIs and QEIs section. So, four main qualitative comments arose from the active SQELT project participants. These do not want to just criticize the SQELT list of items but only to raise question and suggestions.

I) The meaning of some core data, PIs and QEIs should be clarified since their interpretation is not unambiguous. Here as follows some examples, just to mention a few:

- “Number & duration of student interactions with library”: *what do we mean for interaction? The number of times a student asks a book? Or the number of times a student asks for assistance?*
- “Number of students who need support for minorities”: *what do we mean for minorities? There are different types of minorities that influence the learning capacity of students in different ways.*
- “Students experience in discussions with diverse others”: *what do we mean for “diverse others?”*
- “Teaching subject-matter competences”: *what do we mean for subject-matter competences? How much the teachers know the topic/content of the course?*
- “Student learning gain in collaborative learning”: *what do we mean for collaborative learning?*

II) The capacity of some core data and PIs to really measure the quality of L&T.

- “Ratio of female to male students who complete a doctorate”: *how the gender balance of doctorates influences the quality of L&T for universities?*
- “Number & duration of student interactions with student admission system”: *Which type of information do we get by looking at this data?*

- “Number & duration of student interactions with course contents”: *by only looking at the number of interactions with course contents you only consider a measure of frequency. However, you do not consider the quality of the course contents uploaded. Students might indeed interact frequently with the course contents, but these are not good at all.*
- “Fostering sustainability values”: *are we measuring the quality of L&T? is the fostering of sustainability values an objective measure of quality in L&T?*

III) The reliability of some core data, PIs and QEIs should not be taken for granted, in particular for those characterized by the label ‘TBDBE’ (to be determined by evaluation), in other words, for those items that are already a consequence of a prior assessment. The quality and reliability of these indicators depend on the quality and reliability of the evaluation that generates these P.I. and QEI. However, if the students’ survey is the only evaluation of teaching made within UNIMI. For indicators such as the following, the student’s assessment might not be the most appropriate and reliable since their perception might be biased.

- “Teaching staff subject-matter competences”;
- “Teaching staff methodological competences”;
- “Teaching staff encouraging students’ autonomous thinking”;
- “Students evaluation of assessments”;
- “Student workload”;
- “Course quality”.

IV) The feasibility of some indicators. If we retain that a comprehensive list of core data, PIs, and QEIs should contain the highest differentiated number of items, some of them seems to be very demanding for the university to be adopted and usable in spite of their potential relevance. For example, all the PIs on the ‘Learning gain’ potentially provide a crucial information on the learning process of students. Yet, to monitor the knowledge and skills of students through different learning phases demand an extraordinary effort for teachers that cannot be taken for granted, especially in realities where the teaching activities are not rewarded in any ways like Italian universities. Similarly, all the QEIs in the “Learning Competences & Processes”, requires not only the resources to acquire and implement some instruments such as Moodle, GLASS, SNAPP and COHERE, but also a significant willingness from Teachers to learn how to use them and how they might be contributing to the quality of their teaching activities; something that cannot be taken for granted within academia.

Table 1b: Further surveyed performance data items (“core data”) as assessed by active SQELT project participants

Further surveyed performance indicators supplementing those in Table 2a to build a comprehensive set	
L&T Environment	
Learning resources	Number of book titles held in library
	Number of periodical print subscriptions held in library
	Number of periodical online subscriptions held in library
	Number of student workplaces held in library
	Number & duration of student interactions with library
	Average processing time of a library orders
Teaching resources	Number of Bachelor programs offered
	Number of Bachelor programs that are offered in a foreign language
	Number of joint/dual degree Bachelor programs
	Number of Master programs offered
	Number of Master programs that are offered in a foreign language
	Number of joint/dual degree Master programs
	Ratio of teaching staff number to student number
	Number of female teaching staff
	Number of teaching staff with foreign citizenship
	Number of teaching staff with verified doctorate qualifications (PhD or equivalent)
	Number of teaching staff with verified teaching qualifications
	Number of teaching staff participating in professional development activities
	Number of broad educational subject fields (ISCED97/2011) in which students have graduated in the latest year (disciplinary diversity)
	Number of beds available for teaching in university hospital & affiliated hospitals per 100 students (medicine)
Facilities & equipment	Number of students allowed to enrol in a subject/subject field
	Total institutional expenditure (per full-time student) on ICT for L&T
	Accessible internet bandwidth per student user
	Total institutional expenditure on laboratory resources
	Ratio of students to administrative staff
Financial income & investment	Percentage of total institutional expenditure dedicated to L&T activities (core education expenditure)
	Percentage of total institutional expenditure dedicated to the provision of student services (other than accommodation & student allowance)
	Percentage of total institutional expenditure dedicated to student accommodation & allowance
	Amount of third party funding/extra funding income in L&T per student (e.g. funded research projects for the advancement of L&T)
Student composition & special support	Number of Bachelor students enrolled
	Number of Master students enrolled
	Number of female (& male) Bachelor students enrolled
	Number of female (& male) Master students enrolled
	Number of female postgraduate students
	Number of male postgraduate students
	Number of full-time students
	Number of part-time students
	Number of international students
	Number of international incoming exchange student
	Number of international outgoing exchange students
	Number of students in international joint degree programmes
Number of students with certain social origins [TBD]	
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)
	Number of students who need support for minorities (PDRLA)
	Number of students who use official HEI network options that meet their social, cultural, study interests (PDRLA)
	Number of students who use official HEI network options for linking to community/collaborating with the world of work (e.g. internships) (PDRLA)
Quality of incoming students	Grades of student entrance score/secondary school grades (PDRLA)
	Grades of university admission tests (PDRLA)
	Grades of introductory courses/examinations (e.g. in mathematics) (PDRLA)
Teaching Competences & Processes	
Quality of teaching staff	Number of teaching staff who participated in support activities for their adaptation of technology-enhanced L&T
	Number of teaching staff who participated in peer support systems for teaching staff/teaching observation
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)
	Number & duration of student interactions with course contents (e.g. via the HEI's LMS) (PDRLA)
	Number of repetitive visits to learning contents (e.g. during online learning) (PDRLA)
Learning Outcomes & Learning Gain & their Assessment	
Student success	Coursework marks (PDRLA)
	Number of students who do not complete the program modules they had started (PDRLA)
	Number of students who do not successfully complete the first year of study (PDRLA)
	Number of students who do not successfully complete undergraduate programs (Bachelor graduation) (PDRLA)
	Number of students who do not successfully complete undergraduate programs within the planned program duration (Bachelor graduation on time) (PDRLA)
	Number of students who do not successfully complete graduate programs (Master graduation) (PDRLA)
	Number of students who do not successfully complete graduate programs within the planned program duration (Master graduation on time) (PDRLA)
	Number of students who do not successfully complete their long first degree (long first degree graduation) (PDRLA)
	Number of students who do not successfully complete their long first degree within the planned program duration (long first degree graduation on time) (PDRLA)
	Number of students who do not successfully complete postgraduate programs (postgraduate graduation) (PDRLA)
	Number of students who do not successfully complete postgraduate programs within the planned program duration (postgraduate graduation on time) (PDRLA)
	Number of students who exit HEI per year (PDRLA)
Number of students who exit HEI per year to change to another HEI (PDRLA)	
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)
	Examination marks (PDRLA)
	Grades of students' final examinations (PDRLA)
	Number of Bachelor degrees awarded
	Number of Master degrees awarded
	Number of doctorate degrees (PhD or equivalent) awarded
Contact with work environment	Number of doctorate degrees that are awarded to international doctorate candidates
	Number of Bachelor students actually doing an internship (PDRLA)
	Number of Master students actually doing an internship (PDRLA)
	Number of Bachelor teaching practitioners from outside the HEI departments
Employability	Number of Master teaching practitioners from outside the HEI departments
	Number of Master graduates who within a period of time [TBD] after their long first degree graduation are unemployed
	Number of Master graduates who within a period of time [TBD] after their long first degree graduation are enrolled in further study

Stakeholders' assessment of performance indicators

Structured survey about performance indicators

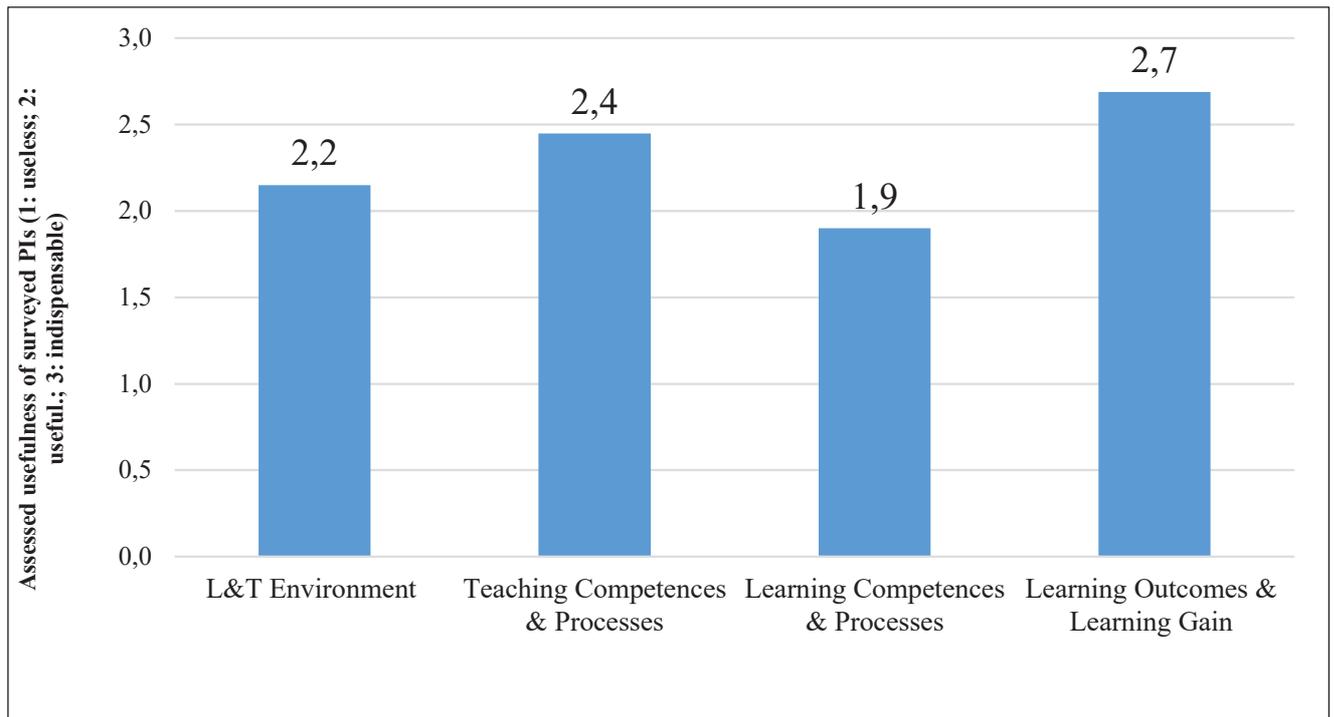
The approached stakeholders were asked to discuss in either focus groups or face-to-face interviews certain issues and fill in a questionnaire (Table 2a), which is about university performance indicators (PIs), broadly construed, that can be reported for quality monitoring and improvement in L&T. For example, such PIs may be included in mandatory or non-obligatory quality reporting requirements, target agreements, rankings, etc.

