

Putting Learners First: An Integrated Multimedia Environment for Language Learning

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Abstract: One of the greatest obstacles to Taiwan's English learners is the lack of an environment rich in authentic English input used for real communication. A system entitled IWILL (Intelligent Web-based Interactive Language Learning) has been designed to provide such an environment. The IWILL online environment consists of an array of integrated components which support the needs of language learners and teachers. The multimedia system offers broad exposure to authentic English in text and video formats over the Internet. More importantly, the system tools allow teachers and learners to extract from massive amounts of English input precisely the examples they would like to focus on, adjusted to the level of the learner. The system also allows the integration of English skills such that VOD feeds discussion; discussion feeds reading; reading in turn leads to writing, and so on, in a contextualized learning cycle.

While learners can navigate easily from one of these environments to the other according to their needs, these various environments share a common toolbar that provides access to pinpoint or "micro" language help on demand in any environment. For example, learners can look up a vocabulary item in an online dictionary at any time by clicking on a toolbar while watching a video, while reading an essay, or while composing an essay for the teacher or an article for the discussion board. In addition, however, they can under these same circumstances retrieve up to fifty examples of the vocabulary item from an online English corpus to see that word in a wide range of contexts. The result is a system which encourages learners to learn by doing, not just to passively memorize rules and vocabulary. Learners can use English for communication in an online environment that offers feedback and plentiful authentic input adjusted to their needs and their level.

Keywords: Intelligent CALL, Distance Learning, VoD

1. Introduction: On Technology and Language Teaching

The meteoric rise of the World Wide Web as a tool for distance learning has triggered a renaissance in the field of computer-assisted language learning (CALL). While the technology for distance learning is improving, there is an urgent need to consider carefully how these technologies can best be applied to the design of web-based learning environments. Meeting this need requires the close collaboration of ISPs and ICPs, and the importance of collaboration can not be overemphasized. The present paper focuses on the domain of second language education and the description of a web-based language learning environment called IWILL designed collaboratively by linguists and information engineers. To place the contribution of this work in context, it is worth pointing out the pitfalls of neglecting the role of the domain or content aspects of designing such online environments.

A worrisome trend in the development of web-based language teaching systems is that they often provide a showcase of the latest and most impressive technological developments on the one hand while the applications are

based on outdated or poorly conceived notions of language teaching and learning on the other. In Taiwan there has recently been a healthy dissatisfaction with traditional English teaching methods and a promising search for new approaches. Stated bluntly, however, Internet technology will not offer the solution. The Internet is only a tool and its effectiveness in educational applications can only be as good as the teaching and learning philosophy on which the applications are premised. In other words, if traditional approaches to English language education have failed in the classroom, why should they succeed in cyberspace? It is the problem which westerners might call “old wine in new wine skins” and which Chinese refer to as changing the soup without changing the medicine.

This is not to deny that the Internet is a tool of almost unlimited promise for language learners. The point here is rather that to fulfill this potential, what is urgently needed is environments that are designed to meet the needs of learners according to the best and latest knowledge available about language learning. In what follows, we describe a system that has been designed according to these criteria.

The paper is organized as follows. Section 2 gives a brief overview of the design philosophy that motivates the IWiLL system. Section 3 provides a sketch of the overall IWiLL web-based environment and illustrates the system integration by focusing on how vocabulary learning and writing skills are supported and reinforced through multiple modes. Section 4 summarizes the contributions of the system.

2. Design Philosophy and Motivation

The IWiLL online environment consists of an array of integrated components which support the needs of language learners and teachers. Determining what specifically it is that learners and teachers need, however, depends to a large extent on one's philosophy of language learning and teaching. Traditional language teaching has been teacher-centered and emphasized the memorization of rules and vocabulary and the ability to translate from one language to the other [7]. Dissatisfaction with such approaches is based on the realization that students studying in such an environment may well perform beautifully on examinations yet still after six years of English be unable to use the language fluently or in a meaningful way [5,8]. Recognition of this failure of the system has led to certain probing questions: Do students actually master a language when they memorize it? Is there a difference between learning a language and simply learning about the language? Is the main educational goal to produce students who do well on English tests or students who can use English well?

The philosophy of language learning and teaching upon which IWiLL is premised contrasts rather sharply with the traditional view. We assume that knowing a language is not simply knowing a set of facts (like knowing history or geography); rather it is mastery of a skill, much like knowing how to swim is a skill. We can say the traditional approaches to English teaching are like teaching swimming in a classroom rather than in a swimming pool, asking students to memorize rules of how to swim and to take ‘swimming’ tests with pencil and paper. The learners rarely get wet. The IWiLL environment, on the other hand, offers a swimming pool and swimming coaches, and students get wet as soon as they enter. That is, IWiLL offers an environment of authentic English where students use the English they learn for real communicative purposes [6]. In short, we assume that students learn by doing.

