

# CanAM - A Web-based Multimedia Authoring and Management Tool for CALL

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## ABSTRACT

*We present a web-based authoring and management tool, CanAM. The purposes of this tool are to facilitate lecture design, management, and utilization of multimedia resources in computer assisted language learning. The designed tool not only supports multimedia document authoring, but also incorporates lecture management functions. In particular, it takes language learning into special consideration. Lecture designers and teachers can author online lectures via the web-based environment and use the rich multimedia resources. The integration of authoring tool and lecture management results in features that cannot be easily achieved by ad hoc combination of components. Moreover, what the teachers can provide is not simply one-way delivery of static multimedia lectures, but dynamic interactive learning activities where learners can work alone or engage in meaningful, communicative use of the target language with the teacher and a community of learners with adjustable levels of linguistic difficulty. We have implemented the above tool into the Intelligent Web-based Interactive Language Learning system (IWiLL) for teachers to design their courseware and learning activities.*

## 1. Introduction

The popularity of the Internet and the web has resulted in changes in teaching and learning. Many universities and content providers are using the Internet and web to deliver distance and classroom learning programs. Nowadays, many web-based course design and management tools and platforms (e.g., Blackboard[ 1], Centra [2], and WebCT [3]) and multimedia web-based authoring tools (e.g., Microsoft Frontpage, Micromedia Dreamweaver) are available. Although these systems and

tools are easy to use and have powerful toolsets, they do not take language learning into special consideration.

Over the past several years, we have developed a web-based language learning system, called IwiLL [4, 5], which is used by students and teachers in over thirty colleges and high schools in Taiwan. In the IWiLL system, teachers assign students articles to read and essays to write. Students turn in the assignments and teachers review and correct the essays on the web. The teachers' comment intended as feedback for students are automatically indexed to the students' texts and thus susceptible to statistical and qualitative analysis to help improving teachers' teaching and students' learning. In addition, students can interact with teachers and other students via the discussion board, voting board and many other environments in the system designed to support collaboration.

In this paper, we present a tool for authoring and management of multimedia lectures, called CanAM, designed to enhance the functions of IWiLL. The CanAM authoring tool can be used for:

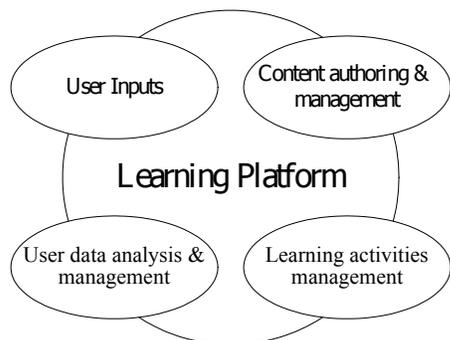
1. Manipulating continuous multimedia elements;
2. Creating, editing and sharing web-based multimedia documents;
3. Managing lecture content and learning activities.

In order to enrich the potential of videos for the second language learning, we select movies and capture their dialogue. We design tools for querying video clips via keyword-based and segmentation based approaches. Lecture designers and teachers can extract and choose suitable sentences for teaching vocabulary, scenario study, and listening improvement. Furthermore, the design of the system software architecture exploits component modulization. A component, which may be a multimedia document, a text, or a learning activity, can be easily added into the lesson web pages. We have integrated the designed toolset into IWiLL web-base environment. Therefore, the designed courseware by

using CanAM can be shared among the users of the system.

## 2. Backgrounds and System Overview

Currently, the digitization of multimedia components such as image and video can be achieved on a Multimedia PC or corresponding digital devices. Meanwhile, available Internet bandwidth continues increasing. The delivery of educational content over the Internet is gaining popularity. Most commercial platforms deal with content authoring and lecture management separately. As a result, many features such as content sharing and utilization of learner data cannot be accomplished without extra efforts. Meanwhile, for language learning software, CD title is still the main vehicle for delivering multimedia content. This format supports individuals learning in isolation but lacks support for human interaction and collaboration that is essential for gaining authentic communicative competence in a second language. After production, the form and content of these products is fixed and cannot adapt to different learner levels and interests and new knowledge created by user interaction. The integration of the Internet and web technology can overcome these drawbacks.



**Figure 1. The integration of content authoring, learning platform and user inputs.**

As shown in Figure 1, learners, content designers, teachers, and researchers may access the same platform. And the corresponding user inputs to the system, content authoring and management, learning activity design, and user learning profiles can be easily designed, implemented, searched, retrieved, and shared over the Internet.

