Improving learning methods through student's opinion into teacher's curricula Using graphical representations

Habib M. Fardoun, Daniyal M. Alghazzawi, Lorenzo Gonzalez
Faculty of Computing and Information Technology, King Abdulaziz University,
Jeddah, Saudi Arabia
Email: {hfardoun dghazzawi, lgonzalez}@kau.edu.sa

Abstract—Nowadays in curricula of university teachers doesn't appear anything related with the way to do the classes or the efficiency of the methods used with the students. We must have to take into account that a teacher is not only defined by his knowledge about a specific field but he is defined also by the way to pass it. For that reason we propose the inclusion inside of the teacher curricula of a section expressly dedicated to the student's opinion about the execution of his classes. This information is obtained through surveys and it will be displayed graphically with the goal of localizing the aspects which the teacher must improve and of maintaining an historic register that helps to check the progression. In addition, it will serve to the competent educational organisms to know the different skills of their employees.

Keywords—Graphical Stadistics; Curriculum; Usability; Evaluation; Study; Student's opinion; Surveys.

I. INTRODUCTION

IN THE current higher education system in Castilla-La Mancha the teachers are evaluated by the students by mean of surveys which will be taken into account later for future bonuses or others [1]. These types of surveys performed by the students evaluate different aspects of the learning of a determined teacher. This kind of proposal is a good idea for keeping a good teachers attitude with the students inside the system. In addition, it means that not only it's needed a good base of knowledge of the teacher but a good way to express them and to show them to the students for a better understanding and acquisition of them. However the results of the surveys don't have enough influence inside the system in general and the teachers in particular.
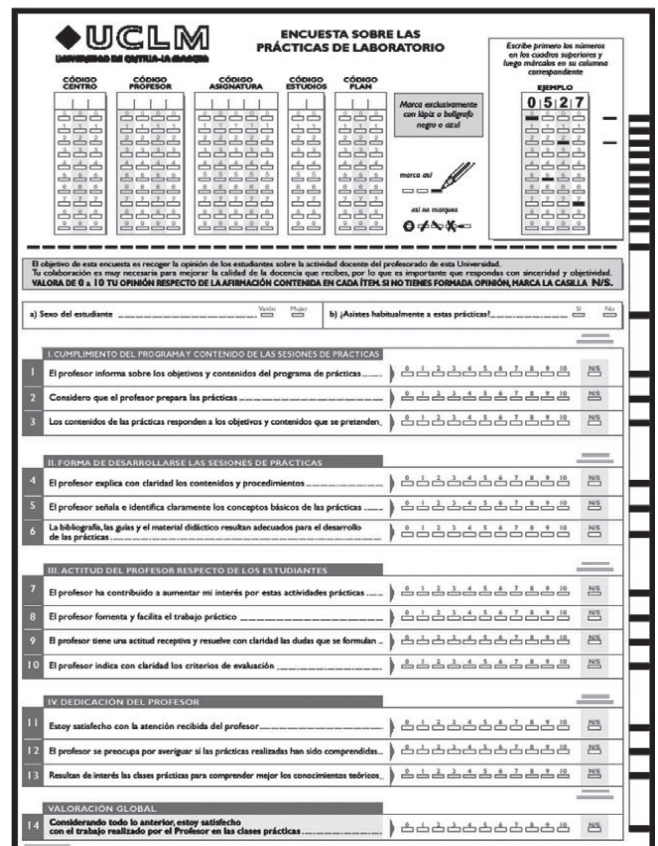
In this paper we propose the study and inclusion of student surveys inside the teacher's curricula. Thus, a historic related with the attitudes and aspects to improve and improved, is kept in the system. But this is not only useful to study the learning aspects related with the teacher but also it forces the teacher to get interest for his work of knowledge transference of a more active form. That is because it will be displayed at the curricula and visible for the competent institutions.

The inclusion of this type of elements will be captured of a graphic manner inside the curricula to ease their understanding. Thus, with a quick sight we will know the strongest and weakest points of a determined teacher in particular. Moreover as the obtained results by the surveys won't be ephemeral (stored in a history), this foments a care for part of the teachers to give the classes. With all of it we don't only get to take into account the experience and knowledge of a determined teacher to evaluate his skills but also to take into account his work with the students and the way to foment the learning.

II. STATE OF ART

Nowadays the evaluation of the teachers is performed by mean of surveys. These surveys were passed to the students,

Fig. 1. Survey of practical part.

Fig. 2. Survey of theoretical part.

until this kind of fact started to be done electronically in 2011, at the final part of the teaching of each subject and in relation with a determined teacher. In that moment the students qualified the different attitudes of the teacher in an anonymous form. Thus, the results referred to the teaching period of a specific subject are obtained.

Surveys were determined by formularies which the students must paint the specific value inside of each category. At the following images we can see a form related with a theoretical part and another related with a practical part of a subject.

Actually the process can be developed by mean a web application. Thus, we reduce the costs and we promote the use of the electronically media. In addition, through this application the teachers may download the reports referred to the students' opinion to check if the methodological aspects of the teaching are adapted to the current students.

