

SIS-ValDidat: a Statistical Information System for evaluating university teaching

Bruno Chiandotto Bruno Bertaccini

Dipartimento di Statistica "G. Parenti", Università degli Studi di Firenze

E-mail: chiandotto@ds.unifi.it; bertaccini@ds.unifi.it

Summary: Besides collecting, elaborating and transmitting the data requested by the Ministry for Education, University and Research (MIUR), the VALMON Group of the University of Florence has worked over recent years at the definition and implementation of information tools capable of satisfying the cognitive requirements of structures and university subjects therein, and of present and potential users of the offered services (university students and young people who intend enrolling in the University). Among other activities, since the 2000/01 academic year the VALMON Group has collected and elaborated the opinions of university students concerning the educational course they have undertaken. Starting from the 2005/06 academic year, the traditional method for the distribution of final evaluations has been substituted by an innovative Statistical Information System based on web pages: the Sistema Informativo Statistico per la Valutazione della Didattica universitaria – SISValDidat). This system conforms to the most recent standards of accessibility and user-friendliness of web programs and guarantees immediate usage of the information.

Keywords: University activities evaluation techniques, Statistical Information Systems, University students' opinion survey.

1. Introduction

Assessment and judgement of persons and institutions, procedures and results are well established activities, even if they are often carried out in an informal manner. Formal assessment, based on a systematic approach, has been developed in the past decades only. Although it has been often due to many laws and regulations, evaluation is becoming an

indispensable tool for managing programmes and policies in social and economical fields, and in public administration in general, especially in sectors where *public utility services* are produced for the citizens (Gori and Vittadini, 1999).

Assessment is now a strategic activity at all levels as a scientific and supportive instrument of decisional processes for an *ex-ante* (of the feasibility), *in itinere* (during implementation), conclusive and *ex-post* (when the results of the policies applied are seen) verification of whatever has been planned (Biggeri, 2000). This evaluation is no longer considered as being merely research, control and judgement, but as an implement that is integrated and intended for supporting future decisions and planning (Chiandotto, 2002).

As far as university education is concerned, assessment was introduced to Italy through laws 168/89 and 537/93. The former of these laws requires the implementation of forms of internal control on the efficiency and on the results of management within the universities, while the latter one establishes the creation of *Nuclei di Valutazione Interna (NVI - Internal Evaluation Groups)* in the universities.

A recent law (L.19 October, n.370) gives rules for a more precise regulation of university system evaluation:

The Universities shall adopt an internal system for evaluating the management of their administrations, their teaching and research activities, their interventions regards sustaining the right to study. (*Art.1, Clause 1, L.19 October, n.370 – G.U. n. 252, dated 26/10/1999*)

Further details of this reform are in the Ministerial Decree n.270/04 containing the modifications to the regulation which illustrate the by-laws concerning the autonomy of instruction in the universities.

The decree, D.P.R. 21 February 2008, n.64, regulating the structure and function of *the Agenzia Nazionale per la Valutazione dell'Università e della Ricerca (ANVUR – the National Agency for the Evaluation of University and Research Systems)*, which is in the process of being formed, also provides for the suppression of the *Comitato Nazionale per la Valutazione del Sistema Universitario (CNVSU - National Committee for the Evaluation of University Systems)* and the

Comitato di Indirizzo per la Valutazione della Ricerca (CIVR - Committee for Guidelines for the Evaluation of Research).

The test of the provision establishes, in particular, that:

The Agency has the task of promoting the quality of the Italian university and research systems. For this purpose, it supervises the national public system of quality evaluation, in every technical sense, of the institutional activities of the universities and of the research bodies, as well as the efficiency, efficacy, and economical aspects of the programmes aimed at financing and incentivising research and innovation activities that are exclusively the competence of the Ministry [...].

For the evaluation of courses of study, including university Master degrees and research Doctorates, and of the structures for research, even grouped together under affinity of discipline, the Agency uses the criteria, methods and most appropriate meters for each and every field of discipline, taking into account the experiences achieved and shared both in Italy and abroad by the relative spheres of discipline. In particular, it uses analysis and comparison of the qualitative and quantitative indicators, of the results of self-assessment procedures, as well as the reports of external evaluation prepared by expert evaluators, comparing with the reports of self-assessment (method of evaluation between similar) and also taking into account the results of in loco verification [...].

In evaluation activities [...] the Agency also considers contextual factors, such as the financial and infra-structural resources made available in the meantime, the human resources available, even if not permanent staff, the social-economical aspects, as well as students having adequate qualifications when enrolling for study courses [...].

From the date of introduction of the regulation, the National Committee for the Evaluation of University Systems, and the Committee for Guidelines for the Evaluation of Research will be suppressed [...].

(Decree of the President of the Italian Republic, 21 February 2008, n.64, G.U. n.84 dated 09/04/2008)

Hence, the evaluation system is a pyramidal structure made up of distinct decisional levels: at the top, the so-called 1st level of evaluation – the *CNVSU* and the *CIVR* (*ANVUR* in the future), on 2nd level, the *NVI* of the individual universities, and on lower levels, the faculties and the study courses.