Particularly, representatives of the stakeholder groups of students, teaching staff, QM staff, and HEI leadership were asked which of the following features apply to the 31 presented PIs which are listed in Table 2a: “indispensable”, “useful” and “useless” as well as “regularly monitored in my HEI”, “occasionally monitored in my HEI” and “not monitored in my HEI”. Respondents also had the choice of answering “do not know”. Moreover, respondents had an option to give open answers and add any comments or make further suggestions.

Table 2a: Surveyed performance indicators (PIs), broadly construed

Performance indicators, selection of “the more uncommon or less widespread or novel items” from a more comprehensive set of performance indicators	
L&T Environment	
Learning resources	Learning diversity offered with respect to course structures to do justice to different learner types & learning processes (PDRLA)
Student interactions	Student interactions with academic advisors (TBDBE)
	Student interactions with faculty (e.g. communication, work) outside of class & coursework (TBDBE)
Further education & lifelong learning	Compatibility of studies & work (e.g. flexible models for adapting study times to working hours) (TBDBE)
	Recognition of non-academic achievements (TBDBE)
Stakeholder participation in L&T quality development & evaluation	Student participation in curriculum development
	Employer participation in curriculum development
Teaching Competences & Processes	
Quality teaching & teaching staff engagement	Teaching staff subject-matter competences (TBDBE)
	Teaching staff methodological competences (TBDBE)
	Teaching staff encouraging students’ autonomous thinking & acting (TBDBE)
	Fostering sustainability values (social, ecological, economical) (TBDBE)
	Teaching staff feedback to students (e.g. on work in progress, test, completed assignments) (TBDBE)
Learning Competences & Processes	
Quality learning & student engagement	Student workload (TBDBE)
	Activity learning offers (e.g. problem-based learning; research-based learning; internships) (TBDBE)
	Provision of training in study skills & self-regulated learning techniques (TBDBE)
	Quality flexible learning (flexibility in the requirements, time & location of study, teaching, assessment & certification) (TBDBE)
	Quality mobile learning (learning across multiple contexts, through social & content interactions, using personal electronic devices) (TBDBE)
	Quality personal (bespoke) learning (TBDBE) (PDRLA)
Learning Outcomes & Learning Gain & their Assessment	
Constructive alignment of programs/ courses	Design & adjustment of teaching & assessments/examinations to defined intended learning outcomes (TBDBE)
Study experience satisfaction	Freshman satisfaction with study experience (TBDBE) (PDRLA)
	Undergraduate satisfaction with study experience (TBDBE) (PDRLA)
	Graduate satisfaction with study experience (TBDBE) (PDRLA)
	Postgraduate satisfaction with study experience (TBDBE) (PDRLA)
	Alumni satisfaction with study experience/student life cycle (TBDBE)
Learning gain	Student learning gain in subject-matter competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in methodological competences (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in learning strategies (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	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)
	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)
Employability	Possibility of inclusion of work experience & elements related to work practice (TBDBE)
	Employer satisfaction with graduates (TBDBE)
Space for additions and comments	
Other, namely	

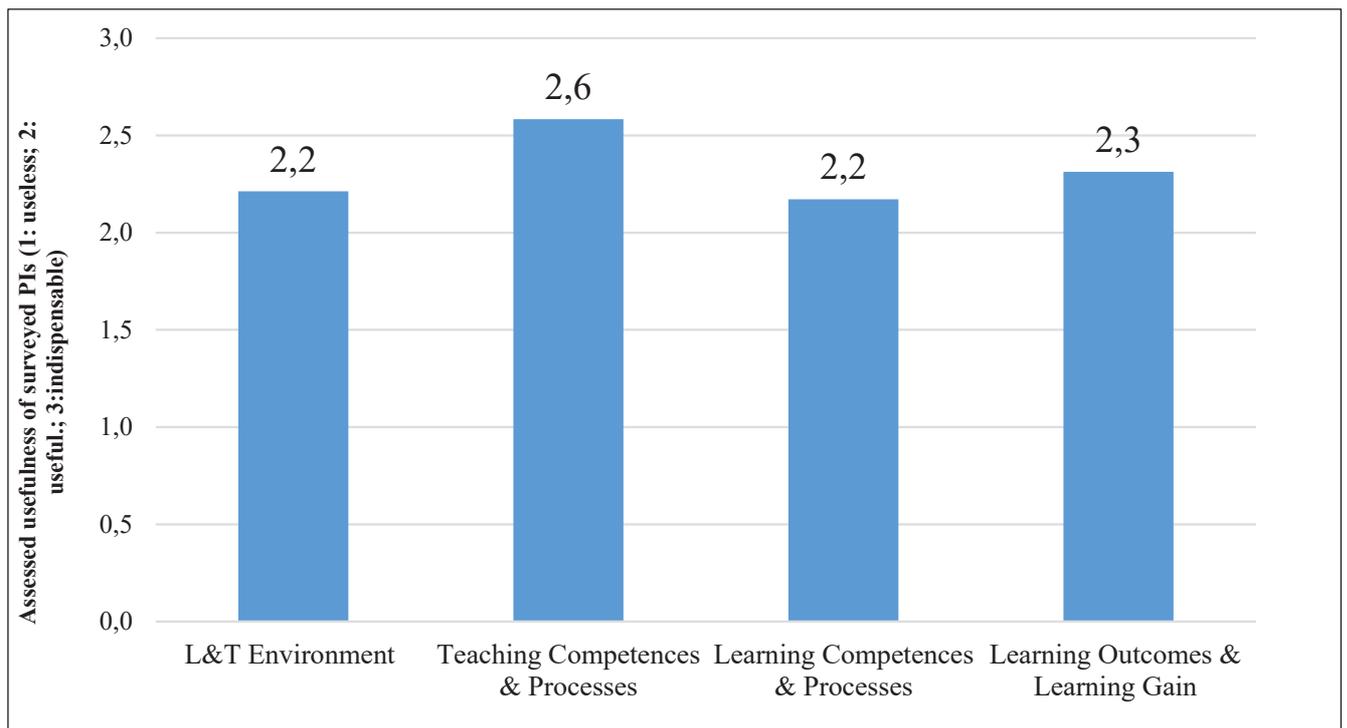
Students' assessment



Students assessed as more useful the performance indicators (PIs) within the categories “Teaching competences” and “Learning outcomes”. This difference is quite strong in numerical terms and very similar to the assessment of core data. Yet, differently from the core data evaluation, the category “L&T environment” presents now a higher score. PIs that were judged as indispensable from all the students are for instance “*Teaching staff subject-matter competences*”, “*Teaching staff encouraging students’ autonomous thinking & acting*” as well as all the satisfaction indicators (i.e. “*Graduate satisfaction with study experience*”). On the contrary, examples of PIs that were judged equally as useless are “*Fostering sustainability values (social, ecological, economical)*” and the “*Recognition of non-academic achievements*”. From a qualitative viewpoint, students did not fully understand the difference between “Teaching competences” and “Learning competences”. This could have altered the result favouring the former instead of the latter.

Concerning the assessment on the use of PIs within UNIMI, for a total of 186 responses (31 PIs and 6 students), only 1 student gave a different answer from ‘do not know’. As already claimed before, this result highlights a low awareness of this topic also from those students that are more involved in the internal QA practices.

