5. ASSISTING QUALITY TEACHING AND LEARNING IN HIGHER EDUCATION THROUGH ONLINE INTELLIGENT TUTORIALS

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Abstract

The explosion of electronic resources available like computers, laptops, mobiles can be used for educating students apart from the form of face-to-face encounters, either in a classroom setting, or on a one-to-one basis in the library. Also, remote access to electronic resources using internet and web based software allows users to utilize these resources without physical presence. Higher education needs quality education to face dynamic market changes and this can be achieved if on line tutorial assists classroom teaching. Functionality of learning and teaching sub modules like conducting lectures, solving queries of students, submitting assignments, online tests etc can be done by online tutorial. This paper discusses main functionalities of education system, benefits of using online tutorial and results obtained using this system

In this paper, functionalities of two main subsystems learning and teaching in higher level education are identified and ranks to these functionalities are given. Thereafter system is modeled considering constraints and online web based tutorial system is designed and developed. This software will assist needs of a real classroom. It can be used for individual learning or real classroom environment with the guidance of a human faculty during a formal education process. Also, a case study of Master of Computer Application fifth semester consisting of 60 students is carried out to show web based online intelligent tutorial for higher technical courses can improve quality of teaching and learning.

***Keywords**: Intelligent tutoring system, learning, teaching, Quality*

INTRODUCTION : QUALITY IN EDUCATION

We all agree that quality learning by students and quality teaching by teachers is need for day in almost all institutions and agencies in education. Some institutions do take accreditation which provides improvement throughout organization. But day to day continuous improvements lacks somewhere across the organization which affects quality in education.

Quality in education is all about reducing variation to enable students to conform to requirements in learning a body of knowledge. At the moment, our educational institutions are committed to introducing and maintaining as much variation as possible in terms of teaching methods, selection of text books, definition of curriculum, approaches to advising, approaches to assessment of learning, qualifications of

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faculty, and almost any other critical dimension of the educational process one can name. Economic forces have compelled the administrative branches of colleges and universities to implement quality improvement measures in administrative support services to contain escalating costs and meet student expectations that will work. But the heart of the institution - the teaching and learning function is most affected in maintaining quality of education.

QUALITY TEACHING AND LEARNING IN HIGHER LEVEL TECHNICAL EDUCATION

Quality education came into picture from 1980s, but at present higher education is in priority as todays students would become manpower of tomorrow. Companies that invested heavily in quality improvement methods in the '80s were able to streamline processes and build internal capacity for driving continuous improvement. Those who waited for cost to drive them into change were too late. Now it is the turn of higher education. Higher education institutions that invested in quality improvement will weather the coming storm reasonably well.

Emphasis is on quality improvement as improved quality allows organizations to lower costs, and this enhances their competitive position. This is the lesson Dr. Deming taught to the Japanese in the 1950s, and that American industry attempted to embrace, with different degrees of success. But, even when an organization's leadership understands this fundamental truth, it takes time to build the capacity within an organization, and it takes tremendous vision and willpower to champion continuous improvement when times are good[3].

In higher education, technical institutions are complex systems designed for providing technical and professional knowledge which changes with dynamic markets. Any technical higher level system has compulsory two sub-systems ie learning and teaching. A slight change and inclusion of online web based tutorial will affect greatly learning and teaching procedures which broadly impact the entire quality of learning and teaching. Features of online tutorial in the class rooms and labs and for exams can impact student success in academic programs. All of the parts are linked together. Continuous quality improvement acknowledges the reality that these sub-systems working and emphasizes the need for all subsystems in the college or university to identify their most critical processes and to continuously seek to improve them. Classification of functionalities of learning and teaching is shown in below tables 1 and 2. These functionalities are supposed to be added in online tutorial software for making this more successful and achieving aim of improving quality. Also ranking is done of functionality. According to rank functionality should be priority and included in any generalized on line tutorial.