The decentralization and self-government principles included in the regulation have induced, in particular, the 1st and the 2nd level (as responsible for the results obtained from their afferent working units) to

undertake intense and in-depth evaluation and self-assessment work, in terms of measurement of efficiency and efficacy of the work undertaken, with a view to quality.

Specifications as to what should be evaluated in the educational processes are contained in the various documents prepared by the *Conferenza dei Rettori delle Università Italiane (CRUI - Conference of Italian University Rectors)* and by the *CNVSU*. In particular, the “*Technical notes on data and information to be transmitted within 30th April 2008*” offer an update of the views of the Committee regards the problem of evaluating the university system.

The information requested by the Committee is aimed at the creation of a battery of indicators that can permit a comparative evaluation, in terms of efficiency and efficacy, between universities. The principle target of this information is the distribution of the available resources among these same universities. Because of the nature of this information, even though it is extremely useful, it is not able to guarantee adequate and complete evaluation of all the aspects involved in view of defining and activating appropriate interventions locally.¹

In recent years, besides collecting, elaborating and transmitting the data requested by the Ministry and by the Committee, many universities have defined and implemented information tools capable of satisfying the cognitive requirements of both structures and relative subjects therein (University, Faculty, Course of Study and individual lecturers) and the present and of potential users of offered services (university students and young people who intend enrolling in university). The initiatives of the **VALMON Group**² (*Valutazione e Monitoraggio dei processi formativi*) of the University of Florence comes under these activities.

Among other activities, since the 2000/01 academic year VALMON

¹ Sufficiently thorough considerations on the topic of evaluation of the university system are to be found in Bini and Chiandotto (2003).

² The **VALMON** group (*VALutazione e MONitoraggio dei processi formativi: Evaluation and Survey of educational processes*), coordinated by B. Chiandotto and made up of under-graduates, post-graduates and lecturers of the Department of Statistics at the University of Florence, has for many years now been carrying out studies and research on the evaluation and survey of the educational processes within Florence University.

group has collected and elaborated the opinions of students attending³ the university concerning the educational course they have undertaken. The survey is based on a form that responds completely to the proposals made by the *CNVSU*. This is appropriately integrated with a section of five questions that can be modified according to the degree course followed, and with a section containing eight pre-set suggestions. The integration is meant to satisfy the specific cognitive necessities of the University of Florence and, at the same time, to facilitate the activation of corrective procedures wherever particularly critical situations are encountered.

The university reform introduced in the 2001/02 academic year has complicated the evaluation activity, due to the fragmentation of the courses. For this reason, the survey now directly involves the teaching staff. Nevertheless, just as before – when appropriately trained students carried out the survey – the survey takes place in the lecture room during lessons, going from one subject of teaching to another.

The questionnaires are collected and passed through a high-speed scanner, which carries out the electronic acquisition of the evaluations. The information is then recognized and elaborated by means of specifically implemented *SAS* procedures. In order to facilitate the reading of this information, the replies given on an ordinal 4-mode scale (from ‘definitely no’ to ‘definitely yes’) are converted into scores of 2, 5, 7 and 10 (Chiandotto and Gola, 2000; Gola, Chiandotto et al., 2002)⁴.

Until the 2004/05 academic year, other *SAS* procedures were intended for reports from individual lecturers and from all the offices of the upper levels (Presidency of the degree course, Deans of the various faculties, Rectorate) and for their transmission by means of electronic mail. Controls on integrity and non-linearity with the *data-warehouse* of the University always entailed a whole series of non-automated verifications that were a hindrance for the delivery schedule of the

³ It must be remembered that the law in force explicitly states that opinions should be collected from students attending the university; this criterion is required by the *CNVSU* as well.

⁴ The attribution of these scores is obviously debatable; nevertheless, the sensitivity analyses carried out demonstrate that attributing different scores (as long as they are reasonable) does not alter the fundamental results of the evaluation.

survey results, since these could be made available to the interested parties only in the second month after the end of each semester of lessons. These were the reasons that promoted the implementation of a new, totally automated and flexible information system, based on web pages, accessible and integrated, and capable of recognizing the type of user at different levels in the hierarchic organization of the University.

Starting from the 2005/06 academic year, the traditional method for the distribution of final evaluations has been substituted by an innovative statistical information system of web pages: the *Sistema Informativo Statistico per la VALutazione della DIDAttica universitaria – System of Statistic Information for the Evaluation of University teaching (SIS-VALDIDAT⁵)*. This system conforms to the most recent standards of accessibility and user-friendliness of web programs and guarantees immediate usage of the information; that is, even before the end of the semester cycle of lessons has terminated. The functions of the system will be illustrated in deep in the next paragraph.