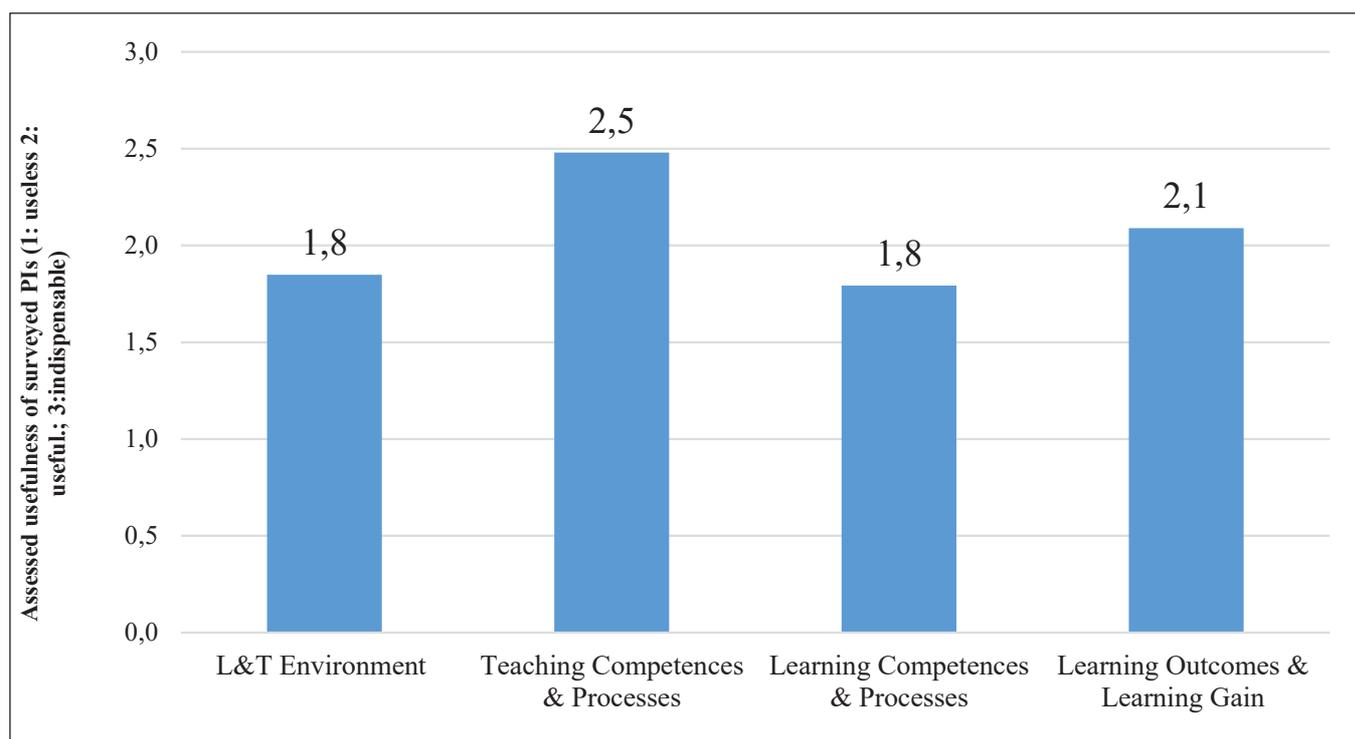
Teachers' assessment



Teachers ranked the usefulness of PIs likewise students. The categories “Teaching competences” and “Learning outcomes” presents indeed the highest scores even if the difference between these and the other two is smaller. The PIs “*Graduate satisfaction with study experience*” and “*Employer satisfaction with graduates*” were, for example, evaluated as ‘indispensable’, whereas “*Recognition of non-academic achievements*” was judged by each respondent as ‘useless’. From a qualitative viewpoint, almost all the teachers argued that several items were not understandable. This can also be visible in the 14 PIs whose usefulness was assessed as ‘do not know’.

Lastly, regarding the evaluation of the use of PIs within UNIMI, 72 out of 186 responses are ‘do not know’.

Quality management staff's assessment



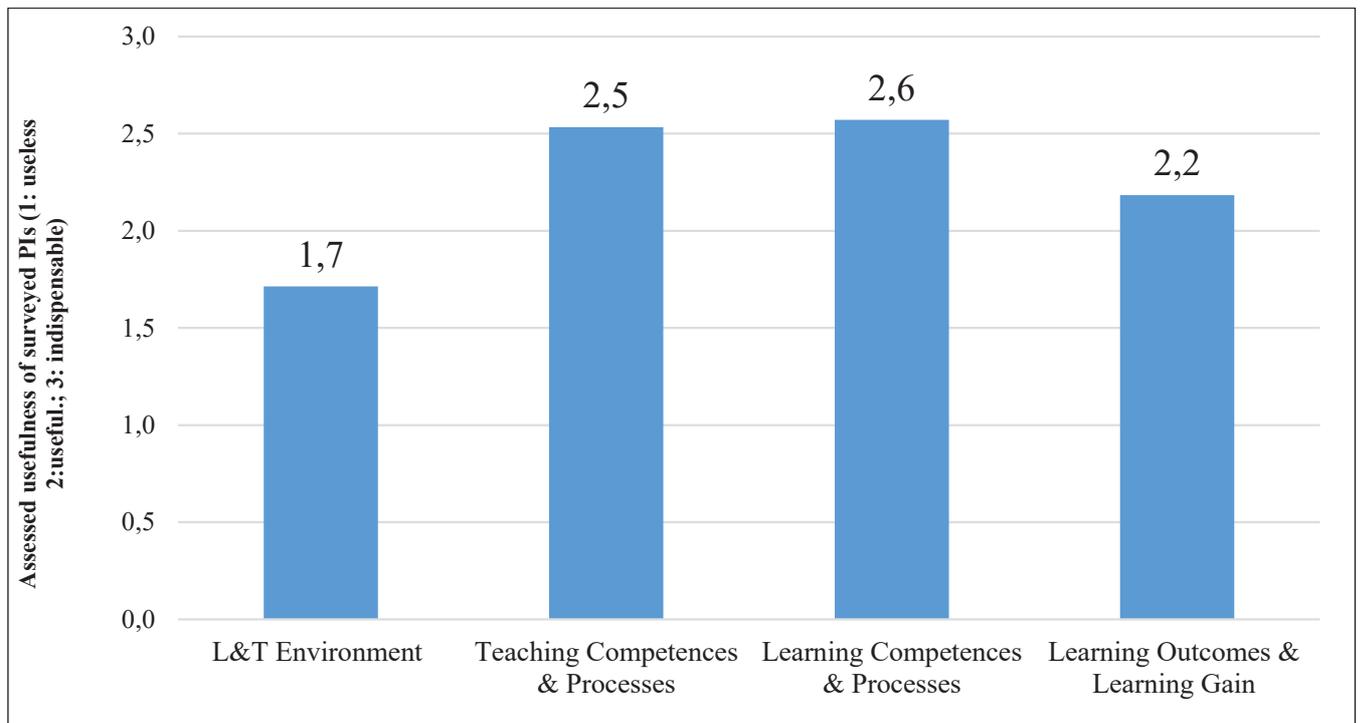
The representatives of the QA management staff assessed the usefulness of PIs underlying the “Teaching competences” and “Learning outcomes” categories as the two more useful to measure the L&T process. Moreover, the difference between these two categories and the others is now clearer. The PIs within the “L&T environment” and “Learning competences” were judged indeed between the values useful and useless. PIs that were judged as indispensable from almost all the QA representatives are for instance the “*Teaching staff subject-matter and methodological competences*” and the “*Graduate satisfaction with study experience*”. On the contrary, examples of PIs that were judged as useless are “*Student learning gain in self and social competences*”.

From a qualitative viewpoint, several comments were similar to those on core data and thus on understanding the meaning of some PIs (e.g. what does it mean ‘Compatibility of studies & work?’), and their effectiveness to really measure the quality of L&T (e.g. is it enough to look at the participation of students in the curriculum development? Are they really informed? Is the only participation synonymous of something positive?). In addition, questions arose on how to measure some PIs such as “*Learning diversity offered with respect to course structures to do justice to different learner types & learning processes*”, all the PIs of the “Teaching competences and processes”, those PIs concerning the ‘learning gain’ (is not the grade enough?) and “*Possibility of inclusion of work experience & elements related to work practice*”.

Lastly, concerning the evaluation of the use of PIs within UNIMI almost 55% of the answer are ‘do not know’ whereas another 25% (39 out of 155) is not collected. It is also interesting to note that in some cases the answers are even controversial. PIs such as the “*Teaching staff*”

subject-matter competences” and others present indeed 2 answers as ‘regularly collected’ and 2/3 as ‘not collected’. The only area in which there is a significant number of ‘regularly collected’ is the “Learning outcomes” thanks to PIs like the “*Undergraduate/Graduate/Postgraduate satisfaction with study experience*”.

Leadership’s assessment



The PIs within the categories “Teaching competences” and “Learning competences” present the highest usefulness according to the 3 Leadership representatives interviewed. This result is quite different from those of the other stakeholders’ groups which ranked the “Learning competences” PIs as less useful than the “Learning outcomes” ones. Regarding the PIs of the “L&T environment”, they received the lowest evaluation as well as presenting 6 ‘do not know’.

Lastly, concerning the evaluation of the use of PIs within UNIMI 73 out of 94 answers are ‘not collected’. The only area in which there is a slightly high number of ‘regularly collected’ is the “Learning outcomes” due to PIs such as the “*Undergraduate/Graduate/Postgraduate satisfaction with study experience*”. Hence, while there is a convergence between the QA management and the Leadership on part of ‘not collected’ the number of ‘do not know’ for the leadership is significantly lower than that of QA management staff.

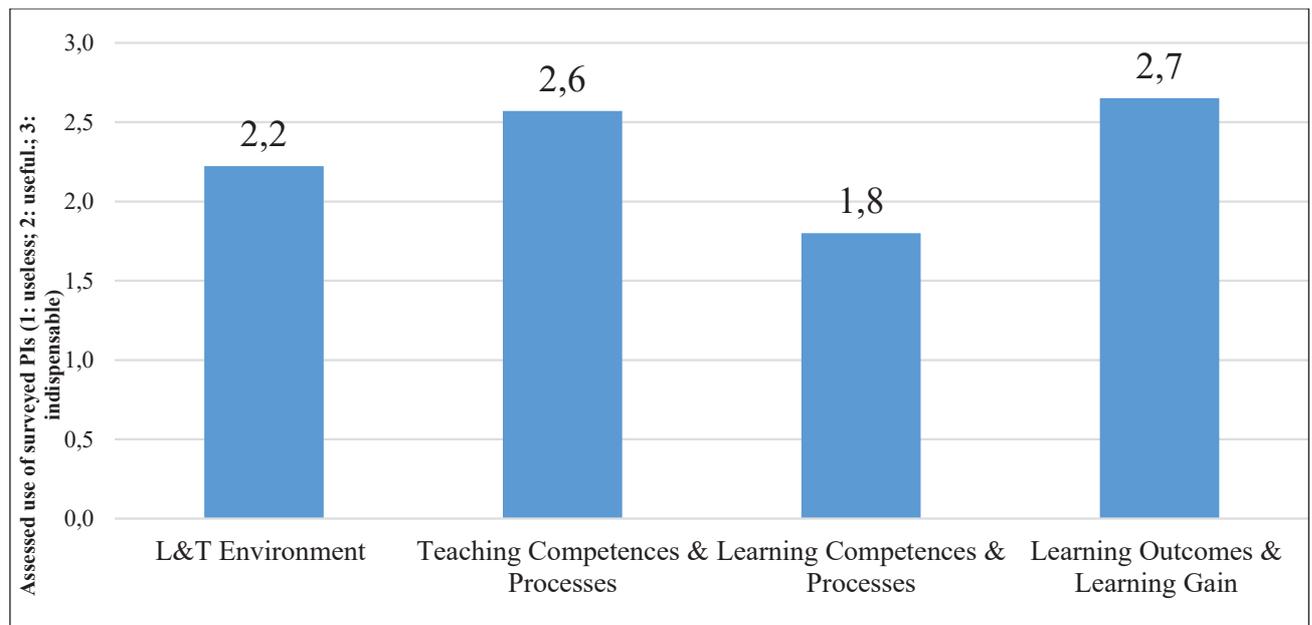
Additional assessments by active SQELT project participants

