WebCT & More: Overcoming Learning & Language Barriers
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Abstract

In view of the significant role played by communication and information technologies in teaching and learning, The American University in Cairo (AUC) through its center for Academic Computing Services (ACS) has been one of the early adopters of new technology enabled teaching and learning paradigms. Despite the success of the first attempts aiming at leveraging technology in education, the following factors called for the adoption of a standardized system that supports a comprehensive environment:

- Technology was being adopted on a piece-meal basis using separate tools for different educational tasks.
- Early attempts were confined to scattered faculty members in a number of departments.
- Lack of coordination and sharing of experience marked these attempts.

In response to this call, WebCT, was adopted by AUC as the official course management system for the institution. With the rich experience gained from the creation of earlier prototypes, qualified technical staff at ACS embarked on setting the stage for the full implementation of WebCT, overcoming different learning and language barriers.

In this paper we shall address three major projects:

- The Application of the Arabic Language
- Interfacing with Adaptive Technology
- Usage of Advanced Multimedia in Specific Disciplines
New technology-enabled teaching & learning paradigms were introduced by the center of Academic Computing Services at AUC and implemented in conjunction with "early adopters", faculty members with a strong motivation in the application of technology in the instructional process. Early attempts were applied on a piece-meal basis to various educational tasks, and centered around Internet tools, office productivity materials and presentation software. Such attempts found success due to the relatively advanced computing infrastructure, training & technical support provided by ACS. However, lack of coordination and sharing of experience amongst users, coupled with a growing need to leverage technology in education on a wider scale, called for a new strategy to be developed.

The strategy's main goal was to shift from teacher-centered instruction to student-centered learning where instructor-student collaboration and interaction with instructional technologies form the backbone of our approach. A conceptual framework was first created to overcome resistance to change and to enable faculty to visualize the correlation between pedagogy and the use of technology. The stage was thus set to search for a comprehensive technology enabled instructional system that could provide a learning environment for the entire campus [4,5].

Significant efforts were thus expended in searching for this system, often labeled a Learning Management System (LMS). After evaluating trial versions of a number of LMS products, the choice was in favor of WebCT which marked a new era in the application of instructional technology at AUC.
To illustrate the potential of WebCT and provide a vision of its contributions to the instructional process, a customized framework was developed by functionally mapping it to the conceptual framework originally designed for faculty orientation.

Seminars, training sessions, online training handouts, self running demo CDs, online support & administration website & an annual WebCT Day event, were all means of improving the use of WebCT among faculty & students.

Passing our third year of adopting WebCT at AUC with 178 faculty members currently using it, attention started to head towards improving the quality, design, support, and administration of WebCT. The software was thus upgraded from a limited user license to an unlimited license starting from 3.6 Standard Edition to 4.1 Campus Edition. The ACS task force was divided into administration and support groups. Administrators are responsible for monitoring, upgrading, and maintaining the WebCT server, installing the latest WebCT versions & patches, administering faculty courses, automatically connecting the WebCT global database with the University Student Information System (SIS), and finally backing up faculty and student course work on a daily basis. The support group, on the other hand, is accountable for assisting and training faculty in course building and design, responding to faculty and student inquiries via email, visits or online discussions, providing innovative techniques, setting a multimedia learning environment, and finally hardware and software integration for a more constructive learning medium.

In this paper we shall address three of our major projects aiming at overcoming different learning and language barriers using WebCT, hopefully presenting novel ideas and techniques in designing online educational courses:
The Application of the Arabic Language

Language learning & teaching have become a major attraction in the development of technology enhanced learning materials. Teaching Arabic especially to non-native speakers is a major challenge that requires effort & hard work from both parties, instructors and students. AUC's English Language Institute teaches both classical and colloquial Arabic to foreign speakers. Using WebCT at the university with its support to Arabic language has encouraged instructors to integrate technology with learning. The idea started in Fall 2003 with an Arabic instructor who wished to enhance her approach of teaching to a more robust, attractive technology enabled style. The project started with a comparative study between the instructor's traditional way of teaching on the one hand and an enhanced technology-enabled version with a modified course structure on the other hand. With the obvious potential of the latter, we translated most of the chalk board instruction and hard copy materials into a digitized format incorporated with a multimedia learning environment.

Arabic course materials posted online include text, images, maps, tables, in addition to sound and video clips. Text materials were created either in HTML format, Word, PDF or PowerPoint slides. Images played an integral role in the interface design of the course in addition to being intertwined with the material, to grasp students' attention and to familiarize them with course content. Multimedia such as audio, video and flash
animation were embedded into the system and integrated with the course material and interface.

A set of student performance and evaluation techniques were incorporated varying from self assessment exercises, take-home assignments and online exams. Blended types of exercises were designed using Java Script, HTML or practice tests generated using the Respondus Software. Respondus, a powerful tool, added as an external power link to WebCT to manage and create online exams [6]. With this software we managed to write Arabic text questions, create innovative exams by integrating images and embedding multimedia kits such as audio and video clips.

In addition to course content we provided opportunities for communication in Arabic via e-mail and interactive discussions, as well as direct links to Arabic websites around the world. We have furthermore encouraged Arabic learners to participate in sharing their work with their peer students by recording and narrating some of their best writings in addition to posting a scanned copy of their works online.

This project was presented several times last year and was approved by the Arabic Language Institute to be a course template to all elementary Arabic sections that will be instructed in Fall 2004. Consequently, all instructors were asked to digitize most of their teaching materials and think of innovative techniques to incorporate multimedia in their teaching.

By the end of the semester, students' performance will be measured, reporting their challenges and difficulties, in order to understand how they perceived their experiences with technology in terms of its contributions to learning the Arabic language.