2. SIS-VALDIDAT, information in a mouse click

SIS-VALDIDAT is a true and proper statistical information system⁶ for distributing the collected data, through the six-monthly surveys on

⁵ At the present moment, besides in Florence University, the System is used in other universities such as Ferrara, Macerata and Sannio; Palermo has already deliberated its collaboration in the system; other universities (Cagliari, Calabria, Cassino, Chieti-Pescara, Foggia, Lecce, La Sapienza in Rome, Viterbo, Pisa, Salerno, Sassari and Siena) are evaluating the possibility of using the System.

⁶ This system is a coordinated and integrated set of procedures, instruments and resources for surveying, memorising, elaborating and distributing data and information referring to points of interest for the decisional objectives to be followed. It satisfies all the requirements that imply quality, such as:

- *integrability*, that is, capacity to ‘collect’ data from different sources;
- *accessibility* and *clarity* (or *transparency*), meaning simplicity regards acquisition and comprehension of the information;
- *comparability*, that is, the capacity to make inter-spatial and inter-temporal comparisons;
- *coherence* in the use of several sources based on definitions and standard methods;

teaching evaluations, via the web. Access to the system is available to all the persons involved in the survey, whether they are lecturers or students. The user, no matter where he is, can access the information he is interested in by simply connecting to Internet and consulting the site at <http://valmon.ds.unifi.it/sisvaldidat>⁷.

On the web, the system guarantees liberal access to all the data, grouped according to faculty, degree course and ‘transparent’ teaching (that is, teaching for which the lecturer has authorized the distribution of sensitive data).

The consultation panel is easy to read.⁸: The groups associating teaching in the degree courses and in the faculty are graphically shown by means of folders and sub-folders that make the information easily accessible, even by those who are not experts in personal computing or Internet surfing (see Figure 1). However, the tool bar at the top of the panel offers further help for surfing by indicating the level of aggregation selected.

On the right of every level of aggregation, there are five icons, which allow access to the relative reports arranged for optimal consultation of the collected information.

The first icon activates a target graph that permits immediate view of the mean values revealed for each of the questions in the survey questionnaire (see Figure 2). The eight sections of the target are shown

-
- *flexibility* in being able to adjust to changing cognitive requirements;
 - *safeguard of privacy*, that is, the guarantee of anonymity for each and every subject (persons, families, businesses,...) whose information is in the system.

⁷ On the same server, besides *SIS-VALDIDAT*, another statistical system for information devised by the *VALMON* group can be consulted (at the page *Sbocchi Occupazionali – employment possibilities*) concerning the employment situation of the graduates (at <http://valmon.ds.unifi.it/sboccup>).

⁸ In order to make the system even easier to use, at the **Documentation** point, on the right-hand part of the panel (see Figure 1), there are specific links that permit access to the user manual, to a copy of the questionnaire used for the survey and to a copy of the Technical Description and Report referring to the evaluation of teaching in 2005/06 at Florence University.

with a range of colors going from red, the lowest score (2), to green, the highest one (10)⁹.



Figure 1. Main control panel of the SIS-VALDIDAT system

The second icon is for the synthesis table of the survey (see Figure 3) that gives, for every question¹⁰:

- the distribution of the incidence of the replies obtained;

⁹ When the students' answers are distributed equally amongst the four modes, the arithmetical mean takes on a value of 6, which, because of the scale chosen, cannot be considered a fully sufficient value. Since the sufficiency has been placed reasonably on 7, the graph has a single yellow section indicating 'scarcely sufficient' in which the mean of the scores between 6 and 7 are placed. Moreover, the three sections for mean scores over 7 are green, becoming gradually deeper in color towards 10, that is, the maximum score possible.

¹⁰ It must be stressed that the informative structure is not bound to any particular evaluation questionnaire, therefore different questionnaires can be used for different academic years, as long as one battery of questions remains unvaried throughout time in order to allow for inter-temporal comparisons.

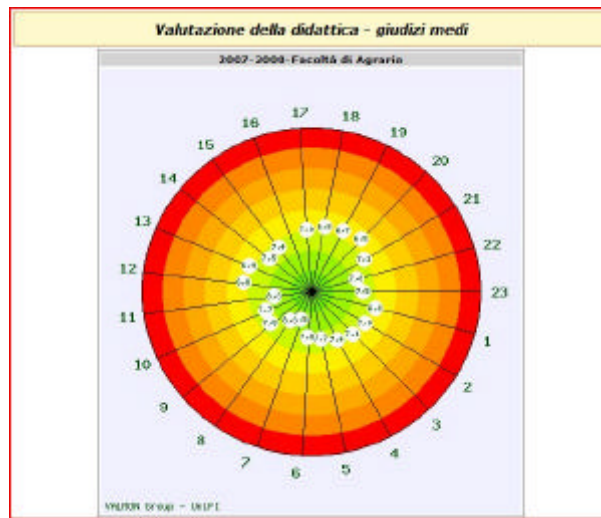


Figura 2. Target graph proposed by the system

Tab. 1 - Quesiti: Statistiche descrittive
Facoltà di Economia - Corso di laurea in Statistica (317)