Table 2b: Further surveyed performance indicators (PIs), broadly construed, as assessed by active SQELT project participants

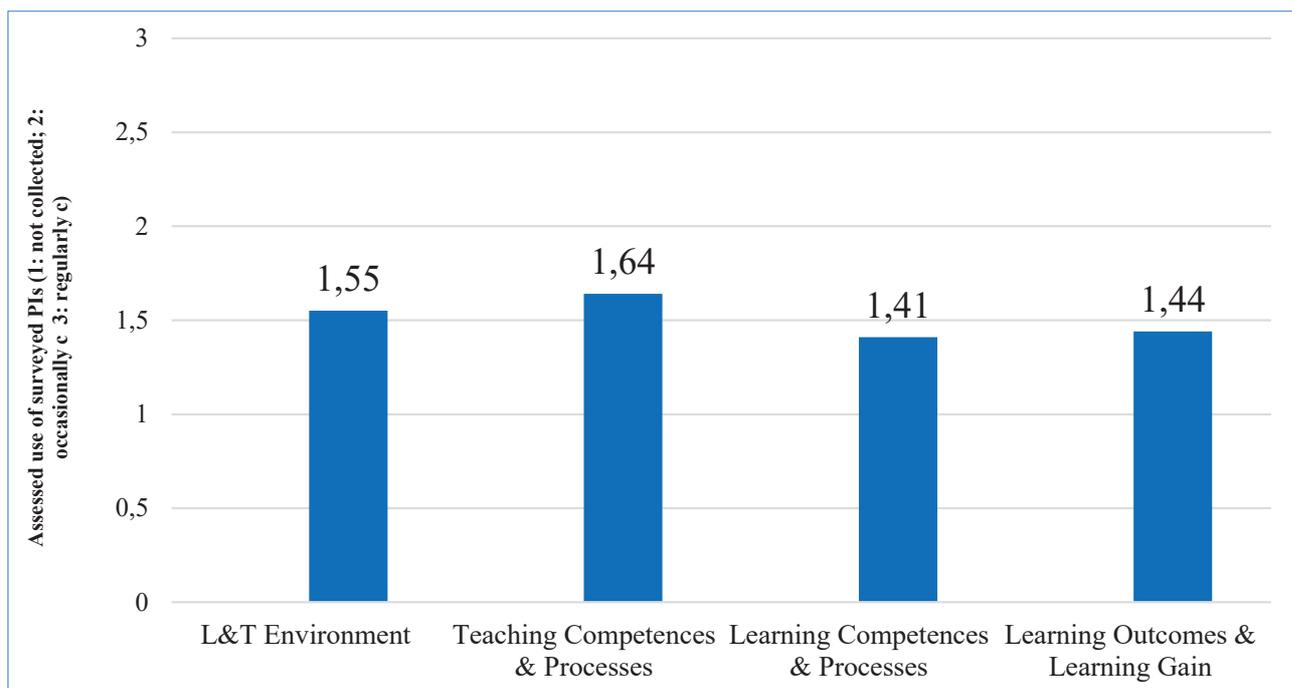
Further surveyed performance indicators supplementing those in Table 2a to build a comprehensive set	
L&T Environment	
Learning resources	Quality of library services (TBDBE)
	Diversity of courses offered (with respect to topics, class options & sizes, time, place, lecturers, etc.) to guarantee that the study programs can be completed within the regular time period (TBDBE)
	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)
Teaching resources	Opportunity offers for studying abroad (TBDBE) (PDRLA)
	Possibility of inclusion of Bachelor study periods abroad Possibility of inclusion of Master study periods abroad
Facilities & equipment	Quality of lecture halls & seminar rooms (TBDBE)
	Quality of IT services (TBDBE)
	Quality of laboratory facilities (TBDBE)
Supportive environment	Provision of student support to succeed academically (TBDBE)
	Quality of learning support services (e.g. tutoring services, writing centre, student exchange centre, learning management system) (TBDBE) (PDRLA)
	Measures of encouraging contact among students from different backgrounds (social, ethnic, religious, etc.)
	Provision of opportunities for students to be involved socially (TBDBE)
	Provision of student support for managing non-academic responsibilities (e.g. work, family, etc.) (TBDBE)
	Provision of student support for overall well-being (e.g. recreation, health care, sports, counselling, etc.) (TBDBE)
	Quality offer of campus activities & events for students (e.g. performing arts, sports events, etc.) (TBDBE)
	Quality offer for students to attend events that address important social, economic, sustainability, or political issues (TBDBE) (PDRLA)
	Equity student support (TBDBE)
Student interactions	Institutional recognition of teaching (TBDBE)
	Student interactions with students (TBDBE)
	Student interactions with student services staff (e.g. career services, student activities, housing, etc.) (TBDBE)
	Student interactions with other administrative staff & offices (e.g. registrar, financial aid, etc.) (TBDBE)
Further education & lifelong learning	Student experience in discussions with diverse others (TBDBE)
Stakeholder participation in L&T quality development & evaluation	Mediation of motivation for lifelong learning (TBDBE)
	Student participation in student evaluations of courses & teaching (SECT)
	Student participation in decision-making related to student evaluations of courses & teaching
	Teaching staff participation in student evaluations of courses & teaching
Teaching Competences & Processes	Teaching staff participation in decision-making related to student evaluations of courses & teaching
	Teaching staff workload
	Teaching workload of teaching staff (TBDBE)
	Teaching quality in general (TBDBE)
	Quality organization of course sessions (TBDBE)
	Teaching staff respect & interest for students (TBDBE)
	Teaching staff pedagogical knowledge & skills (e.g. knowledge of teaching models & learning processes) (TBDBE)
	Teaching staff sensitivity to class level & progress (TBDBE)
	Teaching staff social competences (e.g. team, communication & leadership competences) (TBDBE)
	Bedside teaching (medicine) (e.g. concerning mentoring, suitability of rooms & variety of diagnostic techniques applied) (TBDBE)
Integration of pre-clinical/theoretical & clinical courses (medicine) (TBDBE)	
Quality teaching & teaching staff engagement	Quality skills labs & training centres (e.g. maintenance, accessibility, technical facilities, mentoring) (medicine) (TBDBE)
	Teaching staff satisfaction with teaching quality (TBDBE)
Learning Competences & Processes	

Quality learning & student engagement	Course quality (TBDBE)
	Training offers to reflect upon student learning approaches (TBDBE)
	Student experience of learning quality in general (TBDBE)
	Development of student competences of self-learning (TBDBE)
	Teaching staff assistance in organising peer learning activities (TBDBE)
	Integration of practical experience with patient contact into the study program (medicine) (TBDBE)
	Student engagement in general (TBDBE)
Learning Outcomes & Learning Gain & their Assessment	
Constructive alignment of programs/ courses	Clearly formulated intended learning outcomes (e.g. goals of study modules & courses) (TBDBE)
	Teaching staff awareness of existing intended learning outcomes (TBDBE)
Learning gain	Student learning gain in higher-order learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in reflective & integrative learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in quantitative reasoning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in collaborative learning (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases) (PDRLA)
	Student learning gain in interdisciplinarity (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases)
	Student learning gain in transdisciplinarity (TBDBE) (e.g. by comparison of knowledge & skills before & after learning phases)
Assessment quality	Fairness of assessments/examinations
	Timeliness of assessments/examinations
	Quality of assessment/examination formats (TBDBE)
Contact with work environment	Possibility of inclusion of internships/ phases of practical experience or external projects in the Bachelor curriculum
	Possibility of inclusion of internships/ phases of practical experience or external projects in the Master curriculum
Employability	Academic & career counselling for students (TBDBE)

In addition to the items presented in Table 2a, the active SQELT project participants were asked for their assessments on further core data, which are depicted in Table 2b. Generally, their evaluation is line with those of the other stakeholders with the “Teaching competences” and “Learning outcomes” presenting the highest score in terms of usefulness (see graph below). The active SQELT participants, Likewise QA management staff, assessed the PIs within the “Learning competences” as the lowest useful whereas the “Learning outcomes” ones are the most useful.



In terms of the use of PIs within UNIMI, the graph below shows the clear weakness of UNIMI in this field. The average score is indeed very low and always between ‘not monitored’ and ‘occasionally monitored’. For example, within the category “Learning outcomes” only 8 out of 27 PIs are either occasionally or regularly monitored. This data is aligned with the evaluation of both QA management staff and the Leadership for which the number of ‘not monitored’ answers is very high, especially for the second stakeholders. Finally, if we cross the data on the usefulness of PIs with that of their use within UNIMI it emerges that only 9 out of 35 the ‘indispensable’ PIs are regularly collected whereas 18 are not collected. This data clearly tells us that there are several areas such as ‘student learning gain’ that are completely not considered in the internal QA system. On the contrary, there are not PIs that have been classified as ‘useless’ that are ‘regularly monitored’. For the qualitative comments see the core data section.