By observing these data, we propose the inclusion of the surveys' results in the personal curricula of each teacher. With it everyone can know the progression of a determined teacher and if the teacher's capacities satisfy to the students of the subject. Thus, we get various goals:

- To foment the dedication of the teaching stuff to improve their learning skills.

- To guarantee that the students are agree with the learning and with the taught knowledge.
- To obtain a history for the teachers can see what facets to improve.
- To include in the teacher's curricula not only the technical skills but also the learning skills.
- A control by the educational institution of their employees, by checking if they reach the expected expectatives.

III. EVALUATION AND STUDY

If we take into account the figures 1 and 2, we can see that there exist four main factors to evaluate inside of the capacities of a determined teacher. In function of it is theory or practices respectively, these are:

- Compliance of the program and content of the classes (or practice sessions).
- Way to teach the class (or to develop practice sessions).
- Teacher attitude with students.
- Teacher dedication.

Each of these capacities comes also determined by more specific aspects inside of them which form the global. These aspects will be evaluated by mean of the students' opinion and will be treated to avoid extreme values which go out of the real estimation. Knowing that the valuations of the students usually have a normal distribution [2], different mathematical and statistical methods are used, as for example the empiric rule which use the standard deviation as selector element of the data range used to the evaluation [3].

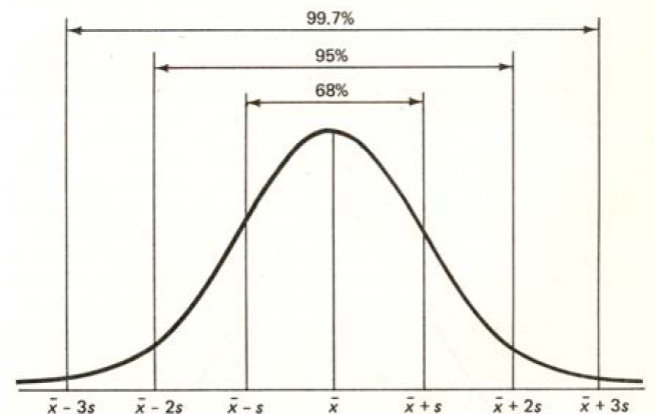Fig. 3. Empiric rule.

Once we have the validate data inside of the sample set, we will proceed with the calculation of the mean of each of these data in reference to each question of the survey. After that we will evaluate at the same form the global capacity in function of these specific data. With it, we will obtain tangible data to be used by teachers and pertinent educational institutions.

IV. INCLUSION INTO TEACHER'S CURRICULUM

Knowing the punctuation provided by the students to a teacher in a determined subject, next thing to do is the inclusion of these data inside of the teacher's curricula. Nowadays this information is available through a web application, thus the teacher may download the reports when he wants. However this type of methodology doesn't foment a increment on the teacher's interest to improve his classes. For it, in this paper we propose the insertion of the data inside of the teacher's curricula for giving it importance and this is taken into account. With this option, students and educational institutions will have more opportunities to visualize it.

All those things drive the teacher attitude to a restructuration of his classes in case of these classes don't give the expected result in a specific field or to a maintenance of the form of doing them in case of the evaluations were successful. Thus, we obtain a greater control over the learning for the knowledge arrives in good conditions to the students, getting a quality education. These data will serve as a history to see the evolution of a determined teacher and as a supporting point to improve on the fields where he is failing. However, the fact of to include the data doesn't have too much influence on the attitude for visualizing them. For that reason, the best form for these data call the reader's attention (the teacher or anyone else) is to show them by mean of intuitive and easy graphs, understandable in a first look.

This kind of graphs will call the attention and will show the evaluations of the four main components of the previously treated surveys at the state of art.

V. GRAPHICAL REPRESENTATION

There exist different forms to display data graphically to the user. In this particular case we need to show a graph which information contains the four main facets related with the learning of a determined teacher. In addition, we must to take into account that for each of them there exist other aspects which constitute them. These aspects will be also represented.

Following the specifications described in the article [4] where the graphs of football games are taken as reference, we are going to use for this case the same form of representation but with the particularity of using a square rather than an octagon. Thus, the representation of the data would be displayed as follows at the figure 4.

Once observed the data referred to these four main elements which constitute the evaluation of a teacher, for the case of wanting to look deeper in each of them, we only need to pass over one of them to see the associated data. With it, we can watch the information related with the evaluation of a determined aspect of the teacher learning. At the figure 5 we can observe how that information is shown (theoretical part).

With all of these data added to the teacher's curricula, the information contained in it will be completed. Of this form
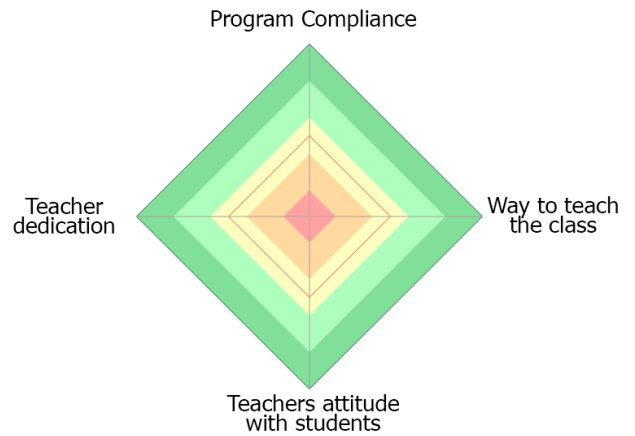

Fig. 4. Graphic representation of the teacher's attitudes.

there won't be only technical aspects but also aspects referred to the learning attitudes.