Quesito	Risposte	R1	R2	R3	R4	Md	Media a.a. 2003-2004	Media a.a. 2002-2003	Media	SQM	Posizione
Q1	497	0,036	0,159	0,610	0,195	7	7,09	6,86	6,81	1,814	8° su 12
Q2	484	0,025	0,184	0,614	0,178	7	7,04	6,86	6,82	1,718	7° su 12
Q3	492	0,018	0,173	0,602	0,207	7	7,19	6,99	7,12	1,726	7° su 12
Q4	480	0,054	0,196	0,533	0,217	7	6,99	7,04	7,22	2,022	9° su 12
Q5	317	0,032	0,164	0,511	0,293	7	7,39	7,17	7,39	1,982	9° su 12
Q6	479	0,052	0,148	0,453	0,347	7	7,48	7,32	7,97	2,187	12° su 12
Q7	499	0,016	0,088	0,401	0,495	7	8,23	8,48	8,76	1,923	12° su 12
Q8	475	0,006	0,072	0,520	0,402	7	8,03	7,90	8,42	1,732	12° su 12
Q9	494	0,038	0,247	0,443	0,271	7	7,13	7,31	7,38	2,092	10° su 12
Q10	493	0,041	0,217	0,489	0,254	7	7,12	7,38	7,50	2,037	11° su 12
Q11	491	0,008	0,059	0,532	0,401	7	8,04	8,11	8,33	1,720	12° su 12
Q12	478	0,046	0,119	0,448	0,387	7	7,69	7,91	7,86	2,152	6° su 12
Q13	144	0,014	0,090	0,438	0,458	7	8,13	8,40	8,36	1,889	7° su 12
Q14	138	0,014	0,094	0,500	0,391	7	7,91	7,78	7,98	1,851	6° su 12
Q15	138	0,014	0,159	0,442	0,384	7	7,76	6,87	7,45	1,969	7° su 12
Q16	135	0,007	0,081	0,504	0,407	7	8,02	7,30	7,83	1,770	6° su 12
Q17	479	0,017	0,050	0,461	0,472	7	8,23	7,96	7,86	1,830	9° su 12
Q18	314	0,025	0,064	0,538	0,373	7	7,86	7,37	7,51	1,871	5° su 12
Q19	492	0,077	0,266	0,486	0,171	7	6,59	6,68	6,53	2,090	7° su 12
Q20	489	0,039	0,282	0,540	0,139	7	6,66	6,49	6,62	1,799	6° su 12
Q21	482	0,029	0,245	0,467	0,259	7	7,14	7,07	7,01	2,005	8° su 12
Q22	489	0,029	0,115	0,597	0,260	7	7,41	7,66	7,72	1,829	11° su 12
Q23	486	0,037	0,158	0,617	0,187	7	7,06	7,12	7,40	1,800	11° su 12

Figure 3. Summary statistics table proposed by the system

- two indices of position (mean and median) which, for the values assigned to the replies, range between 2 and 10 and which are compared with the values revealed for the same course in previous academic years¹¹;
- a variability index (the mean squared deviation);
- the position obtained by the question in the classification calculated on all the other groups belonging to the same hierarchic level.

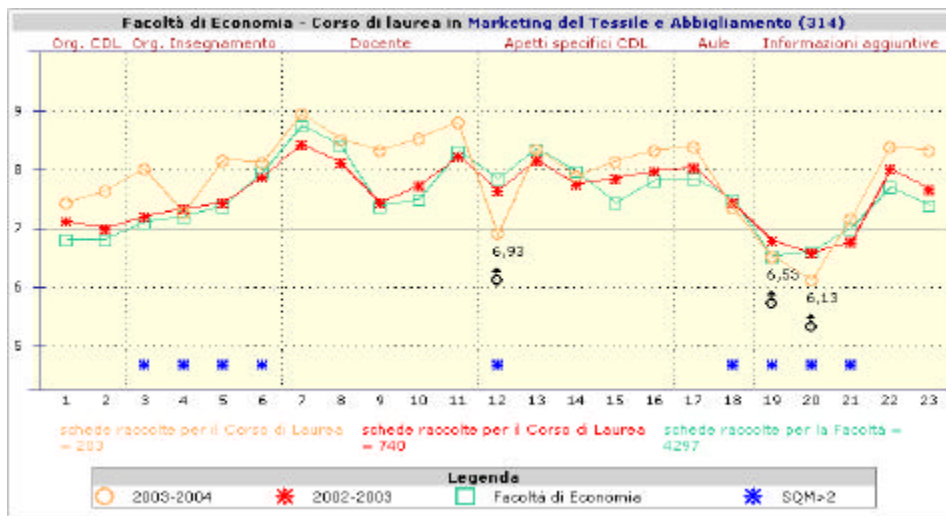


Figure 4. Profile graph proposed by the system

The third icon leads to the graph referring to the 'profile' of the hierarchic level chosen (see Figure 4). The mean scores in the previously described table are represented as dots and are connected by a continuous line in order to facilitate reading and comparisons with other profiles from the previous academic year and the entire upper hierarchic levels (degree course total teaching, faculty total of the

¹¹ Since the sufficiency has been placed with reason on 7, the table endeavors to focus attention on the questions that give a lower mean value, highlighting them in a darker color.

degree course, University total for the Faculty). The asterisks at the bottom of the graph indicate the *items* with high variability in the evaluations obtained.

