USING ONLINE DATABASE PROVIDERS TO MEDIATE THE STUDENT-TEACHER AND TEACHER-TEACHER INTERACTION. SOME APPLICATIONS FOR HIGHER EDUCATION

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Abstract: The online, small and highly customizable "cloud computing" applications can be used very efficiently for educational purposes. Applications used in frameworks such as Zoho Creator and Google Apps approximate well these requirements. In this paper we present the use of Zoho Creator programming environment for the development of applications that mediate the student-teacher and teacher-teacher interaction. The first example is Student Paper and Marks Organizer, an online application for the uploading of the term papers by students, which also permits grade assignation by the professor and the assistant. The second one, called Conference Organizer, is an online registration application for scientific conferences, recently used for the "Education and social change" conference organized by the University of Oradea. All applications produced within this framework are user-friendly and highly customizable.

Keywords: cloud computing, educational software, student-teacher interaction, conference management, term paper management.

I. INTRODUCTION

If Web 1.0 was a matter of reading, web 2.0 one of read & write, then web 3.0 would be read & write & execute. Asked to define Web 3.0, the Google CEO Eric Schmidt said it will consist of "applications that are pieced together" with the characteristics that “the apps are relatively small, the data is in the cloud, the apps can run on any device (PC or mobile), the apps are very fast and very customizable, and they are distributed virally (social networks, email, etc)” [1].

The concept of cloud computing plays an important part in the new software developments, defined as the collection of applications that run over the Internet rather than locally, on an user's computer [2]. Cloud computing provides major benefits for e-learning in higher education environments, offering numerous ways of interaction between the student and the teacher, as well as among teachers [3, 4]. Another important feature of cloud computing is the use of simple and highly customizable applications placed on independent servers, which can be used very efficiently for educational purposes. Applications used in frameworks such as Google Apps or Zoho Creator approximate well these requirements. Given the advances that such technology brings in the field, the Google Apps framework has been often praised like a sort of "technology from an advanced alien culture" [5]. In this paper we present the use of Zoho Creator (http://www.creator.zoho.com) programming for database application that mediate the student-teacher and teacher-teacher interaction [6]. The first example is Student Paper and Marks Organizer, an online application for the uploading of the term papers by students, which permits also grade assignation by the professor and by the assistant. The second one, called Conference Organizer, is an online registration application for scientific conferences, recently used for the "Education and social change" conference. All
applications produced within this framework are user-friendly and highly customizable. The database applications development are more easily made possible by the online platform such as Zoho.

II. ZOHO CREATOR AS CLOUD DATABASE DEVELOPMENT ENVIRONMENT

Zoho Creator is an environment for web database application development. It offers the possibility to create quickly and easily a web-based database application, requiring no database development skills for simple applications such as online forms and basic skills for more complex applications. People having some familiarity with the database concepts and web interfaces can easily transform themselves into application developers using Zoho Creator. The environment also allows importing and exporting data from its databases in a variety of file formats (including Microsoft Excel).

Because of the easiness of the programming, Zoho Creator permits fast development of user-friendly and highly customizable applications. Given that application data is stored on Zoho servers, there is no cost attached for the renting of servers and the maintenance efforts are minimal. For small numbers of records and users, the applications are completely free. In this case, the use of cloud database application is cheap, saving the necessary funds for the acquisition of a database development framework such as Dbase.

The use of cloud computing development environments has inherent risks. One is linked with the security of the data, given that actual regulations do not cover all possible events that can conduce to the disclosure of sensible data. Another risk is that, in the eventuality that the provider goes out of business, the use of the whole application will be disconnected.

III. STUDENT PAPERS ORGANIZER: AN APPLICATION FOR THE UPLOADING OF THE TERM PAPERS BY STUDENTS

A specialized educational software should provide the student with the possibility of electronic uploading of the required papers, and also it gives the teacher the possibility to read these papers in order to evaluate them. These requirements were satisfied by the database application developed in Zoho Creator. The system offers the teacher the possibility to enroll a large number of students on different education levels categorized by specialization and cohort. The teacher can previously enroll each student, individually, or, a new class can be entered by importing an Excel-type file.

![Figure 1. Online form for individual adding of students](image-url)
Once enrolled, the student will figure as a record in the searchable and updateable database until he or she graduates.

![Image](image1.png)

**Figure 2. Searchable list of students**

The teacher can also insert a list of disciplines for which the evaluation takes place. For each discipline the details for the evaluation are defined (the number of required term papers and the number of points assigned to each of them, the maximum number of points assigned to the final test, the number of times a term paper can be reloaded). There is a possibility, if it is necessary, to enter the identity of an assistant who can give grades (for example for the activity at the seminar).

![Image](image2.png)

**Figure 3. Online form for inserting the details for an academic discipline**

The teacher has access to all the term papers and also to the grade assignment by the assistant. He or she can download the papers, read and enter a mark for each one, as well as for the final exam, and the application automatically computes the final mark. Teacher and assistant can make comments that will be automatically sent on the student’s email. The marks can be exported and read in spreadsheet viewer such as Microsoft Excel.

The application is especially useful with large classes. A further development will include the possibility of viewing the term papers within the application.
IV. CONFERENCE ORGANIZER: AN ONLINE MANAGEMENT APPLICATION FOR SCIENTIFIC CONFERENCES

The developed application for online management of the registrations for a scientific conference is complex, assisting the organizing committee and the participants at all the phases of the conference:

- abstract submission and evaluation
- confirmation of the participation by the accepted participants
- elaboration of the final program
- submission of the papers
- peer-review of the submitted papers
- organization of the accepted papers into the conference proceedings

The application is developed around a central database that comprises all the data for the submitted abstracts and papers (titles in Romanian and English, abstracts in Romanian and English, full-text papers) as well as the authors (full name, institutional affiliation, mailing address, email, phone, and so on). The organizers previously set the sections of the conference, so the submitter already loads his or her abstract in the framework of the selected conference section.

Figure 4. Online form for abstract submission for “Education and social change” conference.

The application is very user-friendly, giving automatic email confirmations for the abstract submission, confirmation of participation and uploading of the paper. A copy of the record of the submissions by participants is also send to the conference email address, providing a backup for the organizers. Using a listserv system, it also allows the organizers to notify the participants in all stages of the conference, including the follow-up phase. The application is easily customizable, depending on the stages of the preparations for the conference.
Figure 5. Login window for the reviewers of the papers with an overview of the number of submitted papers by sections.

The peer review system developed for the paper permits a complex but effortless communication between the authors and the reviewers. Finally, the papers are easily grouped into sections and panels for the inclusion in the book comprising the conference proceedings.

V. CONCLUSION

We presented in this paper two examples illustrating how Zoho Creator programming environment can be used for the development of applications that mediate the student-teacher and teacher-teacher interaction: an online application for the uploading of the term papers by students, which also permits grade assignation by the professor and assistant, and an online registration application for scientific conferences, recently used for the "Education and social change" conference. We argued that the all applications produced within this framework are user-friendly and highly customizable, and they can be developed with rather limited material resources and basic knowledge in the development of database applications. Consequently, we consider this framework as very appropriate for the use within Romanian higher education.

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