HYPERMEDIA AND MULTIMEDIA AUTHORING TOOLS: THE APPLICATION OF NEWER TECHNOLOGIES IN *CALL* AUTHORING*

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ABSTRACT:

Computer Assisted Language Learning (CALL) came of age in the late eighties and it is now strongly tied to educational syllabi in many schools of language all over the world. Due to the fact that a number of hypermedia and multimedia authoring tools are available for IBM and Macintosh computers, language teachers can now create their own CALL programs with or without help from computer programmers. Unlike traditional ready-made systems, these tools provide many opportunities for language teachers and courseware developers to create CALL software that increases the efficiency, enjoyment and speed with which language learners can assimilate information. After discussing the features of some authoring tools for CALL and also accepting the importance of listening as an active process in communication, *Multimedia Listener*, a prototype CALL program that aims at helping Turkish EFL students improve their listening comprehension is illustrated through some screen shots or figures from a lesson module.

KEY WORDS:

Computer Assisted Language Learning (CALL), Hypermedia, Multimedia, Authoring Tools, Quicktime, HyperCard, SuperCard, Authorware Professional, Macromind Director, LinkWay, ToolBook, English Language Teaching

ÖZET:

Bilgisayar Destekli Dil Eğitimi (BDDE) seksenli yılların sonlarına doğru belirli bir olgunluğa erişmiş ve bugün dünyada birçok eğitim kurumlarının müfredatına girmiş bulunmaktadır. Artık IBM (veya IBM uyumlu) ve Macintosh platformlarında birçok hypermedya ve multimedya yazarlık araçları bulunduğu için, dil öğretmenleri de, kendi başlarına veya bilgisayar programcılarından alabilecekleri yardımlarla kendi BDDE yazılımlarını üretecek düzeye gelmişlerdir. Sınırlı olanaklar sunan geleneksel hazır yazarlık sistemlerinin aksine, hypermedya ve multimedya yazarlık araçları dil öğretmenleri ve yazılım geliştiricilerine BDDE programları hazırlamada daha çok imkan sunmaktadır. Dil öğrencileri de, bu olanaklar ile hazırlanan BDDE yazılımlarında sunulan içeriği daha verimli, eğlenceli ve hızlı bir şekilde edinebilmektedirler. Son olarak bu makalede BDDE için bazı yazarlık sistemlerinin özellikleri tartışılmakta, iletişimde dinleme becerisinin etkin bir süreç olarak önemi vurgulanarak, Yabancı Dil Olarak İngilizce öğrenen Türk öğrencilerinin dinleme becerilerini geliştirmeye yönelik *Multimedia Listener* adlı prototip bir BDDE yazılımı çeşitli şekillerle verilmektedir.

ANAHTAR SÖZCÜKLER:

Bilgisayar Destekli Dil Eğitimi (BDDE), Hypermedya, Multimedya, Yazarlık Araçları, Quicktime, HyperCard, SuperCard, Authorware Professional, Macromind Director, LinkWay, ToolBook, İngiliz Dili Öğretimi

1. INTRODUCTION

Computer Assisted Language Learning (CALL) has been in the agenda of many school administrators and language teachers for well over three decades. In the USA and in most European countries, computer-mediated instruction is no longer seen as a new phenomenon. Like videos, casette players and tape recorders the microcomputer has put itself in the service of language teachers and learners, and it is in the storehouse of language teaching profession.

As a developing country where the teaching of English as Foreign Language (EFL) has continually gained.

Impetus, Turkey has also started taking advantage of microcomputers in language teaching. At present many private and state schools try to support the teaching and learning of English through microcomputers with one or two hours CALL work in the computer labs each week. And many others have already begun to invest millions of Turkish Lira on microcomputers on both the IBM (or IBM compatible) and the Macintosh platforms. The programs which these schools have been using are mostly characteristic of "traditional CALL", including grammar, vocabulary, spelling exercises and verb drills. These activities usually focus on the structural aspects of language. Although not all structural CALL activities merit the criticisms directed against them, I think that, when hypermedia and multimedia elements such as audio, digitized video images, animation, high-quality graphics, and texts are incorporated and properly de-

signed, CALL can be more enjoyable, non-uniform and thus keep students' interest more than usual.

In preparing CALL software materials with such elements we no longer need to be PASCAL or C programmers. Thanks to a number of hypermedia and multimedia authoring tools available for IBM and Macintosh computers, language teachers can now create their own CALL programs with or without help from computer programmers. In this article I would like to point out why I find some authoring tools for CALL most helpful for language teachers. Because I happened to begin CALL work with the Macintosh, my discussion of the use and application of these tools will be mainly on the Macintosh platform with some references to their IBM equivalents. In addition, I would like to draw attention to the sample prototype CALL software, *Multimedia Listener*, under development for Turkish EFL students.

CALL materials, we are not required to be an expert in computer programming. Indeed, the available authoring tools with newly added features may turn us into courseware developers.

In figure 1 are given some hypermedia and multimedia authoring tools with which the language teacher can prepare courseware materials. Here we will not make any effort to show the differences between a hypermedia and multimedia application. Doing so will fail because what was a few years ago considered as only a hypermedia tool with limited features is now furnished with multimedia elements like animation and digitized video images. In fact, the distinction is getting more and more blurred.

