

REVIEW OF MULTIMEDIA LEARNING SUITE: CHINESE CHARACTERS

Title	Multimedia Learning Suite: Chinese Characters
Platform	Microsoft Windows® 2000, Windows XP or Windows Vista
Minimum hardware requirements	USB 1.1 (USB 2.0 recommended) Intel® Pentium® Processor or compatible 128 MB RAM (minimum depending on the operating system) Graphics adapter and monitor capable of more than 256 colors (a resolution of 1024 x 768 or higher is recommended)
Software requirements	Microsoft Internet Explorer 6 or later Microsoft .NET Framework 2.0 or above (included on stick) Windows Media Player 6.4 or above
Publisher	LearnLift
Support offered	(1) Complementary Study Guide (2) Learn to Learn booklet (3) MP3 Audiobooks (4) Website: http://www.memorylifter.com (5) Online community board
Target language	Chinese (simplified)
Target audience	Beginner to intermediate-high, young or adult Chinese second language learners
Price	\$79.95
Publication year	2008

Review by [Ching-Ni Hsieh](#) and [Fei Fei](#), [Michigan State University](#)

Learning to read and write Chinese characters poses a great challenge for Chinese as a second language (L2) learners because of the complex Chinese writing system (Allen, 2008). The Chinese characters present a sharp contrast to alphabetic writing systems, such as English, in that Chinese orthography is based on the association of meaningful phonemes with graphic units while alphabetic writing systems are based on the association of phonemes with graphemic symbols (Feldman & Siok, 1999). In addition, Chinese characters, unlike alphabetic words that have a linear structure, have a square, nonlinear configuration (McNaughton & Li, 1999). Learning to memorize a sizeable number of Chinese characters in order to function in the Chinese language is time-consuming and requires repeated mechanical drills (Allen, 2008). Thus, the use of technological tools to assist the learning process is gaining increasing popularity due to the increase in vocabulary learning software readily available to language learners today (Allum, 2004; Liu, Jaeger, & Nakagawa, 2004). *Multimedia Learning Suite: Chinese Characters* (hereafter *Multimedia Learning Suite*) is a vocabulary learning software program specifically designed to facilitate users' learning and long-term memorization of over 3,000 Chinese characters through multimedia flashcards. The intended users of the software are beginners to high-intermediate level learners of Chinese.

Multimedia Learning Suite is Windows-only software and ships on a USB stick, along with the MemoryLifter software, a Complementary Study Guide, and a Learn-to-Learn booklet. The software, MemoryLifter, is a free virtual flashcard program developed by LearnLift, the publisher of the *Multimedia Learning Suite*. This flashcard software is designed as a tool to facilitate memorization of the meaning, pronunciation, and orthography of new words in different languages, including Arabic, French, Spanish, Polish, Portuguese, and Mandarin. The program can also be downloaded for free from the [MemoryLifter website](http://www.memorylifter.com) [www.memorylifter.com]. *Multimedia Learning Suite* is one of LearnLift's latest commercial flashcard learning software programs that builds on the MemoryLifter learning technology.

While using the *Multimedia Learning Suite* to learn Chinese characters, users can also use the MemoryLifter program to produce new virtual flashcards with text, sounds, pictures, and videos in Mandarin as well as any other language since MemoryLifter is not a language-specific software program.

MemoryLifter software employs the Box System, also called the Leitner system (LearnLift, 2008), and incorporates the principles of timed spacing and controlled repetition (Karpicke & Roediger, 2007). A generic procedure as to how the Box System algorithm is set up in the *Multimedia Learning Suite* is explained below, following the information provided in the software's Help function.

1. Initially, all flashcards in each learning module serve as the initial pool. Within each learning module, there are ten virtual flashcard "boxes."
2. When users open up a particular learning module, the software automatically checks to see if any of the ten boxes are full. If so, a flashcard is pulled from that particular box and presented to the user. If none of the boxes is full, a flashcard is moved from the initial pool to box 1 and presented to the user.
3. If the user answers the card correctly (i.e., keys in the correct translation or selects the correct definition of the Chinese character presented), the card is promoted to the next higher-numbered box. Any card that is answered incorrectly is demoted to box 1.
4. When the software places a card in a box, it always places the card at the end of each box. When pulling cards from the box, the software uses a first-in, first-out principle.
5. The software continues with step 2 to 4 until the pool is empty.
6. If the pool is empty, the oldest card from the learning module is recycled.

