

# A Network-Based Writing System for French\*

Aesun Yoon<sup>†</sup> & Hyuk-Chul Kwon<sup>‡</sup>

(<sup>†</sup>Dept of French, <sup>‡</sup>Dept of Computer Science,

Pusan National University, Pusan, 609-735, Rep. of Korea

asyoon@hyowon.cc.pusan.ac.kr, hckwon@hyowon.cc.pusan.ac.kr)

## ABSTRACT

<Système Emile> is a French learning software program using network. This paper presents its implemented prototype version, *Emile 1.1*. It is based on the client/server model connected by a dial-up modem. The data structure, the tutoring tools and the user interface of *Emile 1.1* are described in this paper. It mentions what should be added and improved in the next versions and further studies.

## 0. Introduction

<Système Emile> is a French learning software program using network that we are developing for Korean students. This paper presents its implemented prototype version (*Emile 1.1*) which aims to provide text data in long-distance writing classes.

This project had two goals: one was to make a new textbook; the other was its implementation. The data structure, the client/server model and the user interface including tutoring tools of *Emile 1.1* will be described in this paper. Also mentioned will be what should be added and improved in the next versions and further studies.

## 1. Data Structure

### 1.1. An Overview of Network Based Learning

Compared with the acquisition of our mother tongue, the following difficulties arise in learning foreign languages. First, the given class hours for learning are dramatically short. As for second foreign languages such as French, German, Japanese, Chinese and Spanish, Korean students are given only 1-2 hours a week for 3-4 years.[1] Second, a large number of students share just one teacher, so immediate correction of what they decode or encode is hardly possible. Third, learning a natural language means learning not only its linguistic elements but also its extra-linguistic elements. However instead of their integrated information, only the former such as lexicons and syntactic structures is focused on in many cases. Fourth, the syntactic or semantic structure of mother tongues interferes in learning other languages.

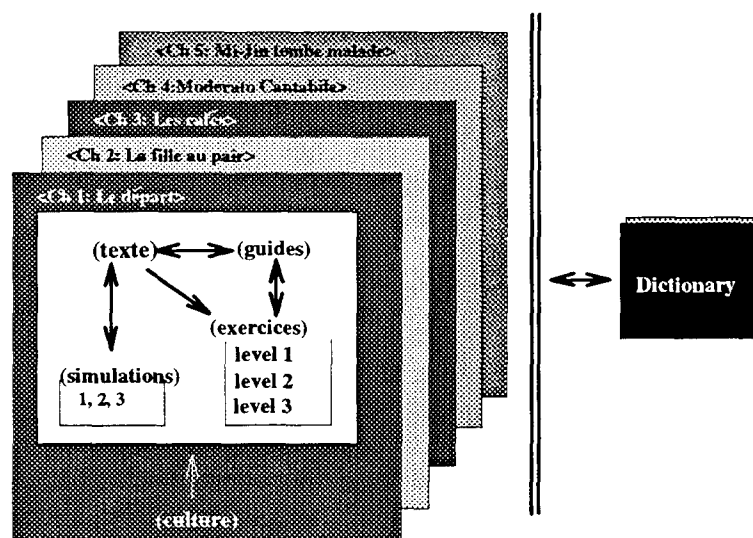
A Network Based Learning (NBL) can ameliorate these situations as follows. First, an NBL provides flexibility.[3] Students can learn at any time at any place. Second, individualized and interactive learning is possible.[2] Each student can use the NBL system for herself or himself

as if she or he owns it. And what the student has decoded or encoded can be immediately corrected by the system or by a teacher through the network. Third, the development speed of technology is so high that the NBL can provide now not only text data but also audio data and images.[3] Realistic video data will soon be able to be transmitted through the Information Super Highway. The audio-visual media will make it possible to show extra-linguistic elements and to combine them easily to the text data. Fourth, to minimize the interference of mother tongues, the NBL can provide a great amount of integrated language information using a large capacity of memory.[9]

## 1.2. Composition Textbook

The textbook on which *Emile 1.1* is based had the following goals. It enables students to get pragmatic competence by training them to generate not disconnected separate sentences but a full-text of connected sentences or paragraphs.[10] This method is borrowed from the guided composition.[1] The textbook includes as much as information about French as possible, but each component of the information is labeled so that an efficient navigation would be possible in its electronic version.[4]

The prototype of the textbook contains 5 chapters and each chapter has 5 sections as shown in figure 1.



[Figure 1: Data Structure of the textbook]

Composed of 20-30 sentences, the {texte} suggests a composition model on the theme of the chapter; for example, the chapter 5 in which our protagonist visits a doctor. The section {guides} is a brainstorm of the field in question; hospitals, symptoms of disease, prescriptions, in the chapter 5. Explaining each sentence of the {texte}, it provides the syntactic or argument structure, related lexicons, alternative expressions according to different pragmatic factors. This linguistic or extra-linguistic information helps students not only to decode the {texte}, but also

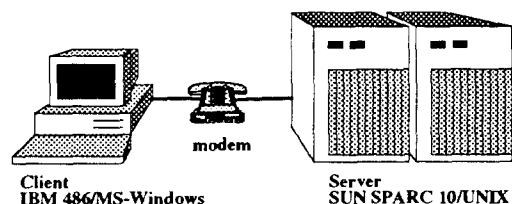
to encode their own text in similar situations.

The {exercices} have three different levels. Strictly based on the guided composition method, the first level invites students simply to imitate the {texte}. They may find appropriate expressions in the {guides}, even though they are located in another situation; for example, a visit to the dentist. The second level is an intermediate transition from a guided composition to a free composition. This level aims at drilling students to make simple separate sentences by themselves. The third level invites them to express their own idea to given questionnaires.