So, how can these tools contribute to the effective design of language teaching materials? What can a foreign language teacher do with them? Each of these tools "presents a number of opportunities for
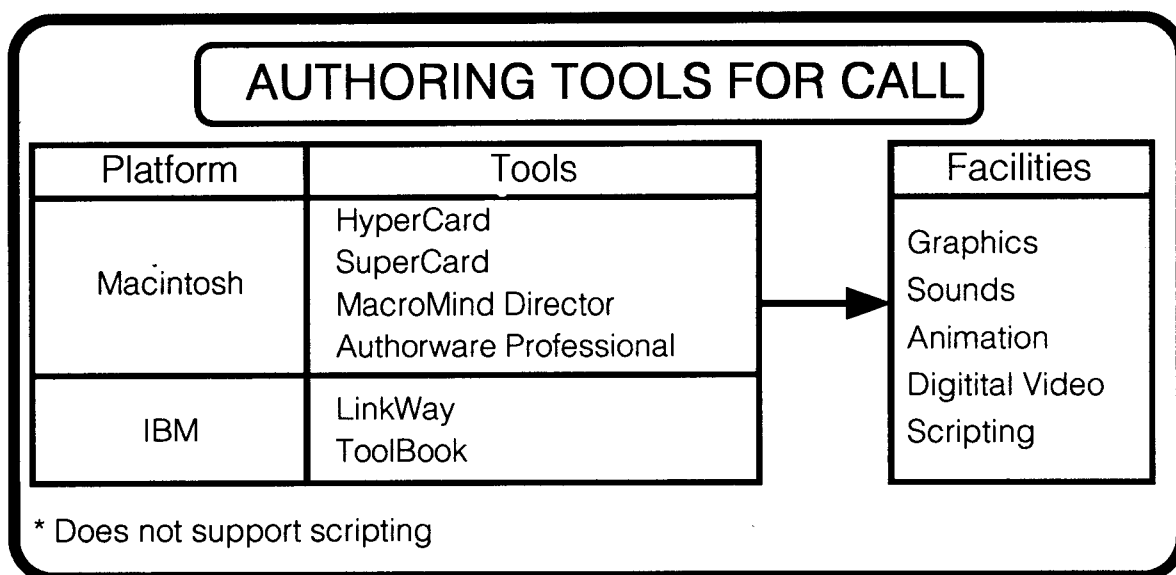

Figure 1: Some Hypermedia and Multimedia Tools for CALL

2. AUTHORING TOOLS AND QUICKTIME FOR CALL

Suppose that you are an EFL teacher in an educational establishment that has the technological facilities for CALL and that you have been newly hired to manage CALL activities for two or three hours a week. What would you do? One may, at this point, look for commercially-available packages to meet the demand. Of course, he would select the ones, if any, that best meet the needs of the official teaching syllabus. As in the case of language teaching textbooks, however, we may find that the available programs do not suit well the needs and interests of our students, and the requirements for the teaching syllabus stated by the authorities. Whether we create our own CALL lessons from scratch or we prepare supplementary

teachers and developers to produce materials that increase the efficiency, enjoyment and speed with which students (and consumers) can assimilate information" (Ransom, 1990: 117).

2.1. Graphics

First of all, graphic facilities enable the teacher to incorporate visual images into his CALL program. This will definitely make the program more meaningful and interesting to use because images will direct the attention of students to both the program and its content. In the past the addition of images to courseware was possible only by creating "a set of commands in the program to make the microcomputer generate preset images at the appropriate moment" (Underwood, 1984: 63). And it would usually take

some time for the computer to draw them on the screen. Graphic facilities of these tools have changed the way we can put images in our programs. They all have built-in painting and drawing modules to create or import graphics with a simple click or movement of the mouse.

2.2. Sounds

The second point in discussion is the addition of sound resources to programs. Stressing the importance of the audio element in CALL and listening comprehension, Underwood points out that software developers should find better ways of incorporating some sort of audio response in CALL programs because it can be "a source of comprehensible input for listening". (1984: 62). In EFL contexts as in Turkey, the language teacher can thus provide native speech samples for his students using the CALL program. He can even incorporate his own voice into the program because students will like it, as they usually like the programs prepared by their teachers more than by others. At this point there are two technical questions about the inclusion of sound resources to programs. One is how the teacher can do that. The other is whether or not the audio element will make the size of programs larger in terms of memory. Both questions have been solved by the recent software and hardware technologies. Some Macintosh and IBM computers are now bundled with a microphone for audio recording. What the teacher or learner has to do is to take the microphone and speak into it. The latter issue is solved by some compression techniques that make sound resources smaller in size. Finally, it is also possible to have the audio in the program at different sampling rates and make its size smaller.

2.3. Animation

Animation, the major vehicle for creating movement on screen, is another facility offered by hypermedia and multimedia authoring tools. Unlike the situation in language teaching textbooks the available tools can convert static pictures into high quality animated color graphics with audio tracks. There are basically two ways for the language teacher to manage animated images on screen. One is to create animation sequences by linking together a series of graphics placed on cards or screens, and the other is to use the tool's built-in facility that asks for the beginning and ending positions of texts and graphics and later animate them in the flow of the program. Whatever technique the language teacher uses to create animation, he will certainly add a new dimension to courseware. As Ransom writes, "animation is useful for both explanation of dynamic processes and for heightening impact of presentation" (1990: 117).

2.4. Scripting

A very important facility which these authoring tools provide for the language teacher is their easy-to-use scripting language. Except Authorware Professional, all of these authoring tools have their built-in language which is very similar to everyday English. Their syntax and vocabulary are just like those of English. As a teacher of EFL, I have been using HyperTalk (HyperCard), SuperTalk (SuperCard) and Lingo (MacroMind Director) scripting languages for two years and find them suitable for creating interactive environments in programs.