Based upon this philosophy of language learning, the collaboration of linguists and information engineers makes it possible not only to deliver authentic English input to learners in multimedia formats online, but also to use information extraction techniques both to adjust the level of difficulty of the English input and to search massive amounts of English data for pinpoint delivery of exactly the English needed at any moment of need. In the next section, we illustrate these capabilities with some examples from the system.

Another critical aspect of our design philosophy is that the system should allow the language skills of reading, writing, listening, and speaking to be integrated rather than isolated. We assume that the isolation of these skills is artificial and that when integrated in the learning environment they are mutually reinforcing and deepen the learner's grasp of English. To give some sense of the design philosophy of IWiLL within the confines of this brief paper, we present an extended example of vocabulary learning.

3. Illustrating an Integrated Learning Cycle: Vocabulary through Micro and Macro Input and Output

This section is intended to illustrate the following properties of the IWiLL system:

- User-centered,
- Dynamic,
- Interactive

- Rich in language input that is:
 1. contextualized
 2. comprehensible
 3. multi-channeled
 4. adjustable
- Rich in opportunities for language output (production by learners) that is:
 1. contextualized
 2. susceptible to comprehensible feedback
 3. supported by online language help

In teacher training in Taiwan, one of the most common questions asked by junior and senior high school English teachers is: How can we help students memorize vocabulary? In contrast to the traditional approaches to language learning and teaching, we assume that the best way to learn a word is to USE it. Indeed, IWILL is designed to help learners learn by doing, in this case to learn English vocabulary by using it in context.

In what follows we sketch some scenarios to illustrate an alternative approach to mastering English vocabulary. The distinctive characteristics that we wish to illustrate are:

1. Our approach is based on contemporary views of language acquisition rather than on traditional memorization-based approach.
2. The scenario depends crucially on Internet technology and information engineering in order to realize the ideals of this non-traditional approach. Such an approach would be impossible with textbooks and a traditional classroom.
3. The information engineering tools make it possible to individualize the learning process for different learners.

The IWILL system is modular in the sense that it includes components which are highly integrated yet independent. For example, the VOD module can be accessed by learners for viewing English films over the Internet as an independent language learning activity [4]. The technology developed in Computers and Networking (CAN) Lab at Tamkang University allows this viewing on the Internet.

In addition, however, users can easily enrich this video viewing experience because the viewing component is integrated with other components. By accessing other modules even while viewing a film online, the system allows users to enhance their grasp of English or of one of the themes of the film. More specifically, authoring tools allow teachers to integrate the VOD module with: (1) a reading environment with articles about topics related to the theme of the film [1], (2) a discussion board where learners (and teacher) can discuss the film freely, (3) an essay writing environment where learners can compose and turn in essays to the teacher or exchange essays with classmates for peer commenting [2], and (4) a synchronous tutoring environment where learners can connect with writing tutors where they to discuss and co-edit their essays in real time (see Fig. 1) [3]. The modularity of the system allows users to navigate from one environment to another without being restricted by a fixed order. The users freely follow the sequence suited to their purpose at the time, whether that purpose is imposed as an assignment from the teacher or completely self-imposed.

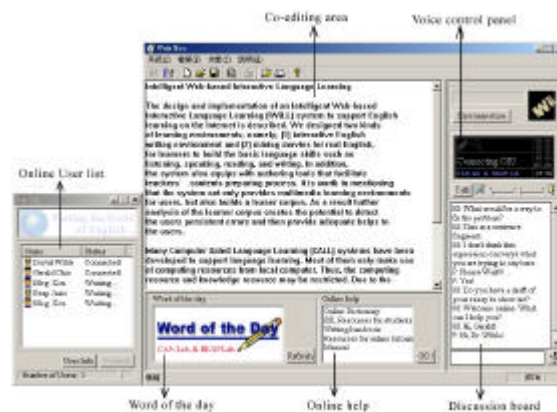


Fig. 1 WriteNow provides an online synchronous tutoring environment for English composition.

While learners can navigate easily from one of these so-called macro environments to the other according to their needs, these various environments share a common toolbar that provides access to pinpoint or “micro” language help on demand in any environment. For example, learners can look up a vocabulary item in an online dictionary at any time by clicking on a toolbar while watching a video, while reading an essay, or while composing an essay for the teacher or an article for the discussion board. In addition, however, they can under these same circumstances retrieve up to fifty examples of the vocabulary item from an online English corpus to see that word in a wide range of contexts. The system even provides a tool for extracting examples of specific vocabulary items not just from text, but from the online videos (see Fig. 2). This tool (called Mining Movies) allows learners not only to read examples of a vocabulary items, but to hear them and see them used in naturalistic contexts extracted from videos.

