

## **A CASE STUDY APPROACH FOR COURSE QUALITY MANAGEMENT USING STUDENT EVALUATION OF TEACHING**

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### **Abstract**

The course evaluation system is one of the main tools for quality management and improvement of conditions in a higher education institution. It is easier to solve an issue when the source is known, and lesson evaluation is the easiest way to identify issues in lectures or exercises. However, most of the evaluation is still conducted conventionally, which is tedious and time consuming, especially for those courses that involve a large classroom with a bigger number of students. To avoid the issues of conventional evaluation, we have developed the “Quality Management and Evaluation System at the University of Tetova” based on the network. With this model we encourage the use of more frequent evaluation of lectures and exercises to explore and encourage effective methods of teaching and practice.

**Keywords:** – Blazor, evaluation, system, student, professor

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### **1. Introduction**

We are surrounded more and more by various technological devices, especially productive programs and systems which, depending on the approach and use, bring different benefits to the users, and this facilitates the work and management of the work of them wherever they are and depending on what they use or utilize that particular program. This technology development undoubtedly contributes to the increase of educational institutions quality and has interfered in the action of all stakeholders in the education system. The big changes in the way people and their work were organized due to the situation of the Covid-19 pandemic, highlighted the necessity and usefulness of digitalization of various indicators in the education system.

Digitization, programs and applications are important for the education management as they are an indispensable tool to plan, supervise and create strategies which will be implemented in order to increase the quality of education. In this regard, in higher education, the systematic evaluation of study programs, teaching and sectors that are part of universities, including recommendations in order to improve and implement changes, is a mechanism for quality increase recommended by the EUA. Therefore, quality management is a basic and most important criterion required throughout the education system. Quality is also the main goal for a university student who will graduate. They should be satisfied with the methods of used conducting the lesson and gain valuable knowledge, which can be used in the business world. In this regard, university evaluation

reports as a mandatory part include surveying students regarding the evaluation of the teaching process.

Unlike the summative evaluation of the teaching process at the end of the semester, the evaluation of teaching classes is a better method to increase the level of quality teaching. The evaluation of the lesson, immediately after its completion, enables the teachers to get the right information about the performance for which they are evaluated, in other words to show improvements or deteriorations in the way the lesson is conducted and to inform the teacher about these results, which will guide them whether they achieve the goal in lectures or exercises, whether students are interested in this type of teaching method, whether students have a problem to follow the material and which are the areas of lectures or exercises in which they have more issues to follow, including the lack of additional material or various measuring tools.

Since evaluation has a great impact on the realization of lectures and exercises, we have developed a better web-based system; it is fully responsive when a user uses it on mobile phones, tablets and various computer systems which have a browser. In this system the data is kept safe and the evaluation data by individual students or of all special classes can be accessed easily and without wasting time, the report is automatically generated by those responsible for the evaluation. The purpose of the web-based evaluation system is to digitize the traditional way of evaluation and to provide an easier and more intelligent way to evaluate the performance of web-based lectures, exercises and semesters. The results will be stored for each professor, assistant and student, and this data will be stored only to extract statistics which will be used by professors and evaluating staff to better understand the aspect of students and how they perceive the realization of lecture, exercises or semester in general. We think that this system will help a lot in improving the methods of lecturing and professor-student interaction and vice versa.

With all these advantages, we decided to develop an evaluation system to manage quality in our university.

This paper consists of three sections: the first part deals with the related studies; the second part details the proposed framework; and the last part details the implementation plan according to a case study conducted at the University of Tetova – North Macedonia.

## **2. Related studies**

The purpose of the institutional evaluation is to support and improve the quality of higher education institutions. Student evaluations of university instruction have long been used to evaluate the teaching performance of instructors of all ranks. In spite of the widespread use of the data acquired from student evaluations for the purpose of determining faculty teaching effectiveness, a review of the literature in the area indicates that questions concerning the validity and usefulness of such evaluations remain unanswered [1]. Researchers have made efforts in this direction to produce the most objective instruments for measuring teaching performance as well as the effectiveness of teaching from the perspective of knowledge and skills of the teaching process [2].

Another issue addressed in the student survey is the biases of student evaluation [3], especially when the evaluation of teaching is an obligation and not students' choice. The concern that the possibility to give a choice to the students to complete a survey will generate a small number of

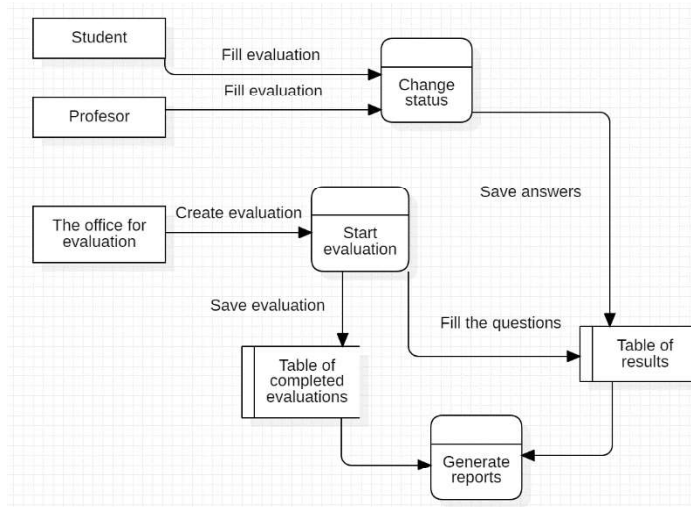
responses that will not be a representative sample representing the assessment of a significant number of students, and the concern that the mandatory requirement to complete a survey will not generate authentic responses have been rejected by previous studies [4].