2.5. Digitized Video Images and QuickTime

Until recently video element in CALL has been supported only by computer-controlled video players. Apple's QuickTime™ (for MacOS - Macintosh Operating System), one of the latest innovation in software technology for digital video, has changed the way we look at the video element in multimedia applications. QuickTime™ provides the opportunity to include digitized video into courseware directly from a hard disk or CD-ROM without using video disc players. It is basically a system software extension which enables CALL authors to integrate hypermedia and multimedia elements like high-quality graphics, sounds, video images and animation into courseware. Furthermore, it remarkably reduces the file size of these elements by various compression techniques and less space is required to store them on floppy or hard discs. In addition, some of the available authoring tools support the development of CALL programs with this QuickTime.

Quick Time files, called movies or clips, have important implications for the design of CALL programs. Since video images have animations and audio tracks, digital movies can be used to present activities with authentic visual contexts for listening comprehension. Most CALL programs that have been developed so far lack listening comprehension activities. Since QuickTime also makes possible the compression of movie clips with sound resources, the developers of CALL software may well incorporate digital video in their programs from now on.

2.6. Making the Most of Authoring Tools

Up to this point I have tried to give an overview of the facilities of some authoring tools that can be used in creating CALL courseware. These tools offer the language teacher every opportunity to create his own lessons for his students. He can turn static pictures, as in textbooks, into dynamic, animated graphics on screen and incorporate audio input into his lessons. Moreover, he can manage interactions between the

student and computer through 'intelligent', non-sequential links by using scripting facilities and provide better audio-visual contexts for learning by using digitized video images.

While all these opportunities are technologically available, the language teacher should also act as a scenarist in designing his lessons. As Koç (1993) mentions, we should carefully organize the order, branching, and even recycling of stages in syllabus-based CALL courseware by determining teaching/learning strategies. CALL lessons should not control the learner but show ways to go or navigate through the program. Equally important is the establishment of the interactivity through immediate feedback mechanisms. Otherwise there would be little use in employing the microcomputer as a learning environment. In short, "the courseware on computer should attract more attention than the book so that learners should not put away but prefer the computer courseware to the book."

3. *MULTIMEDIA LISTENER*

The recent language teaching methodology emphasizes the fact that listening, speaking, reading and writing skills are integrated and thus inseparable from each other. Until recently, however, most CALL applications have mainly focussed on reading and writing skills due to the lack or high costs of technical facilities. Listening and speaking skills have been left to be practised mostly on interactive video-discs, or a video player connected to the microcomputer. Moreover, in the past some people thought that since the process of listening comprehension is not external and directly observable, listening was, like reading, a passive language skill. Unfortunately, some still think so. Today, however, the human mind is considered to be equipped with an information processing system. Thus, "listening is considered an active process. Listeners are thought to be involved in the communication process because they use their background knowledge of the world and of language to recreate the speakers' message." (Chastain, 1988: 193). Approaching CALL programs within an integrated skills framework and also accepting listening as an active process in communication, I have been trying to develop *Multimedia Listener*, a prototype CALL program, to help Turkish EFL students improve their listening comprehension. In the time remaining I will briefly illustrate how it works using some screen shots from a lesson module and later show how it runs on the microcomputer.

3.1. Hardware and Software Requirements

To run *Multimedia Listener* the following hardware configuration is necessary: 1) A Macintosh computer with 68020 or higher microprocessor; 2) A color high-resolution RGB monitor-12" or larger; 3) At least 4 MB RAM; 4) 240 MB hard disk; 5) Microphone.

The first of these components is required because the courseware uses digital video images stored as files on hard disk, and only a color Macintosh computer with a 68020 or higher microprocessor and 4 MB RAM can run it. The last peripheral, the microphone connected to the audio jack of the computer, is used by students to record their own voice and listen to it.

As for the software requirements, the courseware runs with: 1) Macintosh System Software 6.0.7, 7.1.0, or higher; 2) HyperCard 2.1; 3) QuickTime 1.5. While the system software with the stated version(s) and the QuickTime as a system software extension are the essential elements, I have chosen HyperCard 2.1 as the authoring tool because of its facilities and ease of use. Using scripting utilities of HyperCard, I have incorporated high-quality color graphics files, digital audio-video and animation in lessons and their phases. Moreover, non-sequential links in between *Multimedia Listener* lessons have been made to provide the user with a more interactive, learner-controlled environment.

3.2. Structure of *Multimedia Listener*

Multimedia Listener works in a menu-driven system with various audio-visual resources such as color graphics files, pre-recorded voices, animations and digitized video images as QuickTime movies. At the very beginning of it is given a list of lessons that each focus on a specific language function. The list serves as a 'global menu' for selecting lessons and navigating in between them.

When the user selects a lesson by clicking on a button in the global menu card, the program takes him to the main menu of the selected lesson, which is accompanied by audio input. Once in the main menu, he is provided with various stages and activities for that particular lesson. Briefly, *Multimedia Listener* lessons whose structure is illustrated in figure 2 consist of the following. Each of these is further illustrated in figures 1 to 10 in Appendix.

• *Introductions/objectives* where the user is given objectives and preliminary information about lessons.

• *QuickTime movies/pre-recorded dialogues* where digital video images and pre-recorded di-

alogues are directly played from a hard disk. As exemplified in figure 3 in Appendix, the user can easily control a QuickTime movie, e.g., by pausing and stepping forward and backward. He can further look up a word that he hears by pressing the Dictionary button.

• *Transcripts of movies or dialogues* where written forms of audio or audio-visual elements are displayed to provide the user with a visual context (pictured in figure 4 in Appendix). When the user comes or selects this section of a lesson he can also listen to QuickTime movies/pre-recorded dialogues again. Some lexical items which may be unfamiliar to the user are grouped and highlighted so that he can look them up by a simple mouse click.

