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Role of Application Service Providers in Infrastructure Development For Web-enabled Course Administration Tool

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Abstract

For the effective teaching, the teacher must monitor the effectiveness and performance of the teaching methodology and techniques. For this purpose teacher can use various tools. The effective teaching can be achieved by using different elements of teaching. This paper proposes a system tools called OCAT-PA – Online Course Administration tool for Performance Analysis. This tool can be implemented as standalone system, client-server system or web enabled system. This paper focuses on the web-enabled implementation of the tool. It also focuses on the involvement of the Application Service Providers. This paper discusses the role of application service providers in the proposed system with benefits.

1. Introduction

In a typical teaching activity, the teacher prepares a schedule of the course and the course material by studying the subject contents, scope, depth required, and the level of the students. He also uses his past experience in this planning. It is a challenging task to manage the work planning as per the schedule. The other essential activities may disturb this planning. The other regular activities apart from only teaching include conducting tests, regular assessment and recording feedback from the students. As such, there is need of some comprehensive tool to manage all these activities in an integrated manner. The development and use of such tool require substantial amount of investment. This paper describes the basic structure of a course for effective teaching, the architecture of the course administration tool, its implementation and role of Application Service Providers in its implementation.

2. Elements of a Course

A course is not just teaching the prescribed syllabus, but it also includes many essential elements, which forms a basic comprehensive foundation for the teacher [1]. The essential components include – syllabus, the topic list from the syllabus, teaching plan, question bank, frequently asked questions, acronyms, notes, slides, handouts, books, resources for reference, research papers, student list, attendance record, performance record, test mark record, etc.

2.1 Syllabus

The university and/or the specific authority prescribes a detailed syllabus. It includes many units with summary of each unit in short. The summary may not specify each and every topic. As such, the teacher is responsible for reorganizing the subject syllabus in accordance with the scope and level of the students. He may include more essential topics, which may not be specified in the syllabus.

2.2 Topic List

The reorganization of the syllabus as per the need results in the comprehensive topic list. The teacher prepares the topic list with the details. The details include book references, research papers, and web reference for each topic.

2.3 Teaching Plan

In teaching plan the topic list is arranged as per the weekly schedule and lectures. A list of the available weeks and topics to be covered is prepared as a teaching plan.

2.4 Question Bank

The teacher prepares a comprehensive list of questions for each topic. The questions are very necessary to assess the depth of understanding of the topics. The questions may include objective type questions, broad questions, short questions, etc. The question bank also consists of the desired answer plan of the question. This question bank is prepared per topic to make it accessible after teaching a topic.

2.5 Frequently Asked Questions

The students normally ask many questions not directly related with the subject. These questions are prepared with actual answers forming a typical FAQ. This FAQ is prepared for the whole subject, not per topic, since it is typically a smaller list as that of the list of subject questions.

2.6 Acronyms

Teacher prepares a list of all the acronyms with meaning and details, related with the subject.

2.7 Lecture Notes, Slides and Handouts

The teacher prepares notes, slides and handouts for each topic. The notes are the well-formatted documents with text, diagrams, formulae and other needed things. The slides are used during teaching for explaining the topic contents. The handouts can be distributed to the students for reference and for taking some notes during the classroom teaching.

2.8 Books, Resources for Reference and Research Papers

The teacher prepares a list of books required during the learning of the subject. He can mark the textbooks and reference books separately. He prepares a list of research papers per topic for reading. He also prepares a list of web references, online articles, web sites and other available resources as a resource list. This list may be prepared per topic or as a whole for the subject.

2.9 Student List and Performance Records

The teacher is responsible for monitoring and evaluating the performance of each student. He prepares list of students with test marks and grading for this purpose.

2.10 Lecture Record

The teacher records the actual coverage of the proposed teaching plan by preparing a lecture record while teaching during a semester.

3. Monitoring the Progress of the Course

The progress of a course can be monitored using the teaching plan and actual lecture record. The progress can be evaluated in terms of the syllabus covered. The teacher supervisor is responsible for regular assessment of this record for each course and accordingly directing the teachers to improve the performance of teaching and planning.

The teacher is responsible for regularly testing the students by organizing the quiz and tests. This will result in continuous assessment of the students by the teacher. From this record the teacher can direct the student to improve their performance and understanding of the course.

4. Structure of the Tool

The previous section describes the essential factor for effective teaching and performance monitoring. Here we propose a system for managing the course called “Online Course Administration Tool with Performance Analysis”

(OCAT-PA). The Figure (1) describes the architecture of the system.

