

Information System for Pedagogical Assessment

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Abstract

This poster presents an information system that is being used in Escola Superior de Tecnologia de Castelo Branco to perform the pedagogical assessment of their teachers. The process, almost fully automated, begins by sending an access code by email to each student, which allows him to fill an Internet based questionnaire for each discipline he is registered. Each questionnaire data is then stored in a database for further automated analysis. The statistical results for each teacher, which are confidential, are automatically sent to him by email. Global results are both sent to responsible entities and published in the Intranet.

Keywords: pedagogical assessment

1 Introduction

In order to increase teaching quality in Escola Superior de Tecnologia de Castelo Branco, a pedagogical performance assessment of their teachers is being promoted. During the latest years this assessment has been based on a set of questions for each discipline answered by students on a paper form. This type of assessment requires huge amounts of paper and lots of personnel. Also, producing the final results is a large time consuming activity because thousands of paper forms must be analysed and processed.

Due to the large amount of work and associated delay of this process, a team has been working in the development of an information system that should simplify this task and accelerate the release of statistical results. The main purpose of this work is to automate this process using Internet based forms and a Database Management System (DBMS) engine.

2 System's architecture

The system's main requirements are:

- (i) The forms should be web-based with both internal and external access;
- (ii) Each student should only fill in forms related to disciplines and classes they are registered in;

- (iii) The anonymity must be preserved in order to promote fair answers;
- (iv) Collected information should be stored in a database for further analysis;
- (v) Both the data analysis and results' delivery should be made fully automatically, without human intervention.

When fully implemented, the system will allow starting the whole assessment process just by clicking on a button. The process begins by delivering an access code to every student, which allows him to fill in a web-based questionnaire for each discipline he is registered in. The access code can be sent by email, which requires that the email of every single student must be known, or using paper tickets delivered by hand. Using email has some advantages over paper tickets, mainly because it doesn't require human resources. However, students may suspect that access codes are being associated with email accounts, thus it's very important to assure them that the anonymity is preserved. This can be accomplished by allowing periodic auditing to the system by the students' representatives in the pedagogical council.

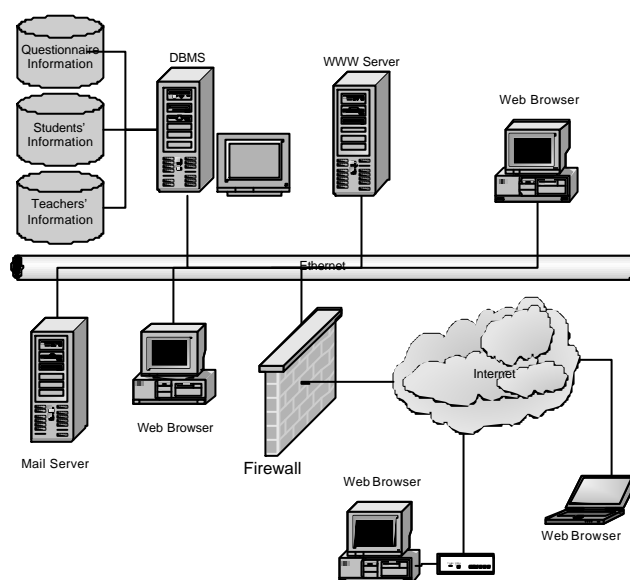


Figure 1 – System's architecture

When more than one teacher teaches the same discipline, the list of possible names is presented to the student that must choose his teacher. Each questionnaire data is then stored in a

database for further automated analysis. The results for each teacher, which are confidential, are automatically sent to him by email. Global results are both sent to responsible entities and published in the Internet.

Figure 1 shows the architecture we propose to achieve these requirements. The system's main components are:

- (i) **Students' database:** this database should be a mirror of the administrative database, which contains student information required by the system, such as email and list of attended disciplines. As the other databases, it is currently implemented using Microsoft SQL DBMS;
- (ii) **Teachers' database:** this database contains information about the teachers who teach each discipline and respective email;
- (iii) **Questionnaires' database:** this database stores the results of each individual questionnaire without identifying the student. The results include not only the answers to each question but also the teacher's and discipline identification;
- (iv) **WWW server:** this server manages the Intranet/Internet interface to the system and has been implemented in a dedicated Windows 2000 server, using Internet Information Server as Web server. It uses Active Server Pages (ASP) technology to generate dynamic HTML forms according to the databases information and access code.
- (v) **Mail Server:** the system automatically generates email messages used to send access codes to students and statistical results to teachers involved in the assessment, which are then delivered by this server. A Linux system was used to manage these messages.

Although some information about the student is necessary to generate the random access code, such as his email and the disciplines he is registered in, no information relating it to individual students is stored, which guarantees that each questionnaire is really anonymous. To prevent misuse, after an access code had been used to fill in a questionnaire, it is immediately discarded and access through that code is afterwards denied.

The questions of the questionnaire are statically coded in HTML, although some fields are dynamically generated by ASP using information obtained from the databases. The communication between ASP and SQL server uses ODBC. In order to avoid fulfilment errors, all the answers are multiple-choice based, using combo boxes, check boxes and option buttons.

The results for each teacher are obtained from the questionnaire database, including some statistical analysis such as average and standard deviation. A C++ application then creates and sends by email a HTML report for every teacher, which includes its statistical results and comparisons with global results. Global results are also sent to the

pedagogical council members and published in the local Intranet.

3 Results and conclusions

During the last semester the pedagogical assessment was made using this system and the access codes were delivered in paper tickets. The questionnaire fulfilment was optional and therefore the participation in the assessment was left to the students' criteria. Although all students were told to fill in their questionnaires, results weren't according to our expectations because only about twenty per cent of the students answered the questionnaire.

Given that the assessment success depends on the students' participation, some actions should be taken to guarantee that in the future more students take part in this assessment.

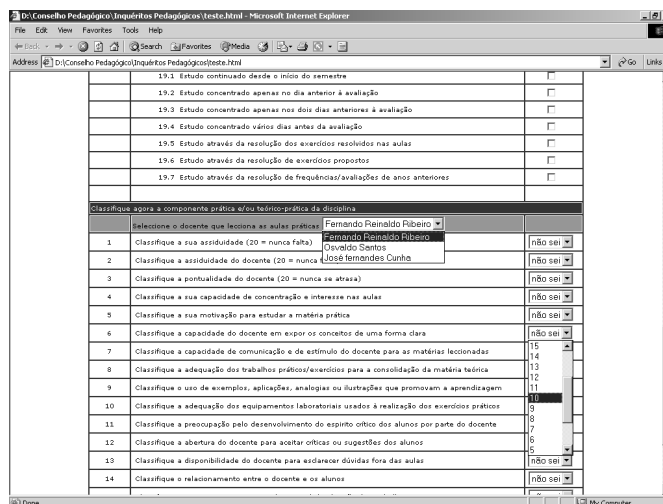


Figure 2 – screenshot of a questionnaire

Due to the current inexistence of email information about students, the system is not yet fully implemented: access codes are being distributed in paper tickets and not by email. However, even without this feature, this system has several advantages over the paper-based process, namely smaller human intervention, saving huge amounts of paper, and finally and most important, quicker release of statistical results. Last paper-based assessment results took more than a month to be released, but with current system, results can be obtained in just some minutes.