Objectives of online Intelligent tutorial system will be to assist in all these functionalities in order to improve quality of learning and teaching. The main objectives achieved through this system will be Audio/visual teaching presentation in teaching (Z1), Ready Material (Z2),On-Line tests(Z3), solving query online(Z4),On line results(Z5), online advises(Z6).

If student misses lectures then he can find material related to it online for clear understanding of subject, can solve query after classes also, online submission of assignment and seminars, possible on-line quiz and exam online results, can take mark sheets and suggestions. The same can be written in model form as:

Objective: To optimize quality teaching (O1) and learning (O2) where constraints are previous semester result , regularity etc. So,

$$X1 + X2 + X3 + X4 + \ldots + Xn = O1 \text{ and}$$

Table 1 : Functionalities of Sub-sysem Teaching

Sr. No.	Functionality	Parameter	Rank
1	Detailed Lecturer Planning/Schedule	X1	1
2	Class room lectures	X2	2
3	Class room tutorial	X3	3
4	Assigning Assignments/tasks/projects	X4	4
5	Presentation of specific topic	X5	5
6	Paper /Questionnaire setting	X6	6
7	Quiz checking	X7	7
8	Internal Paper checking	X8	8
9	Result Declaration	X9	9
10	Performance evaluation	X10	10

Table 2 : Functionalities of Sub-sysem Learning

Sr. No.	Functionality	Parameter	Rank
1	Class room lectures	X1	1
2	Class room tutorial	X2	2
3	Submitting Assignments	X3	3
4	Seminars Presentation	X4	4
5	Practical laboratory	X5	5
6	Developing projects	X6	6
7	Offline Case studies	X7	7
8	Online case study	X8	8
9	Appearing Exams	X9	9
10	Mark sheets	X10	10
11	Advisory and improvements and Overall performance	X11	11

$$Y1 + Y2 + Y3 + Y4 + \ldots + Yn = O2$$

ROLE OF WEB IN EDUCATION

The Web is now causing educators, from pre-school to graduate school, to re-think the very nature of teaching, learning, and schooling. Web can free teaching and learning from the physical boundaries of classrooms and time restraints of class schedules. Traditional lectures and demonstrations can become Web based multimedia learning experiences for students. Learning resources of the college and university can be augmented by learning resources of the world via the Web. Moreover, the Web can help us re-focus our institutions from teaching to learning, from teacher to students.

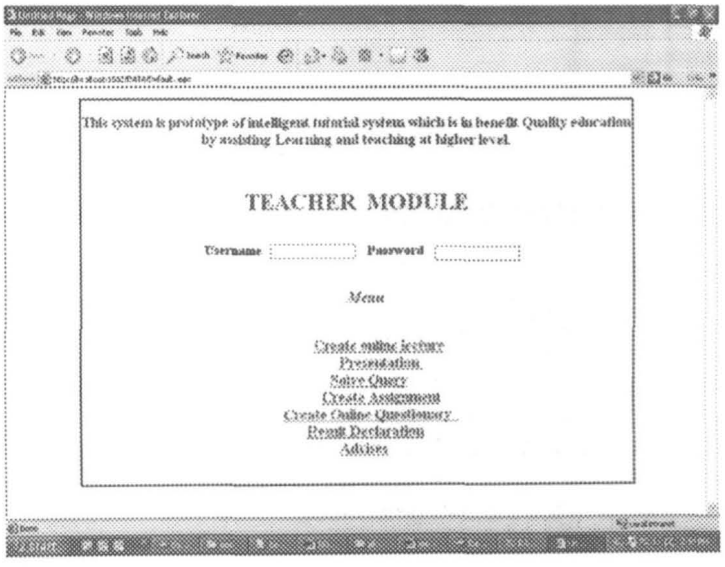
Britain's Open University is a prime example of a dedicated distance education institution that uses the Web to support its mission of providing accessible education [6]. The institution normally requires students to spend some time on campus in residency; however it finds that there are always some students who cannot fulfill this requirement. In the summer of 1994, it experimented with offering electronically an advanced psychology course aimed at this kind of student, using Web and other Internet tools [6]. City University, in Bellevue, Washington, another dedicated distance learning institution, operates with the mission of "making education available to all who desire it...without interrupting commitments to work and home." Recently, they established (EDROADS) Education Resource and Online Academic Degree System to take advantage of Internet based technology to offer their programs. At present, they provide on-line MBA degree program and a Bachelor of Science in Computer Systems [4]. Through the university's World Wide Web site, students around the world apply to the university, register for courses, and complete course work electronically. They can also send questions and assignments to the instructors from the Web site and participate in specialized live forums at the program and course level.