This procedure is repeated until all the flashcards are moved to box 10. The use of the Box System allows learners to prioritize their learning by focusing on the Chinese characters that are difficult for them. In order to facilitate long-term retention, the software also adjusts the repetition spacing interval; that is, the characters that are problematic are shown more often while characters that are easier are shown less often. The difficulty level of the characters depends on the number of correct responses users give to each character.

The Complementary Study Guide contains information about Chinese language rules, three learning modules, and different learning modes built in the *Multimedia Learning Suite*. The step-by-step introduction of how to use the software provided in the booklet provides novice users with an easy start. The Learn-to-Learn booklet provides concise theoretical background about how memory functions in encoding, storing, and retrieving information, and how human beings establish and strengthen memory in long-term retention. The *Multimedia Learning Suite* USB stick also comes equipped with 89 audiobooks, organized into 16 themes that roughly correspond to the chapters in the three learning modules. These audiobooks are in MP3 format and are on average five minutes in length. The audiobooks provide the pronunciation and English translation of the Chinese characters presented in the modules. Each character is first pronounced in Chinese, followed by the English translation, and then pronounced in Chinese again. Users can easily transfer these audiobooks to a portable music device, such as an iPod, to practice on the go. The audiobooks are useful for pronunciation enhancement when learners do not have access to a computer.

Learning modules

Multimedia Learning Suite has three learning modules built in. Each learning module is further divided into chapters, and chapters into individual flashcards. Each flashcard introduces one lexical item. The first learning module, **Numbers, Dates and Time**, is organized into 10 chapters and contains 372 flashcards, that is, 372 Chinese characters. This module helps users familiarize themselves with the symbols for the Chinese numbers and teaches them how to form dates and use basic time-related expressions in Chinese. Novice learners will find the Chinese characters introduced in this learning module useful because they are commonly used and easy to memorize.

The second learning module, **Radicals**, contains 32 chapters and 444 flashcards. The first chapter introduces 31 semantic radicals. Radicals are a major component of Chinese characters which carry information about the characters' meaning (Feldman & Siok, 1999). Chapter 2 through Chapter 32 are named after one radical and consist of compound characters containing the specific radical introduced earlier in that chapter. These 31 radicals (out of a total of 214) introduced in the second learning module are widely used in compound Chinese characters and are of pedagogical importance. Research has shown that learners who are aware of the functions of the radicals can recognize complex Chinese words better and the knowledge of radicals serves as a powerful tool in literacy development (Shu & Anderson, 1999). Thus, learning to recognize the 31 radicals introduced can help users guess the meaning upon encountering a new word and facilitate the memorization of more complex Chinese vocabulary.

The third learning module, **Thematic Vocabulary**, is organized into 14 chapters and contains 2,500 flashcards. Each of the 14 chapters consists of single- and multiple-character words, including nouns and verbs. The module covers a wide range of thematic vocabulary, such as food and drinks, health, the human body, leisure activities, nature, business, travel, and transportation. The breadth of the thematic vocabulary introduced in this module can develop users' knowledge of Chinese characters and meet their needs for using Chinese in different social contexts.

Main Screen Layout

The main window of the *Multimedia Learning Suite* at any instant represents one flashcard from the currently active chapter. Each flashcard provides the following information about the lexical item: 1) the Chinese character, 2) audio with pronunciation from a native speaker, 3) a large image of the character, 4) Pinyin (the Romanization system for standard Mandarin), and 5) a video associated with the lexical item, if applicable. The character is introduced on the left side panel, and the user types in the response (the meaning of the character in English) on the right side panel. Textual and aural feedback are given after the user's response. The last four characters answered incorrectly are presented at the bottom of the flashcard for review. A typical flashcard from the "Radicals" learning module is shown in [Figure 1](#). Users can also specify a self-assessment feature that allows them to decide whether they really know the item on the flashcard. If a user gives a correct answer but checks the 'Don't know' icon after answering a question, the character will also be presented at the bottom of the flashcard for review. The entire user interface of the *Multimedia Learning Suite* can be changed from its default English to French, German, Spanish, and Portuguese. For Chinese L2 learners whose first language is not English, the provision of different language interfaces can come in handy. However, it needs to be noted that the learning suite is mainly developed for native speakers of English because the definition of the Chinese characters and feedback are both given in English.