The fourth icon leads to a histogram with the percentages of consent obtained for the eight pre-set suggestions on the survey questionnaire. Comparisons are made in this case as well, both with the responses from the previous year and with the total upper hierarchic group (see Figure 5).

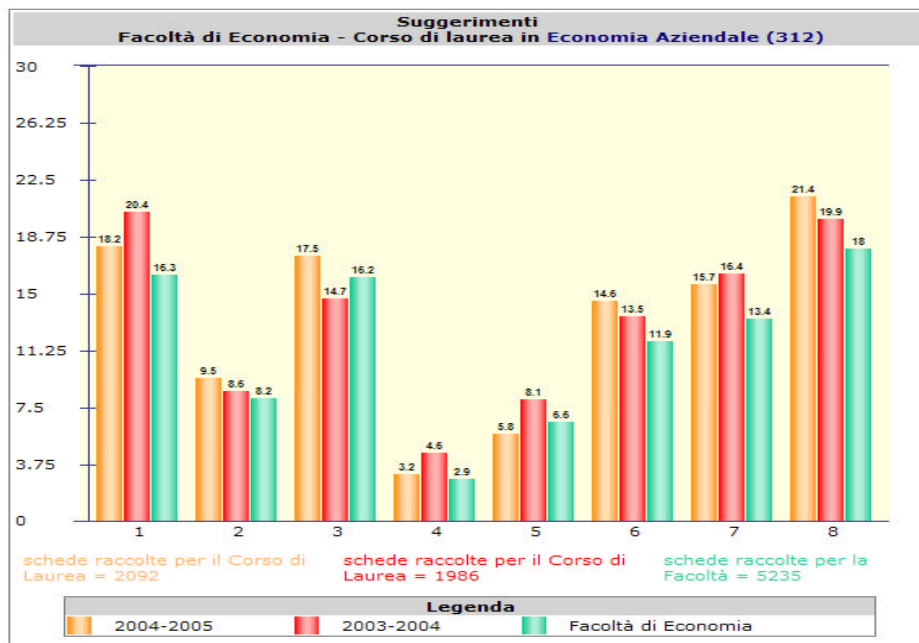


Figure 5. Bar-chart relative to the predefined suggestions percentage of consensus

In each of the four previously described representations, the complete formulation of the questions that make up the evaluation questionnaire can be accessed by simply pointing the mouse cursor on the tag corresponding to the desired item (see Figure 6).

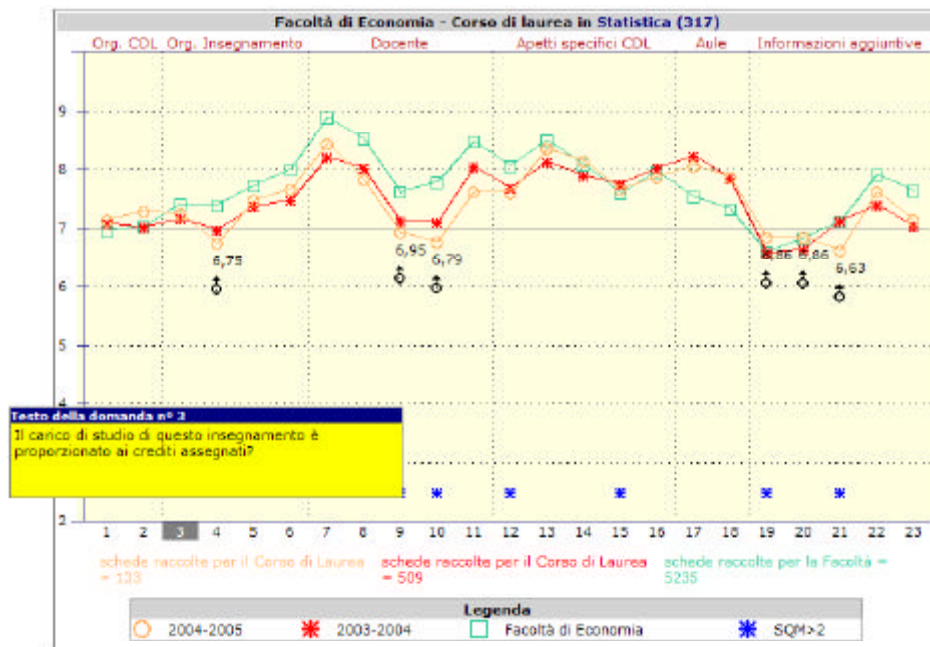


Figure 6. How to examine the formulation of questions

Lastly, the fifth icon gives access to the classification table referring to the hierarchical level selected. In other words, the icon at the level of the faculty illustrates the classification of the relative degree courses (see Figure 7), whereas the icon at the level of the degree course shows the classification of the relative teaching surveyed. The classifications are given for one question after another. For this reason, just above the table that illustrates positions and mean scores, there is a tool bar that permits moving among the different questions making up the questionnaire adopted for the selected year.