VI. CONCLUSIONS AND FUTURE WORK

With the inclusion of the students' opinion into a teacher's curricula we achieve that the teacher pays more attention to his work of teaching because that information will be available for the educational institutions and students can see it when they want. Moreover, as that data is displayed graphically, the user who consults these data will have it easier and in one look he will know the attitudes of a determined teacher. But it is not only used as a consult method to external agents to the teacher but the teacher will be able to consult the data to see the areas which need a improvement for the efficiency in the educational labours was more productive. With it, the opinion of people who must receive the knowledge for the educational system, gets the deserved importance. In addition we foment the good practices and the self-criticism of the teachers to improve their learning capacities. All of this is resumed in the aspects previously commented:

- To foment the dedication of the teaching stuff to improve their learning skills.
- To guarantee that the students are agree with the learning and with the taught knowledge.
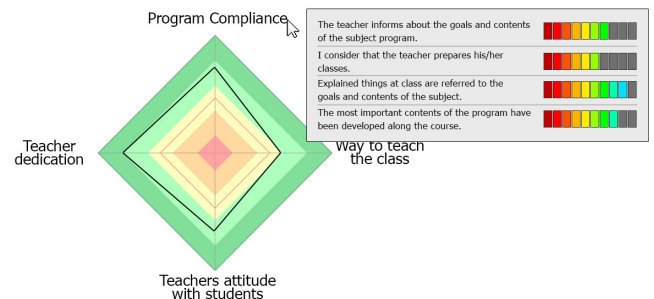

Fig. 5. Contained information inside of a specific aspect of the teacher's learning.

- To obtain a history for the teachers can see what facets to improve.
- To include in the teacher's curricula not only the technical skills but also the learning skills.
- A control by the educational institution of their employees, by checking if they reach the expected expectatives.

The following challenges that we have proposed to us are referred, among others, to foment that the participation in the surveys to be the more realistic as possible, trying to avoid that the external factors have influence on the students at the time of qualify the attitudes of a determined teacher and on a specific subject. This type of factors can be determined by comments of the teachers due to a fear to a negative evaluation or by the students trying to do wrong evaluations without take into account that this actions can have a negative influence into the curricula of the teacher to evaluate.

References

[1] Guía metodológica de la encuesta de "opinión de los estudiantes sobre la docencia del profesorado" en la Universidad de Castilla-La Mancha (Survey Methodology Guide "opinion of students on the teaching skills of the faculty" at the University of Castilla-La Mancha). Andrés Vázquez Morcillo, Jesús Santos del Cerro, Ángel Manuel Patiño García, Elena Silva Gutiérrez. 2005.

[2] Handbook of the Normal Distribution, Second Edition (Statistics: A Series of Textbooks and Monographs). Jagdish K. Patel, Campbell B. Read. 1996.

[3] Introductory Statistics. Douglas S. Shafer, Zhiyi Zhang. 2012. ISBN-13: 978-1453344873.

[4] Graphical Evaluation of Expedients. Lorenzo Carretero González, Habib M. Fardoun. 2013. Sent to IDEE 2013 Workshop (ICEIS 2013 Congress).

[5] HTML5 Graphing and Data Visualization Cookbook. Ben Fhala. 2012. Packt Publishing. ISBN 978-1-84969-370-7.

[6] 62 Tips on Graphic Design, UI/UX Design, and Visualization for eLearning. 2012. The eLearning Guild.

[7] Asking Students about Teaching: Student Perception Surveys and Their Implementation. MET Project. 2012. Bill & Melinda Gates Foundation.

[8] Best Practices for Including Multiple Measures in Teacher Evaluations. 2012. Hanover Research.

[9] Approaches to Evaluating Teacher Effectiveness: A Research Synthesis. Laura Goe, D. Courtney Bell, D. Olivia Little. 2008. National Comprehensive Center for Teacher Quality.

[10] Teacher Evaluation: A Conceptual Framework and Examples of Country Practices. Paulo Santiago, Francisco Benavides. 2009. prepared for presentation at the OECD-Mexico Workshop Towards a Teacher Evaluation Framework in Mexico: International Practices, Criteria and Mechanisms, held in Mexico City on 1-2 December 2009.

[11] Handbook on Teacher Evaluation: Assessing and Improving Performance. James H. Stronge, Pamela D. Tucker. 2003. ISBN: 9781930556584.

[12] Teacher Evaluation: A Comprehensive Guide to New Directions and Practices. Peterson, K. 2000. 2nd edition, Thousand Oaks, CA: Corwin Press.