The Web is not only enabling improved access to colleges and universities. Some experimentation in on-line access to education is happening at the public school level, though it is not as widespread. Three growing areas where the Web is facilitating increased access are in home schooling, alternative schooling, and extension course delivery.

PROPOSED ONLINE INTELLIGENT TUTORIAL FOR HIGHER LEVEL EDUCATION

Here interactive web based online tutorial system is designed that acts as a tutor devising a personalized and permanently updated study plan. This software includes a database of questions, queries previously validated, results etc. The generalized screens for teacher and student are shown in figure 1 and figure 2.

Figure1: Teacher Module of Intelligent tutorial system



In figure 1 teacher will login and if password is correct than appropriate menu will be displayed. For student menu contains view

online lecture, Solve Query, Submit assignment, online quiz, Results, Advises. For teacher menu contents are Create Online lecture, Solve Query, Create assignment, Create Online questionnaire, Results declaration, Advises. The model is built on a relational database that is located on a web-server keeping in mind access and database factors for storing facts. The ASP.Net page dynamically generated through server-side scripts. When using the system the user connects to the web server which processes the request and sends the result back to the browser of the user.

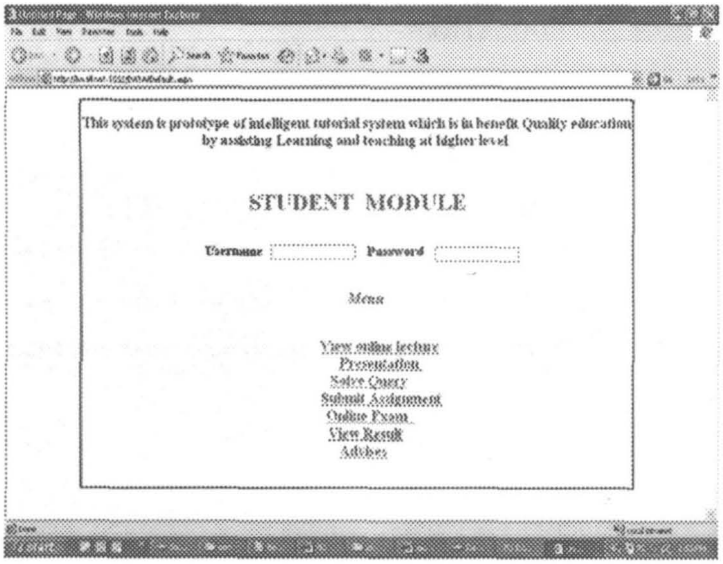


Figure 2: Student Module of Intelligent tutorial system

This system consists of domains like modelling of a knowledge domain (domain model), a model of the student (student model), modelled educational strategies (tutor model), and a component for the communication of the program with the student (interface).

CASE STUDY

Intelligent tutorial system has been tested by 60 fifth semester MCA students. Here in domain model knowledge of MCA course details will be stored. Student and teacher both can use this for all functionalities of learning and teaching. All teachers were quiet satisfied using this system as they can be more efficient, fast and effective. For all 60 students software proved to be helpful to prepare for exam and found easy to use. It was quiet helpful for students who were absent for lectures and submit assignments. Also students queries can be satisfied anytime and not in class hour only. So intelligent tutorial system increased performance of learning and teaching in MCA course by benefiting teachers and students.

CONCLUSION

There is great need to improve quality at higher technical level of education. With advancement of technology, technology should be used to achieve educational goal. Intelligent tutorial system is solution to improve quality of education by assisting learning and teaching activity at higher level.

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