Use of adequate software applications to support the integrated student evaluation teaching process will give an additional value to quality assurance system [5]. However, the process of data collection for student evaluation teaching is carried out in a classical way, or the way of data collection is not clearly explained [6]. In other cases, online data collection programs unspecified in the presentation of works continues to be used [7].

### **3. Proposed Model Architecture**

Depending on what type of software you want to develop (web-based, desktop, mobile) first you must choose which tools and techniques you are going to use to develop the evaluation system using the new .NET Core Framework and blazor. .NET Core Framework is a relatively new framework that is being developed by Microsoft for multi-purpose and cross-platform development of services and software in the C# language. The release date for .NET Core was 27<sup>th</sup> of June, 2016 and blazor's production ready release was 19<sup>th</sup> of May, 2020. Using this framework is highly encouraged by Microsoft, and in contrast to ASP.NET Framework, it offers cross platform development and deployment for desktop, web-based application and mobile development. Microsoft also declared that they will be moving away from .NET Framework and will now be continuing support for .NET Core in the future.

The architecture, that we proposed to the University of Tetovo, for the evaluation system is divided into three main modules (Figure 1): the data management module or first module will only manage with data, and will be responsible for the data that we see and use on in our system. This module is the main admin and administrator module of the study program. The main admin's role is to insert new academic faculties, study programs, course of study and their courses, also they will be in charge of managing the roles of each user. The administrator of the study program is responsible for registering and removing students to and from a course, registering and removing professors and their assistant to and from a course and adding and removing grades – this feature will also be available for professors, too.



**Figure 1.** Proposed Model Architecture

The second module deals more with evaluation process management. There will be only one user managing this process and data acquired in this process. Creating evaluations, managing ongoing evaluations and reviewing the results are key functions of this system, and the main reason why the conventional evaluation was very time inefficient. The evaluation process was very time consuming and depending the number of students registered to the course, sometimes it would take days or even weeks to just manually calculate the results of each questionnaire and, due to the human factor, the results are always 100% accurate. Now that everyone has a smart device, this process will be easy since the questionnaire will be online. Correspondingly, the student is not restricted to answering the questions at a class or lab that he had the lecture or practice in, but can fill in the questionnaire anyplace she/he feel fit and in a period of 3 to 5 days. Creating an evaluation is simple, the office for evaluation only selects a subject or course that they want to evaluate. After the evaluation instance is created, an email is sent which notifies the students and the teacher that the process of evaluation has started for the specific subject. After the evaluation is created (Figure 6), the office for evaluation can check how many students have filled in the evaluation form and if the professor done the same. When the evaluation is complete or when the period of evaluation has expired, the students and the professor can no longer fill in the evaluation form. After the evaluation has been complete, the administrator in the office for evaluation can see and manage with the data, they can send it straight to the professor, download it as a pdf or excel file and archive the results or compare them manually to the previous results of the professor.

The third module is where the evaluations forms are filled and where the system gets all the data. The roles of this module are professor, assistant and student. These three roles have one thing in common, they can fill the answers for the evaluation form. The professor, besides the answering the evaluation form, has more functions than the other roles. He, like the administrator for the study program, can register students and remove them from the study program. After the professor has filled in the evaluation form, he is going to be notified by email and in the system by the office for evaluation with the results of the evaluation. The assistant has an evaluation form of his own where the students evaluate the practice part of the course. In this form, the students are asked questions regarding the practice part of the course and what they learned and did, what did they

like or dislike about this course on a particular chapter. And last but not least, the student. They have one main function, and that is to answer the questions in the evaluation form, for the professor, the assistant and a special evaluation form that will allow the students, twice a year, to evaluate and express their experience about the semester that they finished. The students have the key role in the system. For the system to work, they will have to be more active, and fill in the evaluation forms on time so that the office for evaluation can have accurate results about the course that they decided to evaluate.

#### 4. System Implementation

The system implementation is the final phase of our system. There are some activities that we will need to do for us to have a successful implementation of the system. These activities are *data management*, *constant evaluations* and *engagement of students and professors*. Referring to the coding section, it was accomplished by integrating other, smaller frameworks into the system for a faster and a cleaner interface. All the interfaces of this system are designed and tested continuously by the office for evaluation so that the user can have a friendlier, easy to navigate and a better overall experience using the system. The interfaces of this system are developed to be responsive on all modern devices that have browsing capabilities, for making the system as accessible as possible.