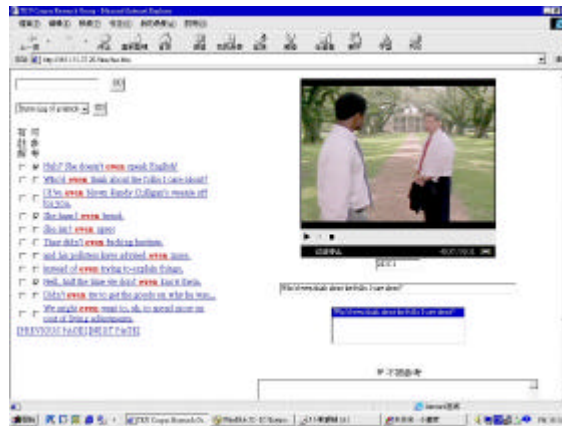


Fig. 2 Mining Movies allows users to extract numerous examples of English vocabulary from video and play them back in context.

An important characteristic to notice about this system is the interconnectedness of the various components. Virtually any component is accessible at any point in the environment. A student can pause in the viewing of the video to post a question or comment to classmates on the discussion board concerning this film or to look up written examples of a vocabulary word encountered in the film. They can then try using that word on the discussion board or in an essay and get feedback from their teacher and classmates. Likewise, a student can pause while writing an essay to go back to replay some scene from the film for the purpose of adding an example to the essay. Hence learners are not passively observing English or memorizing words by rote and out of context simply in preparation for a test. They are exploring English in a learning cycle of input and output, learning and using. This is learning to swim by entering the water and this approach is made possible by the integration of Internet and information technology with principles of linguistics and language learning.

These same tools greatly expand what teachers can do for learners as well, enabling teachers, for example, to provide much richer feedback to students than they can offer in traditional classroom settings. Our research has revealed that in our writing environment, which allows teachers to mark essays on line, by far the most common error marked by teachers is “word choice,” that is, the misuse of a word. In traditional “red-pen” corrections, teachers are extremely limited in the feedback they can offer a student who makes such errors. In the IWILL writing environment, however, the teacher can immediately retrieve dozens of authentic examples of that misused word and offer these to the student to see how the word is used correctly. In this respect, not only does IWILL offer an environment of English, it allows teachers to manipulate massive amounts of information in detailed ways in that environment to give individual students exactly what they need right at the moment of need.

4. Conclusion

One of the greatest obstacles to Taiwan's English learners is the lack of an environment rich in authentic English input used meaningfully for real communication. IWiLL is an attempt to provide such an environment. Moreover, by exploiting Internet and information technology, IWiLL in fact offers an advantage over actually living in an English speaking environment. Specifically, IWiLL makes it possible for learners and teachers not just to be surrounded by English, but to control the English environment in useful ways that are impossible in a traditional English speaking environment. The learner can coerce the Internet environment to provide dozens of authentic examples of a vocabulary in use either in text or video formats. In traditional environments, the learner must simply absorb what is offered with no means for manipulating the language input available.

Details on the specific components of the system, such as the VOD, online synchronous tutoring, and web-based composition environments can be found in a series of papers on the system as well as our web site <http://www.can.tku.edu.tw/iwill>. The focus of this paper has been the overall system integration. The emphasis has been that technology has been applied carefully with top priority given to considerations of the user. More specifically, we have taken care to design a system that incorporates insights of linguistics concerning what language learners need. The result is a system which encourages learners to learn by doing, not just to passively memorize rules and vocabulary. Learners can use English for communication in an online environment that offers feedback and plentiful authentic input adjusted to their needs and their level.

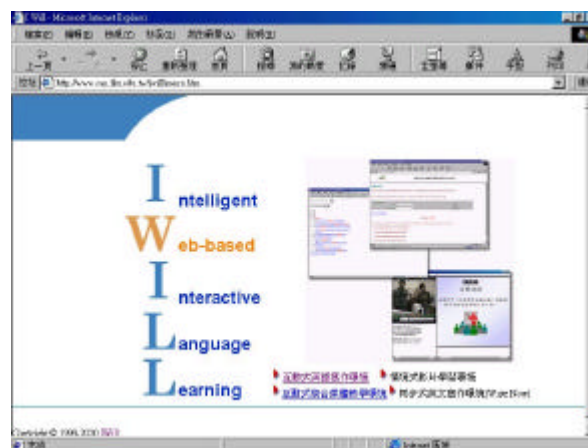


Fig. 3 Intelligent Web-based Interactive Language Learning
(<http://www.can.tku.edu.tw/IWiLL>)

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