Selezione Facoltà **Farmacia**

Valutazione della didattica

Tab. 2 - Graduatoria delle valutazioni ottenute per quesito (valori medi)
Facoltà di Farmacia

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23

Q23 - Sei complessivamente soddisfatto dell'insegnamento?

Posizione	Valore	Descrizione	Codice
1*	7.7609	Informazione Scientifica Sul farmaco I liv.	322
2*	7.7194	Tecniche Erboristiche I liv.	321
3*	7.6707	Farmacia Ospedaliera Scuole spec.	800
4*	7.4694	Tossicologia dell'Ambiente I liv.	323
5*	7.4194	Bioteologie Farmaceutiche II liv.	820
6*	7.3615	Controllo di Qualità nel Settore Industriale-Farm I liv.	320
7*	7.2648	Farmacia LSCU	325
8*	7.1323	Chimica e Tecnologie Farmaceutiche LSCU	324

Figure 7. Ranking of courses of Pharmacy (question Q23)

The teaching staff has protected access to the system through a procedure of recognition and the attribution of surfing privileges. Each authorized lecturer (after inserting the *user code* and *password*) in the right-hand corner of the consultation panel (see Figure 1 again) can consult the evaluations pertaining to his/her teaching. Moreover, at any chosen moment he/she can modify the relative *nulla osta* for public viewing (by activating the 'set-up' link that appears in the top right-hand part of the panel once access has been authorized), in full respect of the privacy laws in force.

The system offers each lecturer a list of teaching activities evaluated, classified per year. Each teaching activity then corresponds to a box that can be ticked by clicking on the mouse. Once the tick has been confirmed, the teaching activity for that particular year is automatically made available for public viewing. In Figure 8, for example, Professor Chiandotto has chosen make available the evaluations for Statistics I and Statistics II for the 2005-2006 academic year, in the Business Economics and Statistics degrees, respectively.

The evaluations of teaching activities that have not been granted public viewing by the lecturer are distinguished by a red **X** above the three mentioned icons which allow the access to the synthesis of the statistics, the profile graph and the histogram of the suggestions. In this manner, any user not identified by the system can access only the

‘transparent’ teaching activities and the global evaluations of the degree course and the faculty.



Figure 8. How to allow public vision of course evaluations

Only the presidents of the degree courses and the chairmen of the recognized teaching committees are authorized to consult the data collected in all the teaching activities in that specific degree course, and therefore the non-transparent evaluations as well. Hence, these persons have exclusive access to the classifications of the evaluations surveyed for the degree courses. Instead, access to the teaching classifications is blocked to other users (here again showing the red X above the relative icon). Moreover, the classifications referring to the degree course according to faculty are ‘transparent’, no matter which user is surfing the system.

When presidents of degree courses wish to delegate others the task of analyzing and commenting the judgments about teaching activities in the entire degree course, (after gaining authorized access) they may do so by clicking on ‘set-up’, which is in the top right-hand corner of the consultation panel. In addition to functions available to other lecturers, presidents of degree courses have access to a further frame for creating new users and for managing the relative authorizations.

By clicking on the buttons in the section called ‘Authorization Management’, found at the bottom of the page for personal set-up, users can be created and their relative privileges can be either modified or

deleted if their term of office has expired. Figure 9 shows how Prof. R. Fisher, having the privileges of a president of a degree course, is creating a user (attributing a nickname and password) and granting the consequent privileges for consultation. In particular, this degree course president has decided to grant this new user access to all the teaching surveyed in his course during the 2005-2006 academic year (in this case, by simply ticking the box underneath the academic year indicated) and to restrict the access to the teaching in Management of Data Processing II and III and Laboratory II in the previous two years. If the box under the title of the degree course is ticked, it is possible to create a user with unlimited access to various previous academic years.



Figure 9. Control panel for the management of users by the President of the study program

If the committee of the degree course unanimously decides to allow access to the evaluations of all the teaching activities, the president of

the degree course can publish all the evaluation results as ‘transparent’, thus sparing the lecturers the inconvenience of operating separately on their own teaching activity. This aim is achieved by ticking the box that appears at the beginning of the ‘set-up’ page and confirming the choice by clicking the special button (naturally, once the system has acknowledged the lecturer the privileges of president of the degree course – see Figure 10).