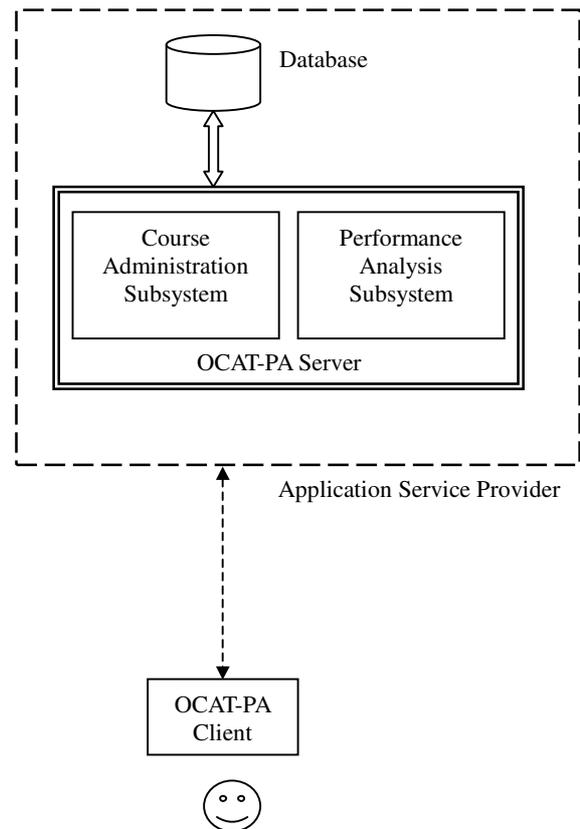


Figure 1 – Architecture of OCAT - PA

The OCAT-PA system consists of the OCAT-PA server and client as it is web based. It also shows central database.

The OCAT-PA server architecture can be assumed in basically two subsystems – Subsystem for Course Administration and Subsystem for Performance Analysis. The figure (2) and (3) describe the architecture of these subsystems.

4.1 Course Administration Subsystem

The Course Administration Subsystem is an important subsystem of the proposed tool. It includes the modules for building and managing elements and aspects of the general course and course administration. Figure (2) describes the detailed architecture of the Course Administration Subsystem.

The elements of a course include the syllabus, topic list, course calendar, teaching plan, question bank, quiz questions, frequently asked questions, acronyms, online notices, notes, slides and handouts, and reading list. The reading list contains the books, references, research papers, etc.

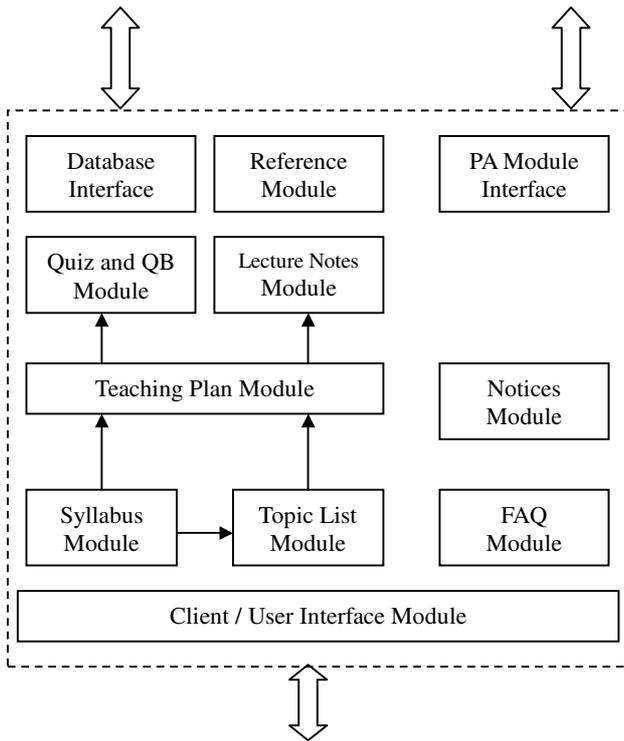


Figure 2 : Architecture of Course Administration Subsystem

The architecture shows many modules, each for handling an aspect or element of the course. It also includes the database interface module needed to communicate and interface the tool with the database. The architecture also shows an interface for the Performance Analysis subsystem.

The client/user interface module is needed to have an interface between the Course Administrative Subsystem and OCAT-PA client.

4.2 Performance Analysis Subsystem

The Performance Analysis Subsystem is a subsystem for monitoring the performance of the various aspects of the system. It includes the modules for managing the lecture record, attendance, quiz and test records.

This module can generate the progress report and various other reports to analyze the performance of students and other elements of the system.

Figure (3) shows the details of the performance analysis subsystem of the proposed tool.

It includes the modules for monitoring the lecture record, students list, students assessment and test records, quiz results, etc.