## 3. System Functions and Implementation

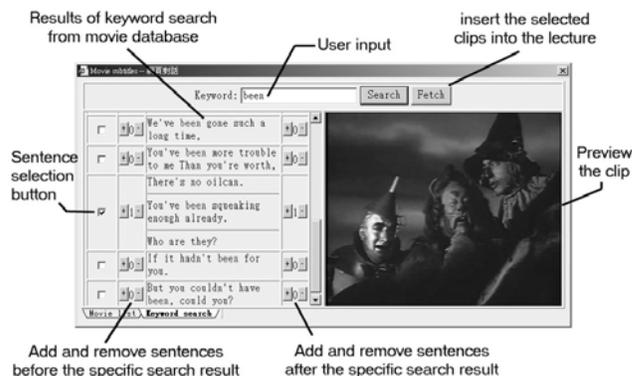
The CanAM includes the management and authoring subsystems. In the management subsystem, teachers can browse, share and assign lectures to classes, and annotate and correct student work, all in the web-based environment. In the authoring subsystem, teachers can

create, modify and remove lessons. Teachers use the web-based authoring tools just about like editing in a commercial word processor. Teachers can insert words, pictures, movie clips and change their properties via clicking the buttons on the authoring toolbars.

The authoring subsystem includes a video authoring tool. Teachers can use this tool to locate and select clips of movies for inclusion in a web-based lesson. Because there are many movies in the database and the playtime of each movie is usually long, a filtering tool that enables us to choose suitable scenes and dialogue from the movies is crucial.

We have provided methods to help teachers in the video clips selection. The first method is to use keywords to search the script texts in movie database. In order to provide this function, we establish the whole caption texts and the audio time codes of all movies in the movie database. By using the recently developed DVD technology, we can extract the movies' subtitles and their time codes.

After users input the keywords, sentences within the movies that contain these keywords will be displayed. Teachers can preview the movie clips and playback the corresponding sentences and use the selection button to choose the appropriate sentences to be included in the web-based lesson. Since one isolated sentence is often not adequate to convey the complete meaning of the word or expression, we also provide a function for expanding the context. This function allows user to increase the length of the video clip incrementally to provide sufficient context. Finally, to insert the selected sentences into the design lecture, users simply click the fetch button. Learners can play these clips by simply clicking on the displayed text. An example of keyword search is presented in Figure 2.



**Figure 2. Keyword searching and the function adding sentences.**

Users may also want to insert longer film clips in a lesson not just for vocabulary or grammar illustrations but for extended listening practice or to convey a theme from

the film for discussion. The keyword search function may not be the appropriate authoring tool

For this reason, we also provide the second method, time mark method, to locate and select longer movie clips. Users can preview the clips after the start time and end time have been set. To set the start and end time, users may first use the keyword search function to help locate the initial point or enter the time in the blocks. After determining the span of the movie clip, teachers can click the fetch button to add the assigned clip into the lesson. The illustration of clip selecting is presented in Figure 3.



Figure 3. Movie clip selection by time mark method.

Teachers can add an essay assignment in the lesson by clicking the essay button. After teachers input the title, description, select special vocabulary words to be used by students, the essay assignment will be added to the designed lesson. On the other hand, when teachers want to add pictures into the lesson, they can select the pictures existing in the system, or upload their own and insert them in the lectures. About the detail of this paragraph, please refer to [4, 5].

#### 4. Application

We have integrated CanAM with the Intelligent Web-based Interactive Language Learning (IWILL) system. The existing functions in IWILL, writing assignment and discussion can be manipulated from CanAM directly. These functions facilitate a lecture designer or a teacher in the design of lessons and learning activities in IWILL. Users can preview the whole designed lesson and check their designed content before posting or share the results, see Figure 4. The document format in CanAM is HTML and the video clips are in Microsoft WMV format. Therefore, a common web browser on Microsoft Windows System is able to display the lecture on the Internet.

Each designed lesson and learning activity is stored in a personal lecture content bank. A content manager mechanism is designed in IWILL allowing users to share their works to other users in IWILL. The CanAM tool is used by English teachers in the IWILL promotion project.

#### 5. Conclusions

We have designed a web-based authoring and management tool, called CanAM, for language learning. The designed authoring tool and learning platform can be integrated together. As a result, users can obtain more benefits from the learning environment. The tool also allows lecture sharing in the same platform. Teachers in the system can obtain lecture content from other teachers. In this manner, a cooperative environment between users is established. The designed tool allows teachers to select suitable sentences of video clips from a video database for lesson design. Teachers have two choices in sentence selections. One is based on keyword search and the other is temporal sequence selection. These tools significantly facilitate the multimedia lecture design. With the designed software architecture, the content authoring and management system becomes scalable. That is, more components can be added into the learning environment in a module format.

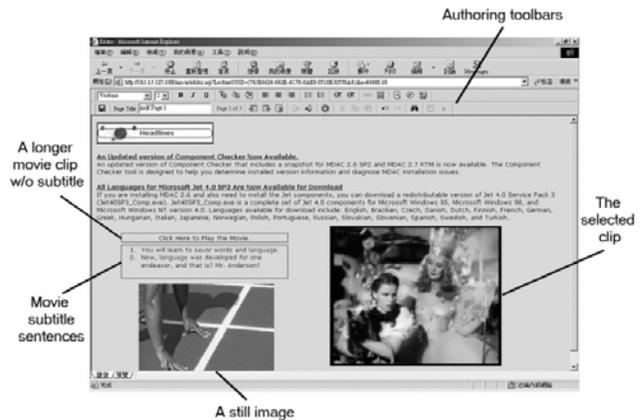


Figure 4. Preview of the designed lecture content.

#### 6. Acknowledgements

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