• *Grammar/language use* where the user can at will see linguistic clues and explanations in a tutorial or presentation mode. Since each lesson focuses on a certain function of language like giving instructions, the linguistic forms too represent the structures used in that function.

• *Comprehension questions/True-False statements* where the user is asked particular questions concerning the movies or dialogues. This phase of a lesson requires that the user has absorbed the information in previous audio or audio-visual 'texts'.

• *On-line dictionary* where the user can look up unfamiliar words, learn their meanings with Turkish equivalents, and listen to their pronunciation. When in the on-line dictionary he can also navigate through other lexical items, or loop up another word, if available, by pressing a Find button.

• *Practice* where aural-oral tasks like listening and recording voice are given. After listening to another dialogue with the same language function as the lesson, the user is asked to carry out a certain activity like putting scrambled sentences in their correct order. Finally, there is an opportunity for the user to record his own voice and compare it with the pre-recorded one.

3.3.A Lesson from *Multimedia Listener: Cindy's Cookbook*

After having briefly explained the general structure of *Multimedia Listener*, I would like to illustrate it with some screen shots from a lesson titled "Cindy's Cook-
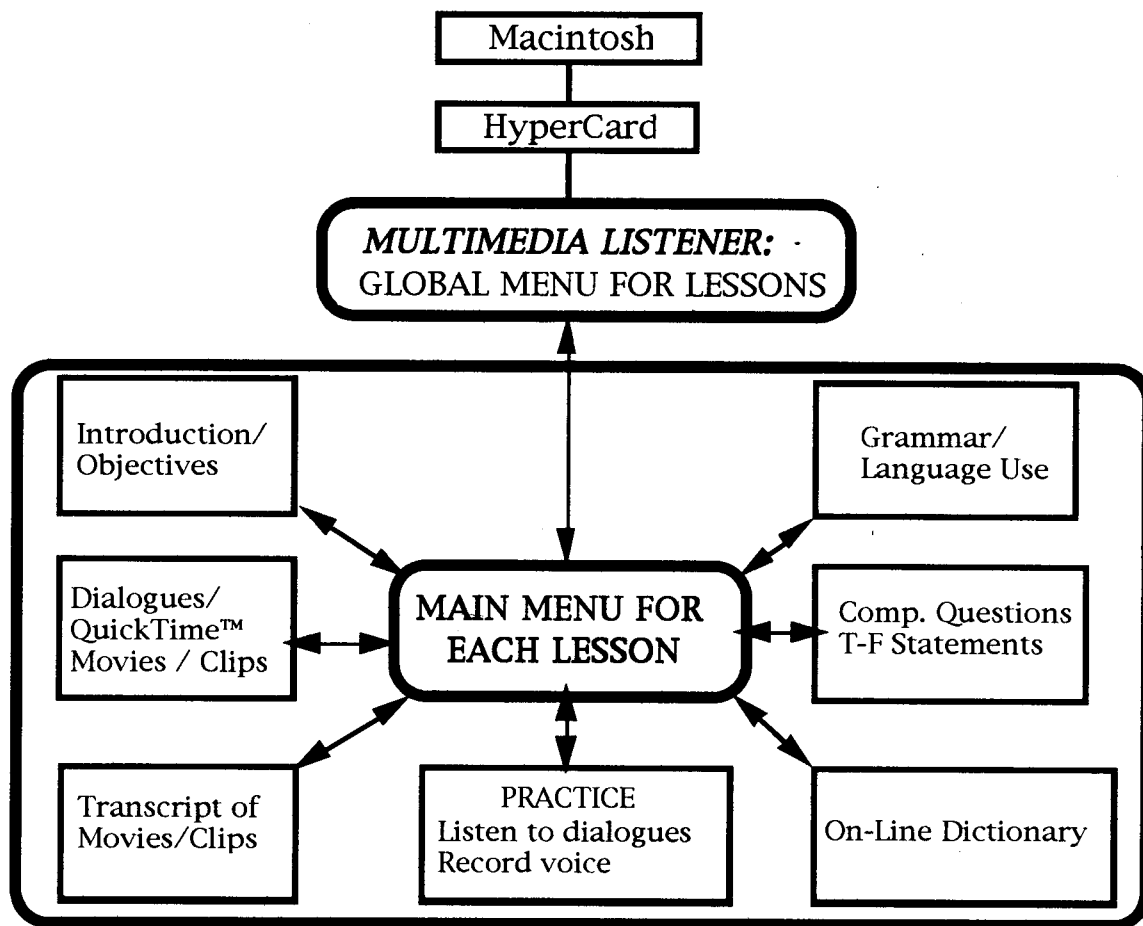

Figure 2: Structure of Multimedia Listener and its Lessons

book." Functionally, the lesson focuses on giving and following instructions. When the user comes to the main menu of the lesson, he can press the intro-duction/objectives button, and a card giving the objectives of the lesson appears. Next, users are given preliminary information about the movie to be watched and the scene is set:

> *You are going to watch a movie about how to make a strawberry cake. The conversation takes place between Cindy and her computer. Cindy wants to cook a strawberry cake for her mother because it is her mother's birthday. She asks her computer for help. The computer gives Cindy some instructions about how to make a strawberry cake step by step, and Cindy makes a delicious strawberry cake for her mother by following up the instructions.*

After enough information is given about the lesson, the student is asked to browse through the whole lesson at his own pace. In the APPENDIX are given various figures from the sample lesson. They all illustrate the organization and content of lessons in *Multimedia Listener.*

4. CONCLUSION

Up to this point I have tried to discuss authoring tools for CALL and their facilities such as graphics, sound, animation and scripting that can be used with the QuickTime software. Clearly, the hypermedia and multimedia authoring tools enhance the development of CALL programs, especially when CALL lessons are supported with QuickTime movies as audio-visual input. In other words, if CALL courseware designers exploit the potential features of these new software technologies and base their CALL programs on sound pedagogical principles, it is a fact that new CALL programs will be more appealing to language learners and more effective in second/foreign language teaching.