Figure 10. Control panel to allow the complete vision of all the courses of the study program

Furthermore, the acknowledged privileges permit the activation of an analysis button on the tool bar, that allows access to an investigation area where there is a control panel for personalising the enquiries and the comparisons that can be performed. Comparisons can be made with respect to previous years, faculty averages, means calculated for all courses belonging to the same scientific section. Moreover, it is also possible to compare the evaluations of teaching related to a given course with another given by the same lecturer, as well as with other courses referring to ‘transparent’ teaching activities carried out by other lecturers¹². For example, Figure 11 illustrates the control panel preset for producing the report of the comparison between the evaluations obtained for *Statistics II teaching* in the degree course in Statistics in the Faculty of Economics, and *Statistics teaching* in the degree course in Industrial Engineering in the Faculty of Engineering, both referring to

¹² To permit access to the analysis area even by those who are not lecturers in Florence University, a virtual lecturer has been ‘created’: R. A. Fisher (a distinguished statistician who teaches only in Florence University). The access mode (respecting the upper and lower case letters) is UserID: **Fisher**, and password **Ronald**

the 2003/04 academic year¹³. This same figure also gives the report produced from the aforementioned investigation.

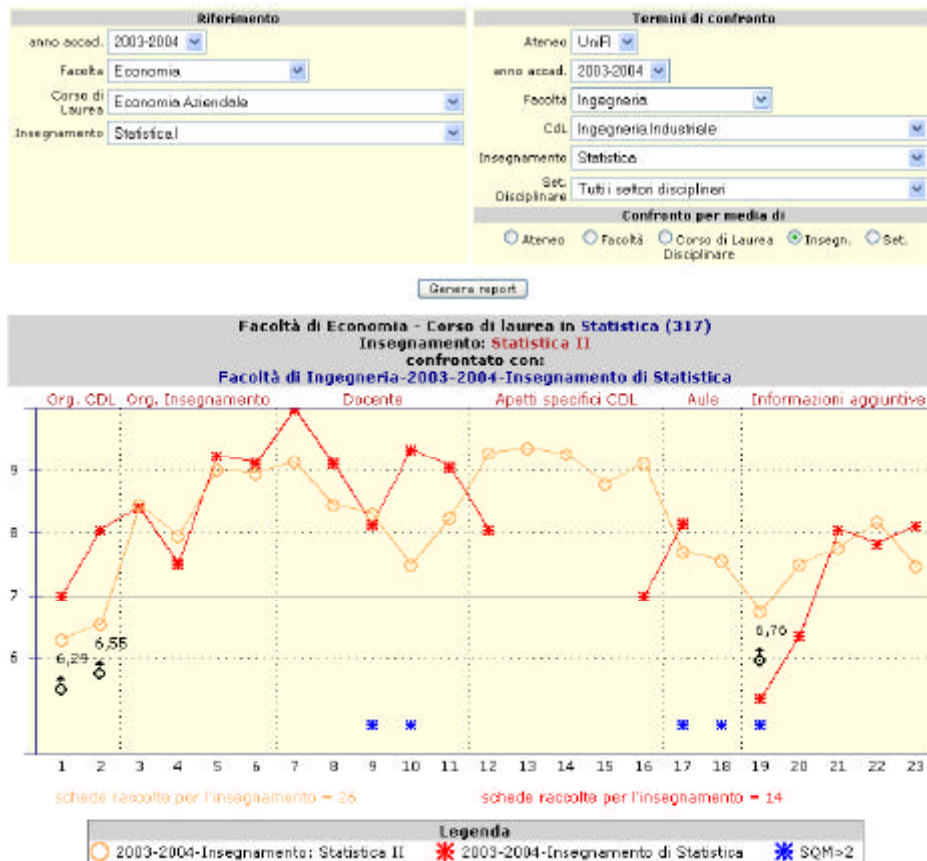


Figure 11. A lot of comparison can be personalized by the control panel of the private area.

The system has been devised in a completely flexible manner and, wherever necessary, it can be easily integrated with pre-existent administrative sources.

¹³ The lecturers of the courses who have granted 'transparent' view of their evaluations for the academic years considered.

Its *modular structure* and the tools with which it has been implemented (*PHP* program environment on an *MySQL* data base residing on the Linux Web server), facilitates future developments. The most important of which will be, without doubt and if all universities decide to adopt the same information system, the possibility of implementing a further inquiry platform on web pages managed by the Ministry and furnished with the aggregated degree course data contained in the *data-warehouses* of the individual universities.