Stakeholders' assessment of quality evaluation instruments

Structured survey about quality evaluation instruments

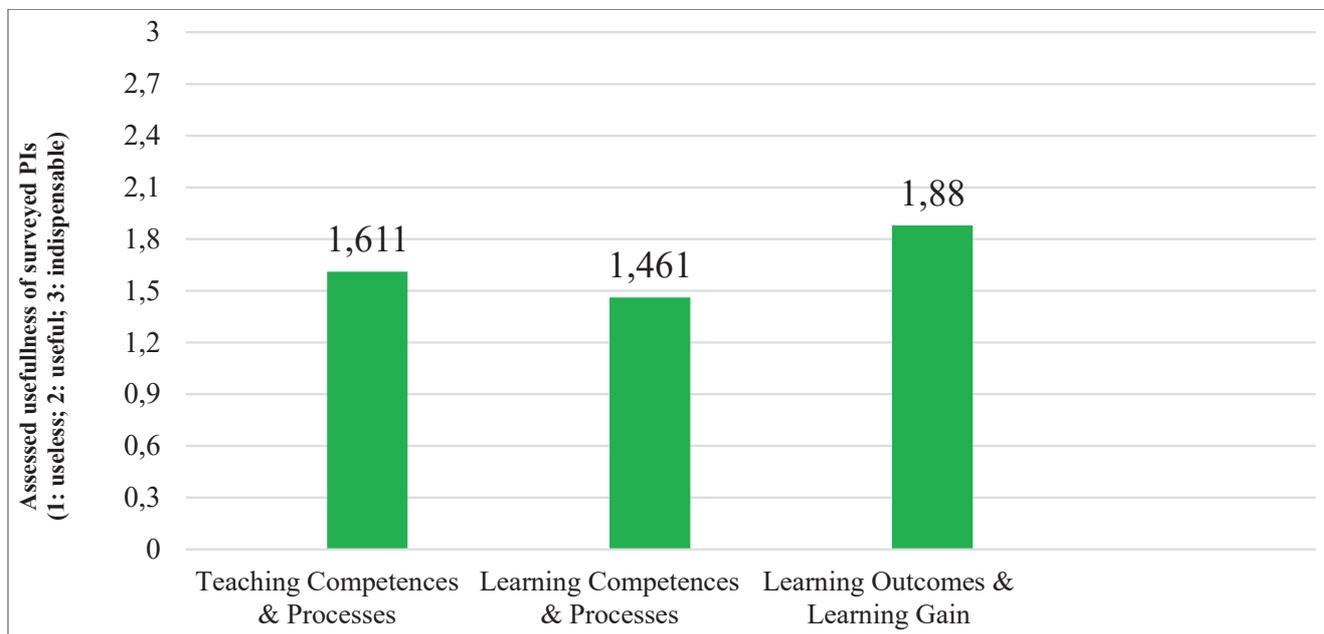
The approached stakeholders were asked to discuss in either focus groups or face-to-face interviews certain issues and fill in a questionnaire (Table 3), which is about quality evaluation instruments (QEI) that can be used for quality monitoring and improvement in L&T.

Particularly, representatives of the stakeholder groups of students, teaching staff, QM staff, and HEI leadership were asked which of the following features apply to the 15 presented QEIs which are listed in Table 3: “indispensable”, “useful” and “useless” as well as “regularly applied in my HEI”, “occasionally applied in my HEI” and “not applied in my HEI”. Respondents also had the choice of answering “do not know”. Moreover, respondents had an option to give open answers and add any comments or make further suggestions.

Table 3: Surveyed quality evaluation instruments (QEIs)

Quality evaluation instruments, selection of “the more uncommon or less widespread or novel items” from a more comprehensive set of quality evaluation instruments	
Teaching Competences & Processes	
Quality teaching & teaching staff engagement	Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for lecturers & associate professors
	Quality procedures of teaching staff recruitment (e.g. responsibilities; recruitment & selection process) for full professors
	Teaching staff peer review or participating observation of courses
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)
	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)
	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)
	Discourse analysis generated from Learning Analytics tools such as COHERE (e.g. visualization of social & conceptual networks & connections) (PDRLA)
	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)
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)
	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)
Assessment quality	Student evaluation of assessments/examinations (peer grading)
Prediction of student success	Predictive models for student performance
	Predictive models for student attrition
Accreditation	Accreditation (external) of study programs
	Institutional accreditation (external) of QMS in L&T (program accreditation carried out by HEIs themselves)
Space for additions and comments	
Other, namely	

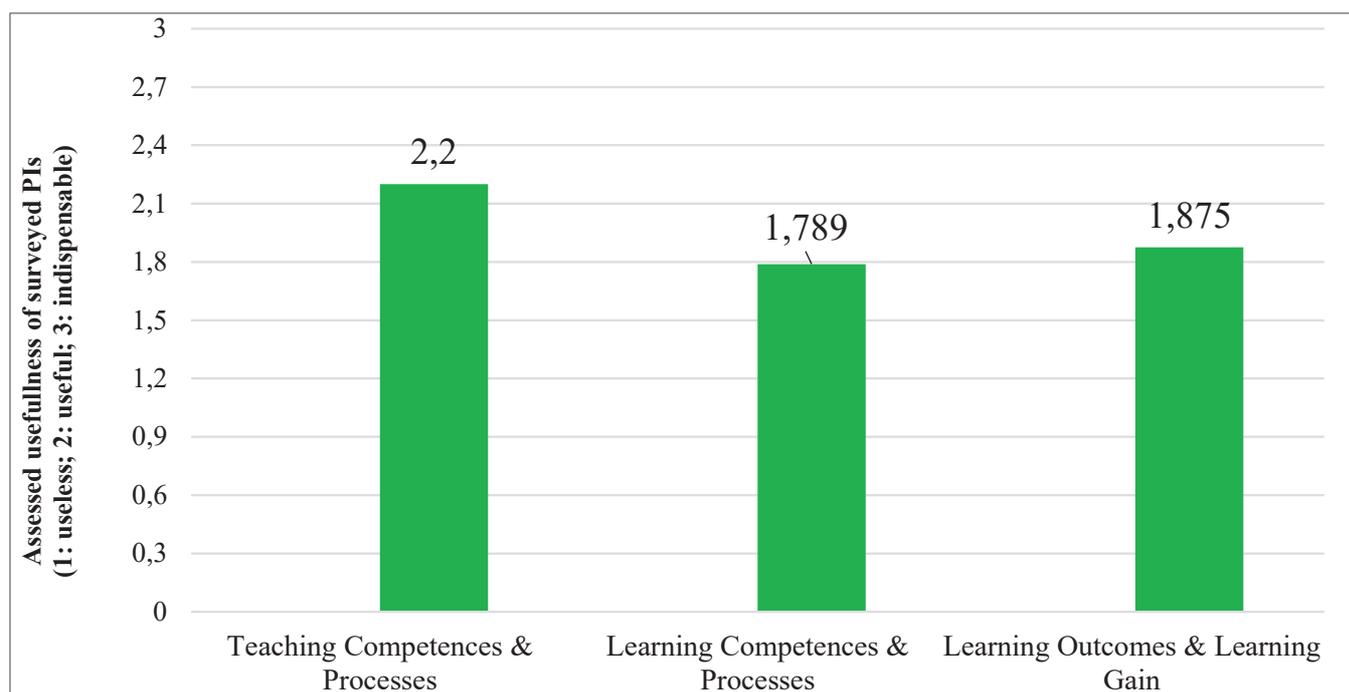
Students' assessment



Students assessed as more useful the Quality evaluation instruments (QEIs) within the categories “Teaching competences” and “Learning outcomes”. However, it is interesting that the average degree of usefulness is around 1,6 that is exactly between useful and useless. Therefore, in general terms, the usefulness of QEIs is lower than both core data and PIs. The only QEI classified as ‘indispensable’ is the “*Student evaluation of assessments/examinations*” while almost all the QEIs within the “Learning competences” have been judged as useless. This is certainly due to a lack of knowledge of instruments such as SNAPP and COHERE as indicated widely by all students.

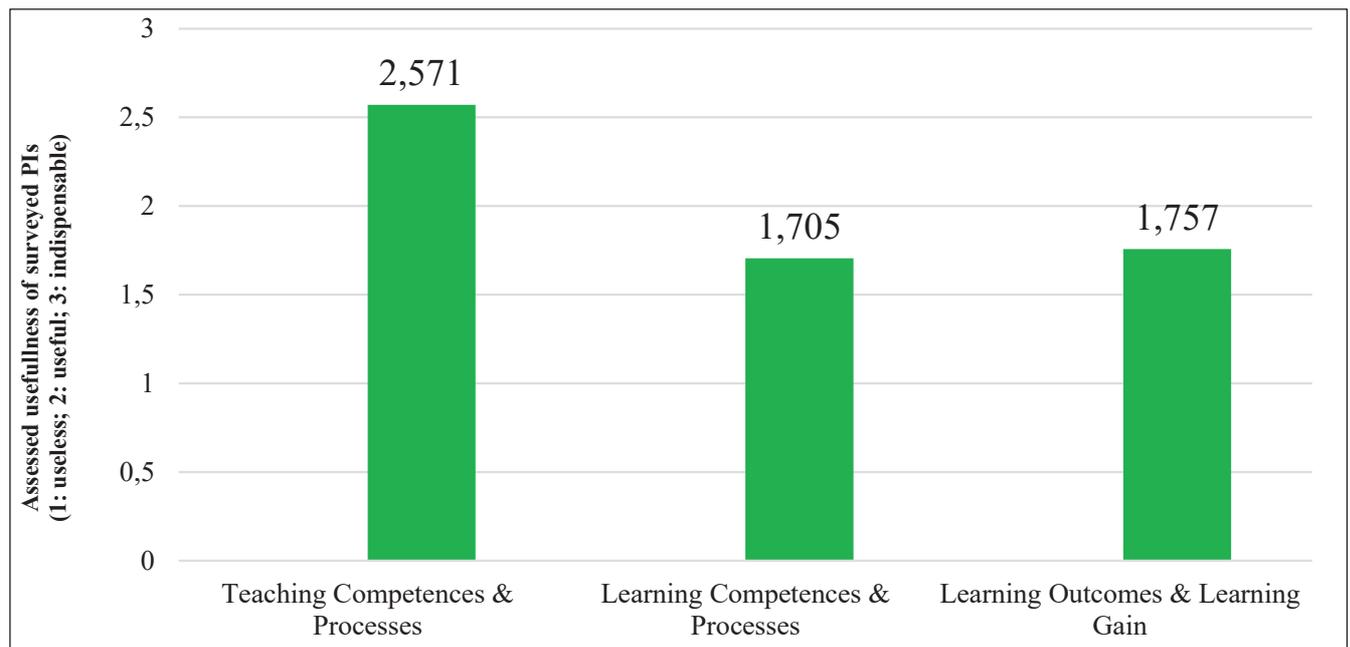
Concerning the assessment on the use of PIs within UNIMI, all students choose the ‘do not know’ option confirming what has been clearly stated for the core data and PIs.