The section {simulations} demonstrates 3 other composition models which are in close relation with the theme of thechapter; for example, to reserve a consultation, to describe a disease, to buy a medicine without prescription. The section {culture} explains French culture with which Korean students are not familiar; for example, the medical insurance system in France.

There is no pre-ordered learning schedule. Those sections can be learned separately, except the {guides} which explains the {texte}. The {dictionary} containing 2,000 words are chapter-independent.

## 2. Client/Server Model



*Emile 1.1* is based on the client/server model connected by a dial-up modem as shown in figure 2: the client needs MS-Windows for Korean language and an IBM PC 486 or compatibles; the server is run on a Sparc-10, using a UNIX system.[7]

[Figure 2: Client/Server Model]

### 2.1. Client System

The client has the following functions. First, it makes possible interactive learning. It demands data from the server, on the one hand. What a user inputs and saves is sent to the server by the client, on the other hand. Second, it reforms the data files sent from the server and shows them to users on the monitor. Third, it supports the Graphic User Interface (GUI) which is more efficient in learning.

The client needs MS-Windows for Korean language on IBM PC 486 or compatibles to be installed. We made a new library as an emulator, since MS-Windows for Korean can not support Korean, French and the International Phonetic Alphabets (IPA) at the same time. For the sake of efficiency, the current code for English and Korean letters are used and 42 codes for

rarely used Chinese characters were redefined for 20 French accented letters (including 10 capitals) and 22 IPAs. The keyboard was also redefined for those 42 special letters. To input, we borrowed the "Off the Spot" model from the Apple computer. The Korean-English key continues to change Korean to English and vice versa. The toggle icons [À] and [A] change English to the special letters and vice versa.

## **2.2. Server System**

The server of *Emile 1.1* is run on a Sparc-10, using a Unix system which can support multi-users. Its main function is to manage data files and provide them at the request of the client. Directory manage method is used for data. Protocols are defined for the communication between the client and the server. The server differentiates the student mode from the teacher mode who has right to access all student files and to modify the electronic version of the textbook.

## **3. User Interface**

### **3.1. Student Mode**

As we explained above, there are no pre-ordered learning schedules in *Emile 1.1* and students can freely navigate towards what they want to learn. Logged in, they may choose one of given chapters. Entered to one chapter, students may choose any of 4 sections ({texte}, {exercices}, {culture} and {simulations}) by clicking the icons at the left of the screen. Then, the toolbar at the top of the screen is activated.

The toolbar provides the following functions: to pop up the last active window; to output on the monitor the translation of French to Korean by sentences or by paragraphs; to show the section {guides}, detailed explanations of each sentence of the {text}; to use an one-line dictionary; to check students' answers by the system or by teachers; to scroll the screen up or down; and to reconnect the system by a dial-up modem in case of disconnection.

### **3.2 Teacher Mode**

Teachers have their own ID and password. Logged in, teachers can get student information, such as ID, password, real name, affiliation, last log-in time and learning history. Through the "comment window", they can answer students' questions, correct what students had generated and make comments. In this way, the current interaction between teachers and students is based on "Store and Forward" method like an e-mail. [1]

## **4. Summary and Further Studies**

In this paper, the writing system for French *Emile 1.1* has been presented. Providing integrated information of French, it makes possible flexibility of learning time and place, individualized learning and interactive learning between teachers and students.

What will be added or improved in <Système Emile> is as follows. First, the language data files should be extended. Second, the system will be connected also by a LAN or the Internet.

Third, the tutoring tools including the immediate corrector will use the results of Natural Language Processing such as morphological analyzers, syntactic or semantic parsers. [5,11,12] Fourth, the message transmission between teachers and students will be developed on a real-time method. Fifth, multi-media data will be included in the next versions.

## REFERENCES

- [1] J Barson. *StayTooned Manual (Network Using French Writing System on NeXT)*, manuscript (n. pb.) 1992.
- [2] S S Kim & H R Kim. "User Interface of Educational Hypermedia". *Korea Information Science Society Review* 13-6, 73-89, 1995.
- [3] T Y Kim & Y S Kim. "Distance Learning Technology based on Information Super Highway". *Korea Information Science Society Review* 13-6, 5-22, 1995.
- [4] H C Kwon & alii. "Information Retrieval Environment Based on User-Models". *Proceedings of '95 HCI*, 65-74, 1995.
- [5] H C Kwon. "A Dictionary-Based Morphological Analysis". *Proc. of Natural Language Processing Pacific Rim Symposium '91*, 178-185, 1991.
- [6] B S Shim & alii. "Design and Implementation of Authoring Tools for Interactive Courseware". *Korea Information Science Society Review* 13-6, 59-71, 1995.
- [7] J C Yoo & alii. "Organization of a Multimedia Server System for multimedia Information Services". *Proceedings of '95 HCI*, 109-124, 1995.
- [8] A S Yoon. "French Parser Based on Unification Grammar". *Linguistic Journal of Korea* 15, 283-307, 1990.
- [9] A S Yoon. "Computer-Aided Translation of French to Korean". *Journal of French Literature and Linguistics* 29, 977-998, 1994.
- [10] A S Yoon. *French Learning System Using Network*. Final Report of '94 Communication Research Fund, 107, 1995a.
- [11] A S Yoon. "Multi-Media Mediated Foreign Language Learning", *Journal of French Literature and Linguistics* 30, 941-956, 1995b.

\*This paper was supported by the Korean Ministry of Information and Communication (the Institute of Information Technology Assessment, Project number 1995-36).