**Interfacing with Adaptive Technology**

One of the pioneering projects initiated and implemented by ACS since the adoption of WebCT at AUC has been to test and interface WebCT with adaptive technology tools to make online education accessible to learners with visual impairment.

Two adaptive technology corners were established by ACS to serve both blind and visually impaired students at AUC, as well as students pursuing their post-graduate studies at other universities. Software purchased for this purpose allowed students to continue with their studies, daily assignments, readings and research independently.

*JAWS for Windows* is one of the top specialized screen reader packages that allows blind and visually impaired users to search the internet, check e-mail and have access to online resources and materials. *JAWS* also enables users to read complex web pages, HTML tables and forms, for its special Internet features such as links lists, frames lists, and forms mode [2]. *JAWS 3.7* was first purchased and now upgraded to *JAWS 5.0* corporate edition which is more robust, speedy and stable.

In Fall 2002, a preliminary course was designed on *WebCT 3.6 SE* and tested with *JAWS 3.7* by three blind students who were familiar with *JAWS* but were not trained to use
WebCT. Basic Instructions on WebCT were first given to acquaint and familiarize them with the new environment.

Materials posted in the course consist of text in word and HTML formats. Instructional materials with embedded audio files were also incorporated, in addition to other WebCT built-in tools such as email, calendar, search and assignment tools. Approaching the end of the course, an evaluation form was distributed using the assignment tool.

Despite the limitations encountered in WebCT 3.6, the results were really inspiring. Students managed easily to login to WebCT, change their login password, navigate through the different course links, and access course materials. They also succeeded to respond to emails, send attachments, post and read calendar entries, download and upload assignments, and use the search tool to look for keywords.

Challenges were faced by students at the beginning of the course. They encountered difficulty in accessing the course homepage due to the existence of page frames. Page frames are read by screen readers as separate pages which would make the pages more difficult and less accessible [3]. Students also recommended providing more instructions for using WebCT along with a brief description of its interface structure, with more keywords that would help them understand some of the terms used. Accordingly, they suggested designing a specifically tailored course in using WebCT with the help of JAWS. The purpose of such a course is to integrate JAWS based commands and shortcut keys along with its functional usage for navigation and reading, to map with WebCT interface, tools and commands. The initiation of this course will allow the blind or visually impaired to visualize and control WebCT functions and operations more professionally.

The following are snapshots of their comments sent in the evaluation form:

- "The course was very beneficial and well designed."
- "I suggest repeating it with other applications."
- "E-learning is a good idea that can be applicable to various fields."
- "The experience of being trained with you was very useful as this is the first time I perform such tasks."
- "Improve the accessibility of the different tools including advanced software packages such as: chat, multimedia and testing applications that can be used in conjunction with WebCT in order to be better used by visually-impaired students."
- "Thanks to the ACS / AUC for taking this leading step by affording such a combination of more than one technological tool for the service of the blind and visually impaired students."
- "This is the first time in the middle-east where such an initiative is undertaken."

Usage of Advanced Multimedia in Specific Disciplines

Setting up a multimedia learning environment has been extensively carried out in a number of courses designed using WebCT at AUC. Multimedia tools such as audio, video and flash animation were incorporated to serve in describing and illustrating course materials. The most significant usage of such multimedia mechanisms has been for simulating projects or experiments that are very difficult to demonstrate in a normal
classroom or hazardous to be experimented in a lab. Sample usage of courses with a multimedia environment is hereby addressed:

- A mechanical engineering professor has embedded video displays to present three-dimensional process animation of some manufacturing processes that she had stated were very difficult to visualize by students using ordinary two-dimensional illustrations in class. After binding them to the course, students were better equipped with the detailed functionalities of these processes.
- "The primary aim of a chemistry course must be to develop in students an appreciation of how the material world behaves, and this requires that the computer plays an active, positive role in learning [1]." The guide to this is computer simulation. In this course, we conducted dry lab simulated chemistry experiments on WebCT using flash animations for hazardous types, or for experiments where chemicals were not available. Such demonstrations will attract students towards a better understanding, and a clearer visualization of lab instructions and details.

Conclusion and Recommendations

Technology enabled Teaching & Learning is a very rich area with an inherit flexibility for the integration of different technology-enabled learning environments. Accordingly, for the coming phase of WebCT at AUC, Academic Computing Services is planning to continue searching for more innovative techniques and ideas for the richness, continuance and progress of such a Learning Management System.

Full Integration of WebCT with SIS+ is one of our main targets which will facilitate and automate students’ drop and add transactions, direct mapping of WebCT grades with SIS+, along with automatic course registration.
Course template design & development will be offered by ACS to all departments to help create fully comprehensive WebCT course materials that could be duplicated and taught by more than one professor in different sections.

Empowering live learning and instruction, using real-time electronically mediated virtual products is considered a top hit in today’s instructional technology. ACS is currently conducting a risk analysis study on a powerful virtual classroom kit testing its speed, reliability, responsiveness and efficiency to validate its integration as a power link to WebCT.

Learning Management Systems still have their own limitations. Designed as secured systems, faculty cannot easily collaborate with other members and share their teaching materials in campus or beyond. Finding open source techniques for sharing and expanding online faculty resources have been today’s major research trend. ACS will conduct a comprehensive research in such fields with the purpose of locating an efficient open source mechanism for the creation of sharable learning objects that could be posted, shared, reused and modified among faculty members.

Finally, we take this opportunity as members of a WebCT user community to call for collaboration among our institutions of higher education, to consider WebCT as an open source and make positive contributions to it and share their benefits.
References