Teachers' assessment



Teachers considered the most useful QEIs those within the category “Teaching competences”. As shown by students’ assessment, also teachers’ evaluation of QEIs is generally lower compared with core data and PIs. As widely reported during the filling of the questionnaires this is due to a lack of knowledge of several of the listed items. The two QEIs about the “*Quality procedures of teaching staff recruitment*” were the only two equally judged as indispensable. From a qualitative viewpoint, almost all the teachers claimed that several items were not understandable, arguing that some of them (e.g. all the QEIs of the “Learning competences”) are mainly Anglo-Saxon based and too different from the Italian conception of teaching, especially in disciplines such as the humanities. Lastly, regarding the evaluation of the use of PIs within UNIMI, 51 out of 75 responses were ‘do not know’.

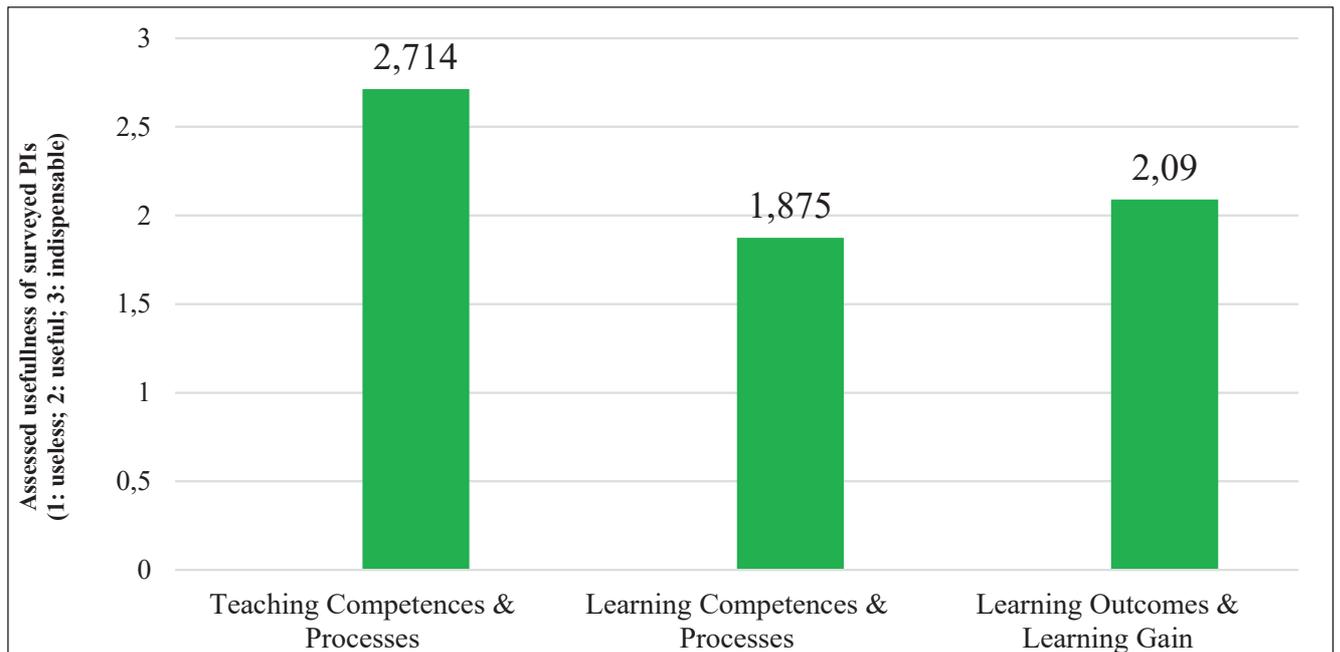
Quality management staff's assessment



The representatives of the QA management staff ranked as the most useful QEIs those belonging to the “Teaching competences” area. The scores attributed by this group of stakeholders is higher compared with the previous two and it is probably the result of higher knowledge of other realities and different instruments besides those used within UNIMI. Nevertheless, the same problems highlighted for the core data and PIs emerged also for the QEIs. Some are unclear in terms of meaning (what do you mean for predictive models? It can mean several things), while others were said difficult to be implemented. For example, the effectiveness of the QEIs belonging to the “Learning competences” rely on the capacity of teachers to use these instruments such as Moodle, SNAPP and COHERE. However, there are no incentives for teachers to learn how to use them within UNIMI and in the Italian context in general. This consideration has influenced the way all the interviewees answered this part of the questionnaire.

Finally, the evaluation of the use of PIs within UNIMI showed that 42 out of 76 answers present the label ‘do not know’ and 24 ‘not collected’. The only QEIs that were classified as ‘occasionally collected’ are the two on the “*Quality procedures of teaching staff recruitment*”.

Leadership's assessment

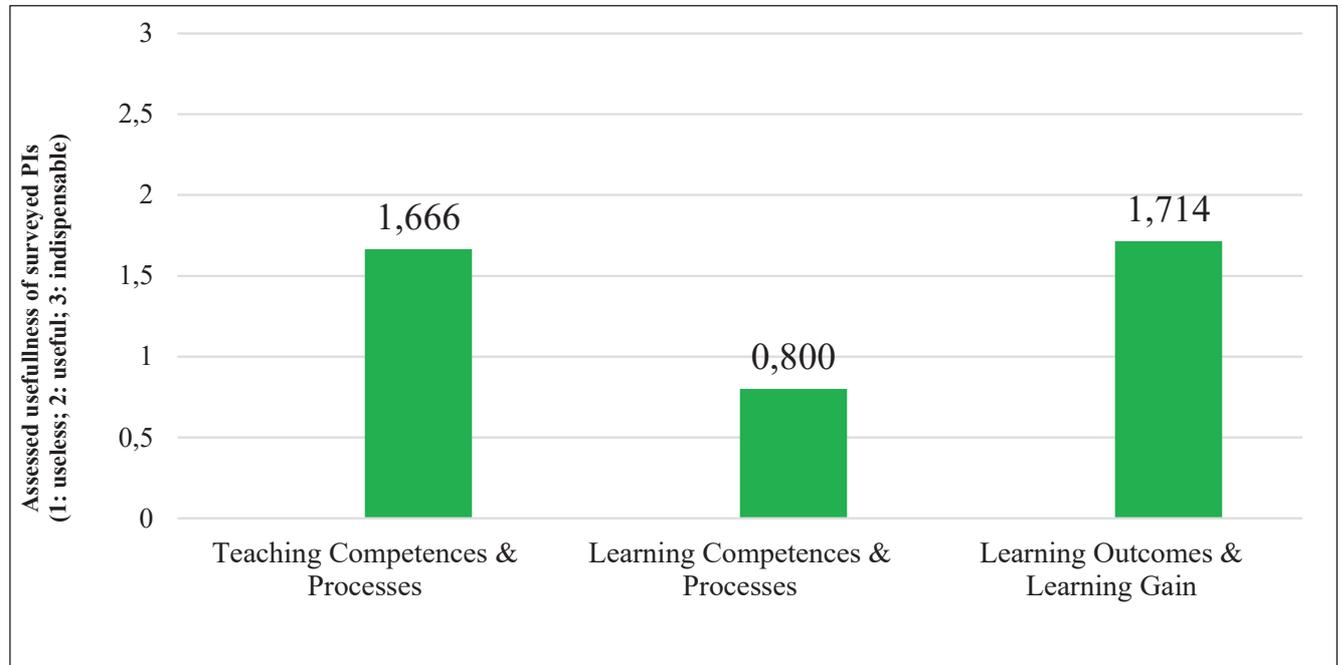


The QEIs within the categories “Teaching competences” and “Learning competences” present the highest usefulness according to the 3 Leadership representatives interviewed. Compared with the other stakeholders, the leadership’s scores are slightly higher. However, all the interviewees underlined how the use of sophisticated QEIs like those of the “Learning competences” areas need time and resources and, above all, clear political indications from the governance of the university in order to be effectively implemented.

Lastly, the evaluation of the use of QEIs within UNIMI presents 37 out of 45 answers as ‘not collected’ and 8 as either ‘occasionally’ or ‘regularly collected’. As preliminary showed by the QA management staff this data is just further evidence of the gaps that the performance data management of UNIMI presents.

Additional assessments by active SQELT project participants

The active SQELT project participants were also asked for their assessments on the same list of quality evaluation instruments (QEIs) which were presented to the university's respondents, see Table 3.



The usefulness of QEIs is the lowest compared with core data and PIs. This can be partly attributed to a technological gap that UNIMI suffers, which influenced how the active members of SQELT perceived the importance of QEIs such as Moodle, SNAPP and COHERE. This assessment is significantly different from that of QA management, Leadership and Teachers more aligned with the Students viewpoint.

Finally, concerning the use of QEIs within UNIMI 15 out of the 17 are not monitored in any ways, whereas 2 are occasionally monitored. This information only confirms the gaps of the performance data management on L&T of UNIMI. Yet, since the usefulness of QEIs was evaluated quite low on average this gap is less problematic than that of PIs. The data are also in line with the evaluation made by both the QA management and the Leadership as well. For the qualitative comments see the core data section.

Insights from the open discussion on the quality of L&T

Each respondent of the 4 stakeholders' groups was also asked to discuss which are in his/her opinion the main attributes (for a maximum of 3) that define the quality of the "L&T environment", "Teaching competences", "Learning competences" and "Learning outcomes", during either the focus group session or the face-to-face interview. Here are summarized the main results that emerged from the analysis of transcript of the focus group and the notes taken during the interviews.

1. STUDENTS

L&T ENVIRONMENT

- I) Quality of infrastructures, especially classrooms and libraries;
- II) Linkages with industry (n. of internships, a good placement office);
- III) On-line platform with diversified course contents.

TEACHING COMPETENCES

- I) Teacher clarity in explaining;
- II) Teacher capacity of creating students' interest; (attendance as an indicator ?);
- III) Teacher capacity of encouraging students' critical thinking.