Making use of the facilities of HyperCard and QuickTime I have also attempted to develop a CALL lesson for listening comprehension in ELT. I have had some background in using and creating materials with these tools, but I think that language teachers who are new to the field can be trained in short-term in-service training courses to prepare their own CALL lessons or other CALL materials.

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APPENDIX:
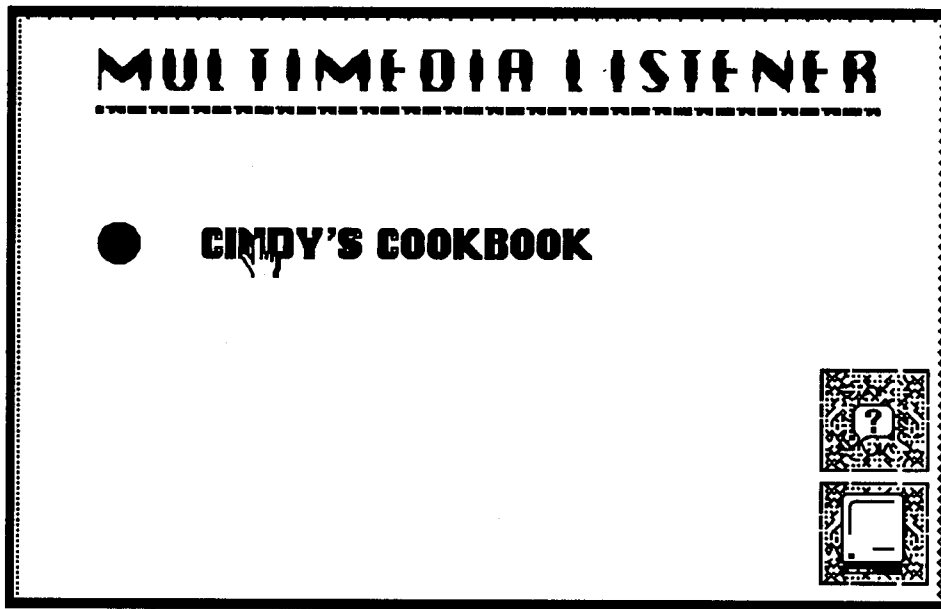
FIGURES FROM *MULTIMEDIA LISTENER*
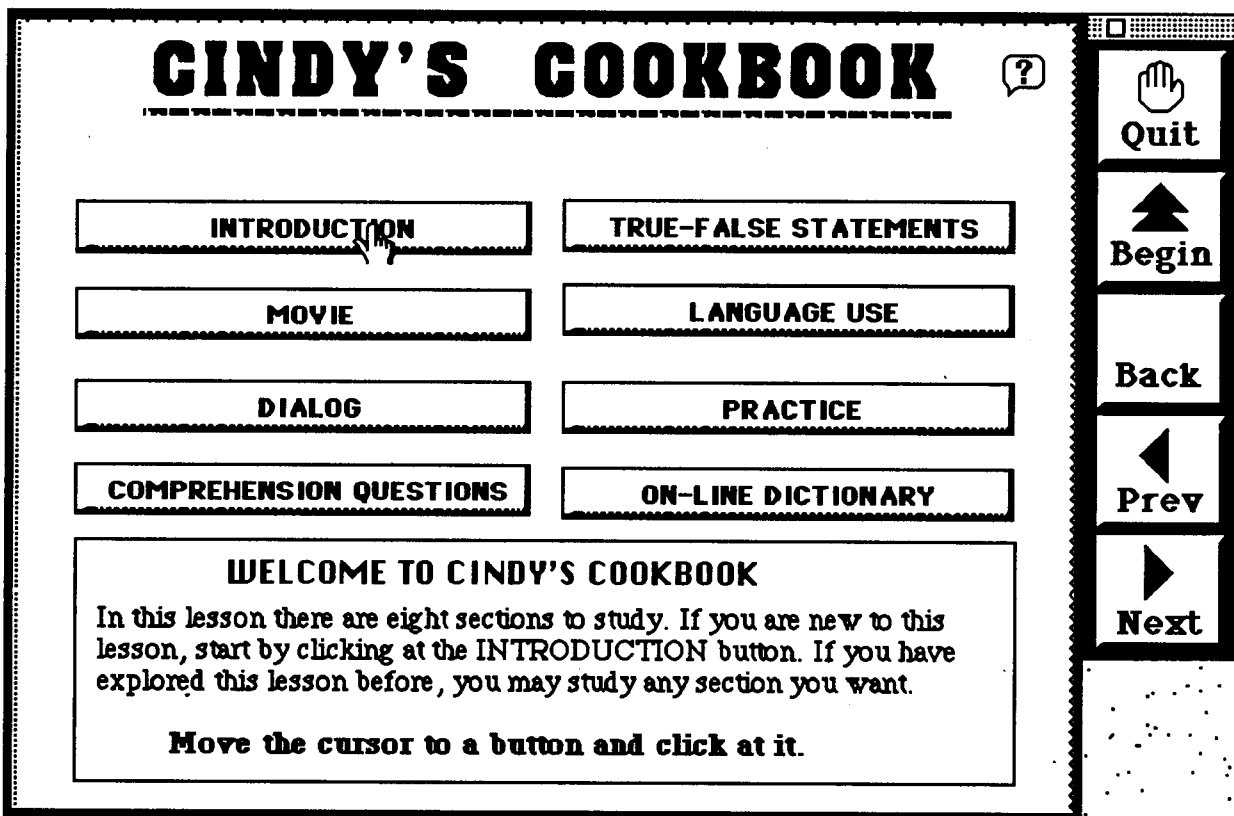