“Data begets more data” – is what the saying goes in the tech industry. Without inserting and managing the existing data on the system, the system would grind to a halt. Because of this, one of the main activities for the system to be implemented correctly, is data management. Administrators register the courses and the study programs of the university. When all the study programs and their courses are registered, the administrators of the study program can begin to assign professors to their respective course. Then the professors or the administrator of the study program can add or remove students from their course. After all of this is complete, then the office for evaluation can start the evaluation process.

All of our users will need first to log in with their Gmail account that was provided by the University. After that is complete, then they can use the same password as their Gmail account to log in to the system or change the password. The log in page (Figure 1) is the same for every user.

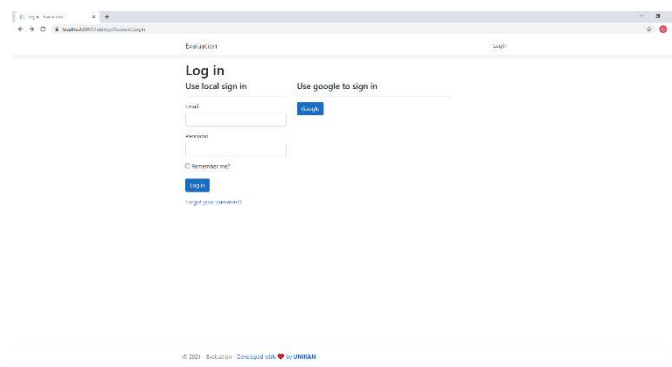


Figure 2. Log in interface

Programi	Niveli	Y. Ditë	Y. Semestr	Y. Anëtarës	Y. Profesor	Butoni për veprim
INFORMATIK	SISTEMET OPERATIVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	PROGRAMIMI I KODIMIT	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	SULPËRHYETESIA	1	1	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	SULPËRHYETESIA	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	LABORANTËSHI I INFORMATIKES	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	SULPËRHYETESIA PËR PËRSHKËRIMIN	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	SHËRBËTESIA E BAZËS	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E REKURSIONIT	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	LABORANTËSHI I INFORMATIKES	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim
INFORMATIK	INFORMATIKË E DËTAVE	1	8	3000	Prof. Dr. M. M. M.	Butoni për veprim

Figure 3. Example of data management interface

The administrators of the study program for data management will mainly use the data management interface (Figure 3).

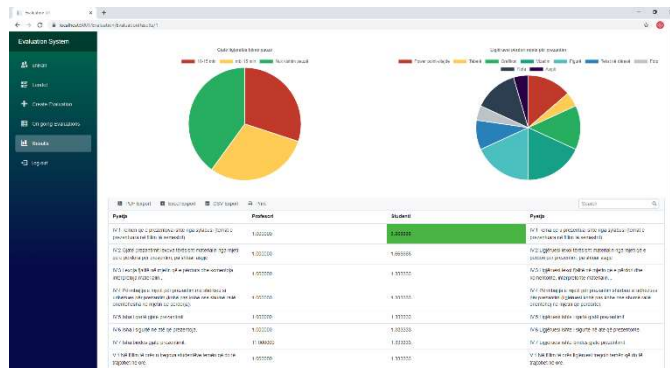


Figure 4. Evaluation results

The evaluation results are only visible to the professor and the evaluation office. After the evaluation is completed, we can view the results of this evaluation (Figure 4).

Evalimi i Profesorit nga Studenti

Te dhënat rreth lëndës-mesazhuesit

1.1 Fakulteti:  1.2 Programi Studimor:

1.3 Emri i lëndës:  Viti:

Mesazhuesi:  Tema e ligjeruar:

II. Organizimi (pjesa teknike) i/e orës

II.1 Ora fillor:  II.2 Ora Mbarë:

II.3 Lista për prezencë të studentëve u lëshua:  II.4 Gjate ligjerës bëmi pauze:

III. Përdorimi i mjeteve të punës

III.1 Ligjeruesi përdori mjete për prezencën

Power Point  
 Tabler  
 Grafikon  
 Vjeshër  
 Figma  
 Tekst në detyrë  
 Foto  
 Fletë  
 Asgjë

Figure 5. Part of the evaluation form



## 5. Conclusions

The proposed model for the evaluation of courses was developed after reviewing and analyzing the existing manual system in the investigation phase and an analysis of the systems used by other Universities, all in order to determine as accurately as possible the actors of the system.

The developed system presented in this paper has been successfully designed and tested. The professor evaluation reports will be analyzed and exported. The evaluation system is very important in attending lectures and exercises. This system will create reports, which will help the professor better understand how students want the lesson to be carried out and will be able to make a general evaluation of all subjects at the end of the semester.

Seeing that everything goes towards digitalization we think this system is quite necessary to be used by the University.

As for the future, we think that the model has a lot of room for expansion. The model can be implemented anywhere in the future, it also can be extended to include other evaluations, including administrative staff of various departments. It can also be updated in the near future, if demand for the same arises, as it is very flexible in terms of expansion.

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