LEARNING COMPETENCES

- I) Presence of differentiated course contents (not only the frontal lesson)
- II) A balanced workload

LEARNING OUTCOMES

- I) Employability;
- II) Capacity of thinking critically;
- III) New knowledge compared with the beginning of the academic career.

Students in ranking what they thought the quality of L&T environment / Teaching competences / Learning competences / Learning outcomes is, identified in the “Employability” and the “Teacher clarity in explaining” as the main two attributes that they would have chosen in order to measure the quality of a degree programme. Yet, without considering the employability, the majority of the identified items like the “Teacher clarity in explaining” or the “Teacher capacity of creating students' interest”, are difficult to be measured as widely recognized also by the students themselves. Moreover, two other points emerge significantly during the discussion of both students and teachers. First, there is no vocabulary on L&T quality and, moreover, no knowledge at all about how the UNIMI manages QA. Students, in particular, recognized that their participation during the annual self-evaluation process of each degree programme is merely formal since the entire procedure is generally perceived as a bureaucratic fulfilment. Both students and teachers recognized that this is one of the reasons behind the choice of the answer ‘do not know’. Second, Students and Teachers tended to consider relevant only those aspects on which they were used to provide an assessment, as they clearly argued. Students' surveys are indeed compulsory, and it is mainly structured on either employability or the perceived quality of teachers' explanation, organization, availability, all attributed that were indeed provided during the open discussion. On the contrary, Teachers are used to be evaluated by students. As stated by one student: “If I do not have to provide an evaluation, I tend to think that this aspect is less important”.

2. TEACHERS

L&T ENVIRONMENT

- I) Quality of infrastructures, not only physical but also technological (emphasis on classroom and laboratories facilities)
- II) Grades of students from secondary school

TEACHING COMPETENCES

- I) Difficulties in separate content proficiency and methodological proficiency
- II) Training that teachers have undertaken during their academic career

LEARNING COMPETENCES

- II) Analysis of “path/sequences”
- III) Analysis of data from exams results
- IV) Satisfaction evaluation from the alumni

LEARNING OUTCOMES

- I) Stable link with employers
- II) Evaluation of “professional” competences

Teachers underlined as the most important attributes the ‘quality of infrastructures’ and the ‘Grades of students from secondary school’ since infrastructure and students these two are the main factors that they face during the teaching activity. Moreover, two other general comments emerged from the discussion. First, there is no incentive for them to spend time in providing very high-quality teaching. Teachers argued indeed how the national system of academic career does not allow them to dedicate on teaching since they are evaluated only based on their research publications. Second, Teachers underlined how UNIMI (and Italian universities in general) does not take into account the teacher’s viewpoint at all. Indeed, while students evaluate their course and degree programme through a specific survey, teachers are never asked to assess their courses, the organization, the quality of the classroom... This is said to be detrimental to a holistic view of the quality of L&T.

3. QA MANAGEMENT STAFF

L&T ENVIRONMENT

- I) Interaction between students and teachers (academic advisors)
- II) Good welcoming and administrative offices;
- III) Number of people (and financial budget) on L&T.

TEACHING COMPETENCES

- I) Teaching staff engagement: number of approaches used during a course or degree programme (how many materials are used; if digital support is used; if working groups / alternatives modes are used etc...);
- II) Clarity of teacher's explanation.

LEARNING COMPETENCES

- I) High heterogeneity of the course contents (Yet, it is very disciplinary based);
- II) Course quality (perception of the quality of a course from students);
- III) Progress of students in terms of learning gain (the problem is how to measure it).

LEARNING OUTCOMES

- I) Employability of graduates (especially master's degree ones);
- II) Satisfaction of graduates of the whole degree programme (would you do it again?).

The QA management staff identified the Teaching staff engagement as the most important attributes along with the employability. Besides these two the respondents also identified how the number of interactions between students and teachers (academic advisors) can be very informative since it tells how much students participate and is involved in the academic life. If the value of this indicator is high, it might suggest a dynamic and interesting educational environment.

4. LEADERSHIP

L&T ENVIRONMENT

- I) Percentage of financial resources (income) on L&T;
- II) Number of students from another university;
- III) Employers and student's participation in the curriculum development activities.

TEACHING COMPETENCES

- I) Heterogeneity of teaching approaches (pedagogical approaches);
- II) Number of academics dedicated on teaching activities compared with those on research.

LEARNING COMPETENCES

- I) Learning gain of students
- II) Students workload

LEARNING OUTCOMES

- I) Employability of graduates
- II) Students' satisfaction

The 3 representatives of the Leadership group identified in the amount of “financial resources dedicated on the L&T activities” and the “employability of graduates” the most two important attributes through which measure the quality of a degree programme. Nevertheless, they also underlined the worth of looking at the “number of students from another university” as another key element. They claimed that this last indicator is particularly important because is one of the indicators used by the Italian minister to distribute public funds to universities. This fact tells also how indicators for L&T can be policy driven and influence the emphasis of universities' governance on L&T, as suggested by the interviewees.

Stakeholders' assessment of Learning Analytics

Structured survey about Learning Analytics

Respondents, focus group and interview participants were presented the commonly used definition that ‘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 asked whether Learning Analytics is put into practice in their HEI. The answer options were “Yes”, “No”, and “Cannot answer, because ...”. Further questions about Learning Analytics only were addressed at those respondents who answered the question in the affirmative whether Learning Analytics is put into practice in their HEI. The approached stakeholders (students, teaching staff, QM staff, and HEI leadership) were asked to discuss in focus groups, interviews and/or fill in a questionnaire about certain items relating to Learning Analytics, which are depicted in Table 4. The question was “Which of the listed functions of Learning Analytics are realized in you HEI?” Respondents were also asked to give some information and detail about their answer.

Table 4: Surveyed functions of Learning Analytics

Functions of learning analytics, which are realized in universities or not
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

In addition, respondents were asked the open questions listed in Table 5.

Table 5: Further open questions addressed at stakeholders

Functions of Learning Analytics in HEIs
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?

Finally, the respondents were asked, which strengths, weaknesses, threats and opportunities (SWOTs) they see for Learning Analytics, and how they would strategically deal with them. Particularly, they were confronted with the questions listed in Table 6.

Table 6: Preliminary SWOT analysis questionnaire for Learning Analytics

What are, in your view, strengths of Learning Analytics?
What are, in your view, weaknesses of Learning Analytics?
What are, in your view, opportunities & threats 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?

Stakeholders' assessment

The 5 representatives of the QA management staff and the 3 of the Leadership group are the only respondents that answered to some of the Learning analytics (LA) questions since all the other participants answered as 'cannot answer'. The main explanations of the 'cannot answer' response are two. First, both Teachers and Students presented difficulties in truly understanding what LA are (e.g. are LA a special set of indicators? are they something different from them? In which way should have i experienced them?). Second, they clearly showed a lack of knowledge on this topic and in particular on the presence of LA within UNIMI.

Concerning the representatives of the QA management staff and the Leadership, their answer can be described as 'Yes but to a certain extent'. This response was also shared by the active members of the SQELT project. Four main elements contribute to this specific answer. First, some core data and PIs on LA are regularly collected within UNIMI. However, as clearly recognized by both representatives of QA management staff and Leadership, these data are not clearly used to understand and improve 'learning and the environment in which it occurs' (Siemens 2011a; HEC 2016, 4), but only to be compliant with the national legislation that prescribed their use in the annual review of degree programmes. This viewpoint was clearly

shared by both the Leadership and the QA management staff, who also argued that the massive effort of time required to carry out these procedures make these last perceived as bureaucratic duties to be done and not as moments in which potentially improve the quality of degree programmes. In addition, several areas of LA listed in Table 4. are not covered at all the by existing national legislation on PIs in L&T.

Second, there is a lack of political commitment from UNIMI’s governance on this topic. The same Leadership’s representatives admitted that UNIMI does not have both official strategy and a developed internal policy on LA.

Third, there is a lack of knowledge and awareness of the potentiality of LA. This is particularly true for the leadership that had a high difficulty in filling the questions on LA and many of them were left blank.

Finally, there are no incentives within UNIMI and in the Italian universities to focus on LA since academics and their institutions are only evaluated on their research performances. This makes the use for improvement of the small set of PIs on LA based on the commitment of individuals (programme directors).

The three groups that answered, ‘Yes to a certain extent’, identified 5 out of the 13 illustrated in the below table as the functions of LA realized within UNIMI.

Functions of learning analytics, which are realized in UNIMI	Examples	Stakeholder who answered positively
Supporting the improvement of course design	The indicators provided by the national evaluation agency to self-evaluate the progresses of degree programme both annually and periodically. These indicators are concentrated on the students progresses and on the student’s employability. The results of these indicators are used to in particular to identify problems in the general structure of the degree programme during the self-evaluation process of the university. During these self-evaluation procedures students contribute to develop the final assessment and the improvement plan.	Leadership; QA management staff; Active members of SQELT
Supporting the verification of student workload	The compulsory student’s survey for each course presents a specific section on the perception of the appropriateness of workload. This is the only way in which the workload is verified since the definition of this last is left to the autonomy of teachers based on some broad indications from the central administration. The results of the student’s survey are used during the annual process of self-evaluation (in which students participate) and monitored by the Head of department.	Leadership; QA management staff; Active members of SQELT
Supporting the prediction of student learning effectiveness/success	There is nothing precisely on the prediction of student learning success, but there are several indicators provided by the national evaluation agency on the students success such as the “Percentage of ECTS credits achieved in the 1st year / total ECTS credits to be achieved in the first year”, “Percentage of students who continue on to the 2nd year in the same study programme having at least earned 40 ECTS credits in the 1st year”, and the “Percentage of drop-outs after the 1st academic year”. The results of these indicators are used to in particular to identify problems in the general structure of the degree programme during the self-evaluation process of the university.	Active members of SQELT
Supporting the identification of deficits in learning support for students	The compulsory student’s survey for each course presents a specific section on the how teachers support students’ learning. The main rationale of these questions is to identify problems in the relationship between teachers and students. The results of the students’ survey are used during the annual process of self-evaluation and monitored by the Head of department, who can decide to take actions in cases of evident problems in the relationship between the teacher and the students. Yet, these cases are not so common.	QA management staff; Active members of SQELT

Supporting the identification of deficits in environment support for students	The compulsory student's survey for each course presents a specific section on the adequacy of the course's website, the laboratories and the classrooms. The results of the student's survey are used during the annual process of self-evaluation (in which students participate) and monitored by the Head of department. In addition, students can fill a elective survey on the Library 'services that are only used by the Library's management internally.	QA management staff; Active members of SQELT
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On the contrary, the function of LA that are not realized within UNIMI are the following:

Functions of learning analytics, which are not realized in UNIMI
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 verification of student workload
Supporting the monitoring of students learning progress (stages)
Supporting the identification of students failures of study
Supporting the targeted counselling of individual students
Supporting the improvement of admission & recruitment practices

Concerning these questions on the ethical framework for LA within UNIMI only the Leadership and the active members of SQELT were able to really answer to the two questions reported as follows:

Functions of Learning Analytics in HEIs
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?