Figure 1: Global menu for Multimedia Listener
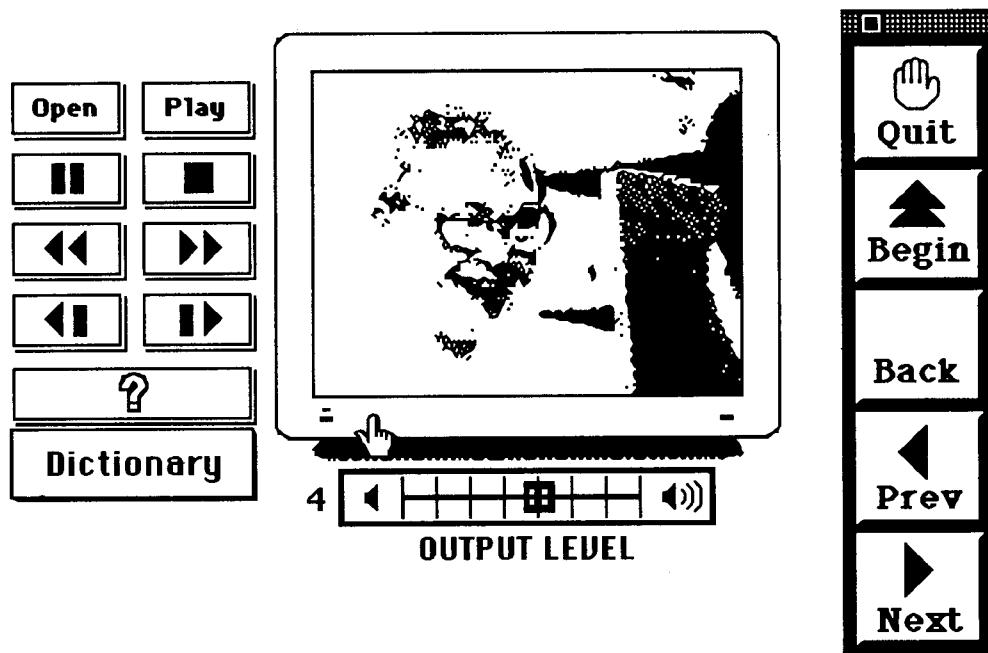

Figure 2: Main menu of "Cindy's Cookbok"

Figure 3: *"Studio" card used for playing QuickTime movies/digital video*

Figure 4: *The transcription of the dialog in QuickTime movie
with hypertext links to the online dictionary*

ON-LINE DICTIONARY

scale
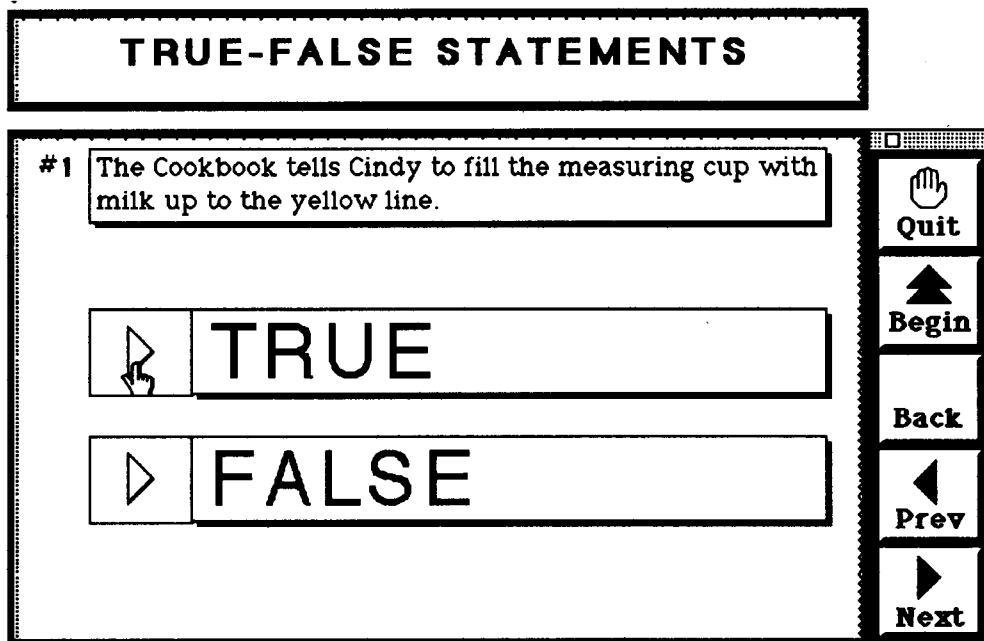
an equipment used to weigh an object

tartı; ölçü aleti

Ex:
She put the cup on the scale to <u>measure</u> the amount of milk.