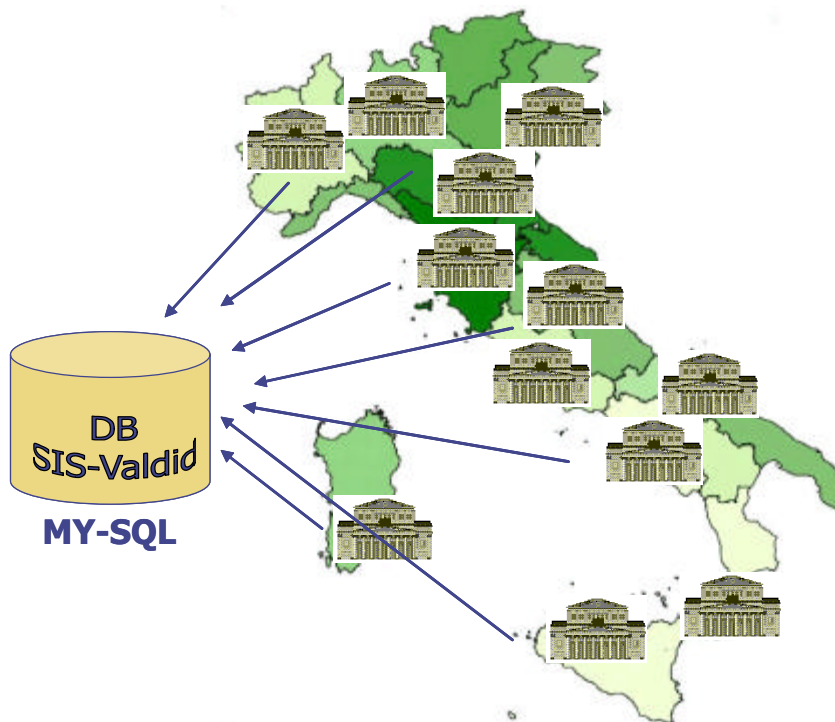


Figure 12. The future prospective of the system

This information can easily feed a database that can be queried directly by the central administrative offices, supplying a complete and exhaustive picture of the students' opinions of the education they have undertaken in the different universities (see Figure 12). The system will also permit university members to perform inter-university comparisons

at any hierarchic level, with reference to the questions that are common to each other in the questionnaires adopted by the various universities.

Hence, by still using the control panel shown in Figure 11, it will be possible to compare the evaluations obtained from the degree course in Statistic Sciences at Florence University with the evaluations from the same course in, for instance, Ferrara University, or even compare the evaluations of a single teaching activity in the different degree courses with other universities where it is taught. Naturally, the central control panel could be personalized according to the information requirements of the operators in the central management, who will have to be recognized by a protection system similar to the access mode already used for Florence University.

3. Conclusions

The data collected and the elaborations performed during the survey on the opinion of students attending university form a well-constructed source of information full of operative implications. It is obviously up to the persons in charge of the management and administration of the instruction processes (Senate, Board of Administration, Faculty Councils, Pole Councils, Degree Course Councils, Teaching Committees and individual lecturers) to draw benefits from it. The experience of the *VALMON* survey group throughout these years has nevertheless demonstrated that actions aimed at achieving higher qualitative standards are not only possible but are also immediately practicable.

This knowledge was one of the main reasons that suggested the implementation of a statistical information system capable of satisfying all the quality requirements demanded of a tool like this. The automation of all the procedures following the electronic acquisition (from paper documents) of the opinions given, together with the immediate availability and usage of the preset pages on the website, has led to publishing the results taking much less time. By means of the new system, these results can be consulted even before the end of the semestral cycles of lessons. Consequently, the teaching staff will have

the opportunity to speak with the attending students about the reasons behind their opinions and, if considered useful, to intervene before the end of the cycle of lessons that are surveyed.

The statistical information system has been implemented in a completely flexible manner, and its modular structure together with the tools with which it has been devised facilitate both its integration with pre-existing information systems in the university and the possibility of it becoming the sole platform for centralized management (at the Ministry, therefore) of the opinions collected in the various universities concerning the quality of the educational processes in activity.

References

- Bini M., Chiandotto B. (2003), La Valutazione del Sistema Universitario Italiano alla Luce della Riforma dei Cicli e degli Ordinamenti Didattici, *Studi e Note di Economia*, 2, 29-61.
- Biggeri L. (2000), Valutazione: idee, esperienze, problemi. Una sfida per gli Statistici”, *Atti della XL Riunione Scientifica della Società Italiana di Statistica*, CS2p, Firenze, 31-48.
- Chiandotto B. (2002), Valutazione dei processi formativi: cosa, come e perché, in D'Esposito M.R, *Valutazione della Didattica e dei Servizi nel Sistema Università*, CUSL, Salerno.
- Chiandotto B., Gola M. (2000), *Questionario di base da utilizzare per l'attuazione di un programma per la valutazione della didattica da parte degli studenti*, Rapporto di Ricerca RdR 1-00, Gruppo di Ricerca MIUR-CNVSU.
- Gola M., Chiandotto B., et. al. (2002), *Proposta di un insieme minimo di domande per la valutazione dell'esperienza universitaria da parte degli studenti frequentanti*, Rapporto di Ricerca RdR 9-02, Gruppo di Ricerca MIUR-CNVSU.
- Gori E., Vittadini G. (1999), *Qualità e valutazione nei servizi di pubblica utilità*, Etas, Milano.