Concerning the first question, the Ethical framework on LA, UNIMI presents its own internal policy on data privacy illustrating the people in charge of collecting data and the rights and duties of all the type of stakeholders on which data are collected. There are several subjects within UNIMI that have the duties of collecting data. These report directly to the Rector and are: Heads of departments, Heads of research centres, Head of specialization schools (Medicine), the Secretariat of the general director (the head of the UNIMI's administration), the managers of the Libraries and of services centres and the Head of all the administrative offices. The people involved in any measurement activities have the rights that are aligned with the data protection EU guidelines 2016/679. In general, the main rights guaranteed are:

- I) Access to the data and to some information linked to them;
- II) Amendment of the data if they present wrong information;
- III) Integration of incomplete data;
- IV) Cancellation of data given that these are not anymore needed in relation to their original goals, data are treated in an illegitimate way, someone opposes to the collection of the data with a legitimate reason and data are on people with less than 16 years;
- V) Limitation of the treatment of the data;
- VI) Portability of the data: data can be shared among the different managers with the consensus of the people measured;

VII) Opposition to the treatment of the data for reasons connected to a set of specific situations (defined by an appropriate internal regulation) and for marketing and branding goals.

VIII) To not be undergone to a decision based on only automatized data;

IX) Complaint to any authorities of its country and within the EU.

The implementation of the above-mentioned rights is costless. The person who wants to implement its own rights can required clarifications directly to the UNIMI's office for data privacy.

Regarding the second question, UNIMI has the duty to provide and declare to each different kind of stakeholders, the goals of the measurement activities, how their rights are guaranteed and how data are collected and treated.

Finally, the active members of SQELT, the Leadership and the QA tried to identify the main strengths, weaknesses, opportunities and threats of LA and how to overcome them.

Strengths: LA potentially allowed to have information on learners and their contexts that are not inevitably quantitative ones. To measure the learning progress of students you need indeed some information that cannot be easily measured by the only number and required more sophisticated instruments. For example, measuring the 'Learning gain' tells us lots of information on how students improve during time, their learning strategies, the difficulties that they face etc... This information cannot be measured by hardly be measured by only quantitative numbers. Similarly, the interactions between students during course activities like group works can provide valuable information on their soft skills that are now so important for the labour market. All these aspects of the learning processes can only really measure by combining different type of data (quantitative and qualitative) and viewpoints (students and teachers).

Weakness: LA requires commitment from the users and resources from the governance of universities in order to be effective. Commitment is usually generated by evaluation and incentives. However, if we think to the Italian reality, both institutions (universities) and individuals (academics) are almost only evaluated on their research performances. This, as clearly underlined by the Leadership, has created a shared conception value to which research is more important than teaching since it provides reputation (universities and academics) and resources (performance-related funding for universities and careers progression for academics). LA needs thus a favourable environment in order to produce the expected results and not to become a further bureaucratic duty. If universities decided to invest strategically LA needs to work on the culture of individuals who should collect and use them.

Opportunities: a comprehensive set of LA potentially allows the governance of universities to develop a student-centred approach in L&T that is based on national directives and policy goals. If we focus on the Italian situation, UNIMI's policies on L&T are heavily shaped by the

national legislation and planned to be applied throughout very different contexts such as private vs public universities, generalist vs specialized, north vs south... This homogeneity does not support a student-centred approach since it reduces the room for improvement for individual institutions. These are indeed first controlled for their compliance with the national legislation and not for the quality of their internal QA mechanism. In addition, if we look at the PIs on learners these are concentrated on the students' success, their progression and on their employability. These are clearly linked to the national goals of reducing the number of drops out and increase that of graduates who are employed after the end of their academic career. A less national based LA might potentially mean a more differentiated and context-specific which is able to face a more and more diverse type of students.

Threats: the main threat of LA can be identified in the great 'race' to measure everything without using the collected data. As widely illustrated in the literature, measurement is a necessary but not sufficient condition for improving performances. Yet, it is also claimed that the measurement is naturally the first stage in order to improve any performances. Therefore, it might be mean that to pass from the measurement to the use of any collected data, a change in the culture and attitudes of people is needed. This usually requires time, resources and a strong institutional commitment. It is thus important to really think what to measure and how to use it in order to not consume the scarce organizational resources.

Conclusions and recommendations

Conclusions

6 points can be identified from the analysis of the questionnaires' results and the open discussion with the respondents. The first four concern the questionnaires' findings while the last two are general comments emerged from the entire research path.

D) The assessment of the usefulness of core data / PIs / QEIs: the evaluation of the usefulness display that the highest scores were attributed to those items within the categories "Teaching competences" and "Learning outcomes". This assessment is shared quite equally by all the different stakeholders involved. Moreover, the highest scores can be found for core data and PIs, while QEIs were judged with lower usefulness by almost all the respondents. These findings are supported by the qualitative judgments emerged during the open discussions. All the stakeholders identified in the employability (Learning outcome) and in the Teaching engagement or clarity/commitment (Teaching competences) the two most relevant attributes to define quality in L&T. Leadership and Teachers underlined also the importance of certain aspect of the L&T environment among which the financial resources dedicated to L&T and the adequacy of the infrastructures.

II) The assessment of the use of core data / PIs / QEIs within UNIMI: two main observations can be drawn from the analysis. First, there is a high number of ‘do not know’ answers in particular from students and teachers. This is quite interesting since the respondents were selected among those people that should have been informed about QA practices within UNIMI. Second, the analysis highlights the areas in which UNIMI presents a very limited number of items. Almost the entire set of QEIs is not monitored within UNIMI since 15 out of the 17 are not monitored in any ways. Moreover, large areas of the “Teaching competences” “Learning competences’ are not covered by the current performance data model of UNIMI. It also emerged that those indicators that required an assessment from Teachers are completely missing within UNIMI.

III) The matching of the two assessments: By matching the assessment of usefulness and that of the use within UNIMI, it is also possible to highlight in which areas core data, PIs and QEIs that are judged as ‘indispensable’ are not monitored. This might suggest paths for improvement for the governance of UNIMI. These areas are in particular the PIs on the ‘student learning gain’, and the core data in the areas of “L&T environment” (finances and supportive environment) and “Learning outcomes” (e.g. data on student success and employability).

IV) Learning Analytics: only the QA management staff and the Leadership answered the questions concerning the LA within UNIMI. This data reveals, first of all, problems in understanding what LA truly are. Second, the answers showed a very low developed system of LA within UNIMI which several functions not covered and the lack of an institutional commitment to improve them.

Lastly, two more qualitative comments can be generalized from the open discussions with the respondents:

I) The lack of incentives at the individual and institutional level on the improvement of teaching heavily influenced how all the stakeholders conceive the teaching activity and, as a result, their answers in the questionnaires. Teachers and QA management, in particular, complained about how an unbalanced relationship between research and teaching in terms of incentives and evaluation does not allow to seriously think and improve teaching activities. It follows, that accurate use of L&T data is only on a voluntary based.

II) There is a low institutional commitment from the governance towards this topic, and the discontinuity in the governance structure (The Rector is elected every 5 years) does not provide continuity to some initiatives that could have potentially initiated a path of improvement.

Recommendations

Two main recommendations have been identified to improve the list of items of the questionnaire taking in mind that the final goal of developing a comprehensive list of core data, PIs and QEIs.

First, some of the suggestions identified by the active members of SQELT might be taken into account, especially the ambiguous meaning of some core data and the reliability of their

measurement by providing an ‘explanation’ that is shared across all the different national realities present in the SQELT project. This consideration aims thus to reduce the spaces for interpretation that, at the moment, is too large in our viewpoint.

Second, the level of teaching activity (course, degree programme, whole academic career) the core data, PIs and QEIs refer to might be included in the list of items since it provides a piece of additional information that can change also the assessment of usefulness of these.

References

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

Leiber, Theodor. 2018. “Impact evaluation of quality management in higher education: A contribution to sustainable quality development in knowledge societies.” *European Journal of Higher Education* 8(3): 235-248. DOI: 10.1080/21568235.2018.1474775. <https://www.tandfonline.com/eprint/jTiwRuTgWZArnpGW3Jcq/full>; accessed 19 October 2018.

Leiber, Theodor, Børn Stensaker, and Lee Harvey. 2015. “Impact evaluation of quality assurance in higher education: Methodology and causal designs.” *Quality in Higher Education* 21(3): 288-311. DOI: 10.1080/13538322.2015.1111007

Ramsenthaler, Christina. 2013. “Was ist ‚Qualitative Inhaltsanalyse‘?” In Martin W. Schnell, Christian Schulz, Harald Kolbe, and Christine Dunger (Eds.) *Der Patient am Lebensende. Eine qualitative Inhaltsanalyse* (pp. 23-42). Wiesbaden: VS Verlag für Sozialwissenschaften.

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

Schnell, Martin W., and Harald Kolbe. 2013. “Die qualitative Inhaltsanalyse im Licht der Wissenschaftstheorie.” In Martin W. Schnell, Christian Schulz, Harald Kolbe, and Christine Dunger (Eds.) *Der Patient am Lebensende. Eine qualitative Inhaltsanalyse* (pp. 9-22). Wiesbaden: VS Verlag für Sozialwissenschaften.