Find

Quit

Begin

Back

Prev

Next
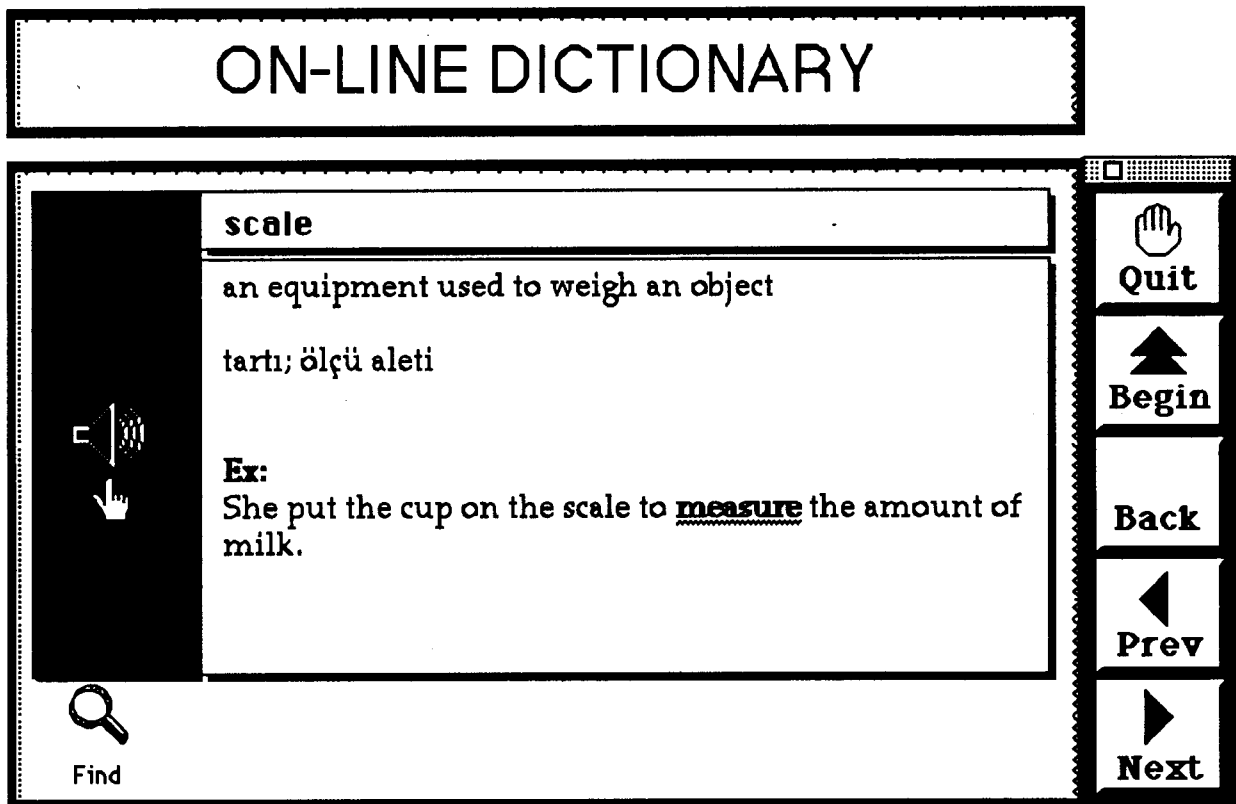
Figure 5: A sample on-line dictionary card

TRUE-FALSE STATEMENTS

#1 The Cookbook tells Cindy to fill the measuring cup with milk up to the yellow line.

TRUE

FALSE

Quit

Begin

Back

Prev

Next

Figure 6: A True-False question card

#3 | What equipment does Cindy need to cook the strawberry cake?

She needs a big spoon, a mixing bowl, and a glass.

She needs a big bowl and a measuring cup.

She needs a big spoon, a mixing bowl, and a measuring cup.

She needs a mixing bowl and a big spoon.

She needs only her special measuring cup.

Quit | Begin | Back | Prev | Next

Figure 7: A multiple-choice comprehension question card

LANGUAGE USE

Form	Example
	quarters cup of milk.
The next thing you have to do ...	The next thing you have to do is to pour three quarters cup of milk.
●●●●●●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●
Make sure you ...	Make sure you stir the bath until it's smooth and creamy.
Don't forget to ...	Don't forget to fill it up to the yellow line.
Remember to ...	Remember to put the meausing cup on the scale.
KEEP + Verb-ING ...	KEEP POURING all the way up to the yellow line.

Quit | Begin | Back | Prev | Next

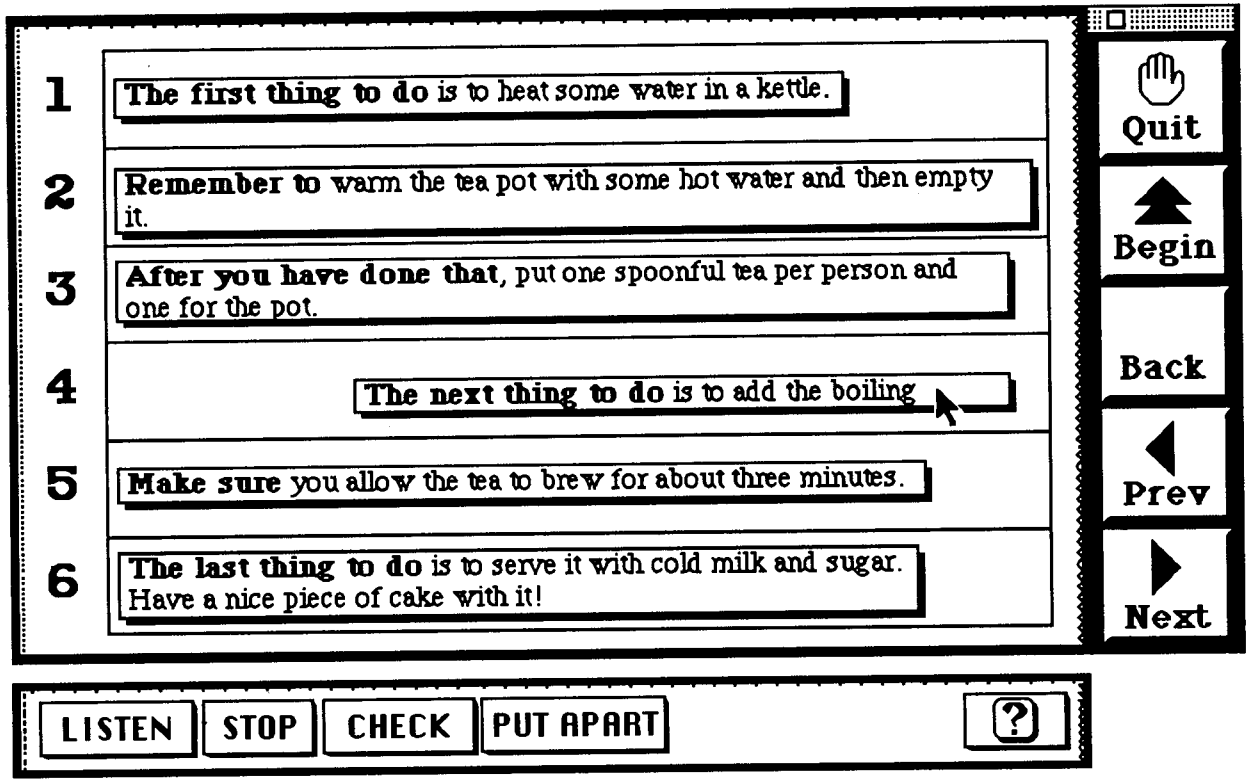*Figure 8: A scrolling table for the summary of language forms used in the lesson*