The architecture shows many modules, each for handling an aspect or element of the performance analysis.

It also includes the database interface module needed to communicate and interface the tool with the database. The architecture shows an interface for the Performance Analysis subsystem.

The client/user interface module is needed to have an interface between the Performance Analysis Subsystem and OCAT-PA client.

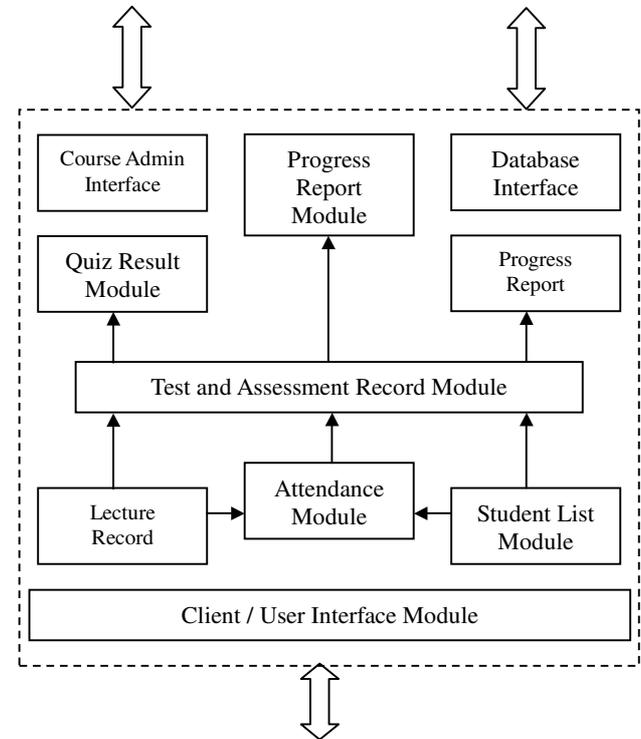


Figure 3 – Architecture of Performance Analysis Subsystem

5. Need and Role of Application Service Providers (ASP)

The teacher can use proposed tool to improve the course administration as well as management of the teaching activity. It will make the activities of a teacher well manageable. But developing and maintaining the system is expensive. It will need huge financial investment as well as manpower in developing the system. The task of maintaining the system is again challenging for the teacher.

The problem can be solved by introducing the Application Service Provider in the OCAT-PA system. The ASP will be responsible for whole development and maintenance of the system [2]. The database in the system will be larger in size and hence needs more effort to maintain and use it efficiently. Due to the ASP, it will be easy to continuously work on the system and make it more effective and better by studying the current constraints and limitations of the system.

The ASP type of business model is necessary where there is need of a common type of software which can be

development and used across many organizations. The software is not needed to be purchased by the organizations but is used through the Internet. The Application Service Provider charges the organization based on the uses of the system.

Due to ASP, the teacher and institute are free from the development and maintenance overhead. The ASP can assist them in various tasks like some data entry and report printing. Due to ASP, it becomes possible to use the system more efficiently.

The online course administration Tool with Performance Analysis system allows the teacher to improve the quality of teaching by providing a better uniform framework for course administration and management. By introducing the Application Service Providers, the system becomes more feature rich still inexpensive.

ASP can design various courses and develop standard study material; which can be useful to the teacher. This will increase the earning potential of the ASP and this way system can indirectly improve the teaching and learning process.

6. Benefits of the Tool with ASP

The OCAT-PA system is itself very useful and effective. By introducing the Application Service Providers the system performance and usability can be improved.

Apart from this obvious benefit, there are several advantages of using the ASP based OCAT-PA system, which are listed below.

- The educational institutes are free from the development and maintenance overhead.
- Due to web based implementation, it becomes accessible from anywhere, anytime.
- The system is inexpensive as there is no need to purchase the software.
- The system can be constantly improved.
- The system provides a standard framework of course elements for a teacher, which can improve overall performance of the teaching process.
- The ASP can provide value added services like pre-designed courseware, expert assistance in managing the teaching plan, etc.
- It provides a feature rich but inexpensive system
- It can improve the inter-institutional relations.

7. Conclusion

The online course administration Tool with Performance Analysis system allows the teacher to

improve the quality of teaching by providing a better uniform framework for course administration and management. By introducing the Application Service Providers, the system becomes more feature rich still inexpensive.

References

- [1] Atkin J.A. *How Students Learn: A Framework for Effective Teaching: Part 1*, Thinking-Critical for Learning Seminar Series No 22, Melbourne: IARTV, 1993
- [2] Coopee, Todd *The Internet today InfoWorld*, p. 52, Sep 25 2000