1   The first thing to do is to heat some water in a kettle.

2   Remember to warm the tea pot with some hot water and then empty it.

3   After you have done that, put one spoonful tea per person and one for the pot.

4   The next thing to do is to add the boiling

5   Make sure you allow the tea to brew for about three minutes.

6   The last thing to do is to serve it with cold milk and sugar. Have a nice piece of cake with it!

Quit
Begin
Back
Prev
Next

| LISTEN | STOP | CHECK | PUT APART | ⟨?⟩ |

Figure 9: *A practice card designed for putting the unscrambled sentences into correct order after the audio input*

My Voice

Save   Edit

Play Example

Play Serap's Voice

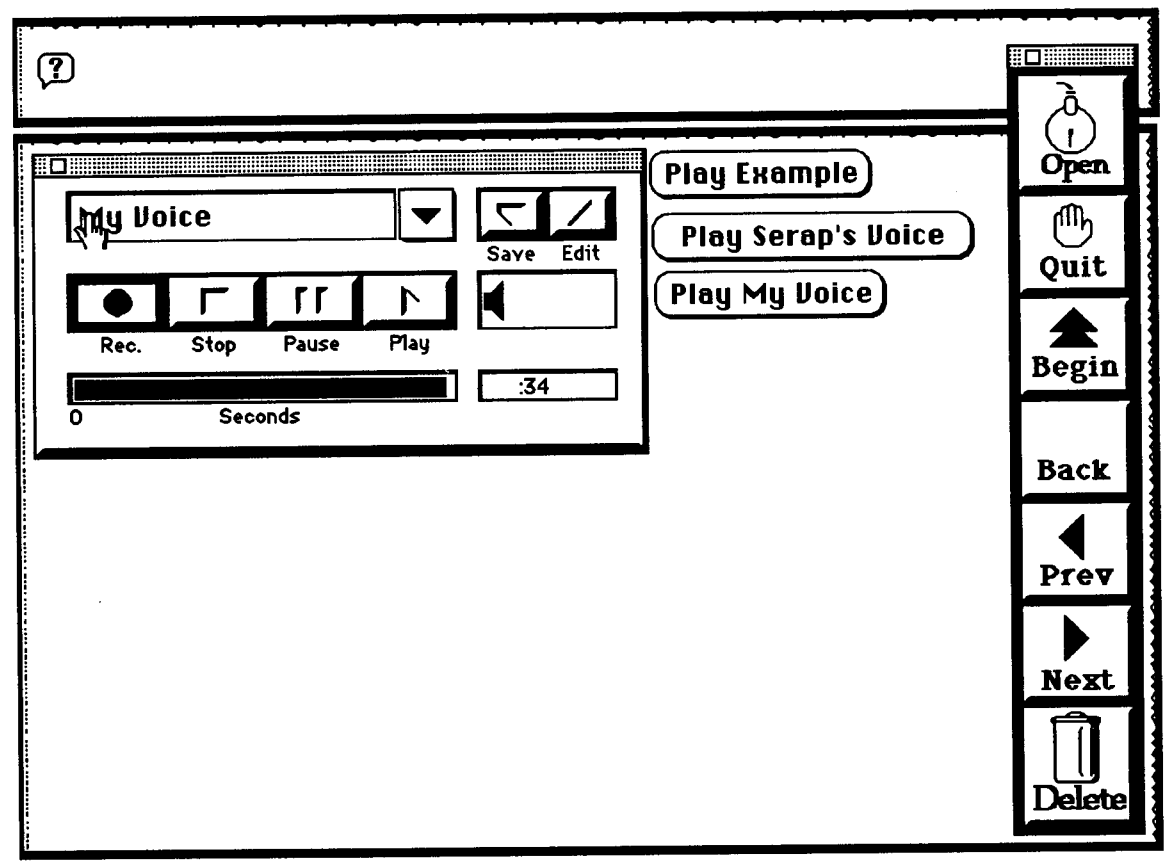Play My Voice

Rec.   Stop   Pause   Play

:34

0   Seconds

Open
Quit
Begin
Back
Prev
Next
Delete

Figure 10: *Voice recording card*