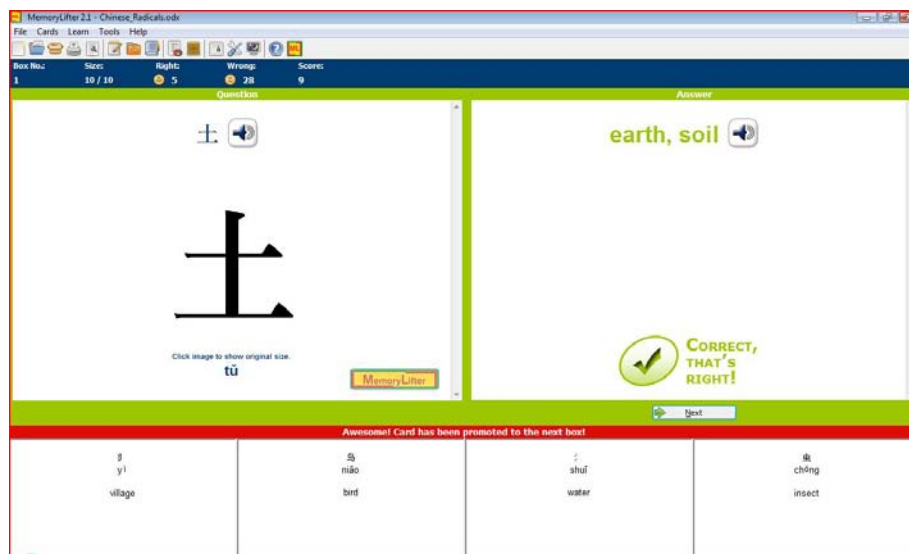


Figure 1. Main window of the *Multimedia Learning Suite*.

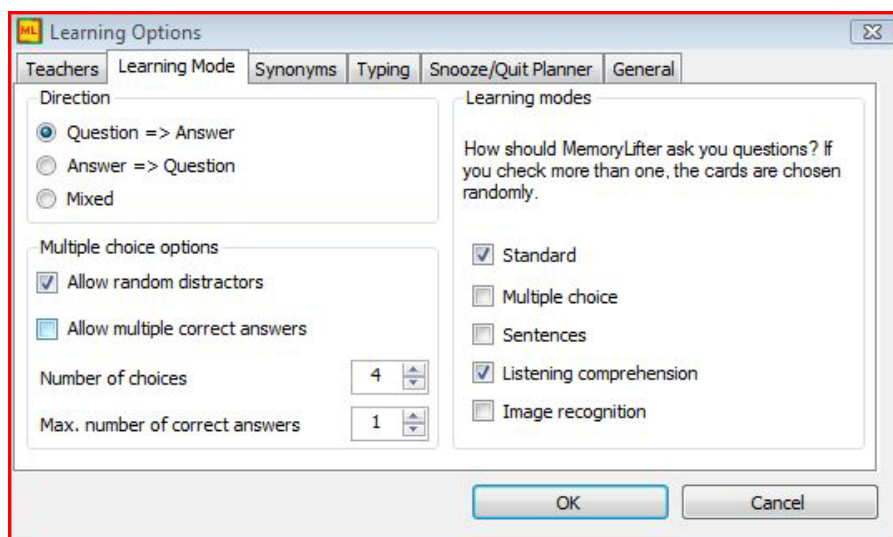


Figure 2. Learning modes.

Customization of the learning experience

1. Learning Modes

Any of the pieces of information about a lexical item that is presented on the left panel of the flashcard can be enabled or disabled for a learning session by specifying the ‘mode’ of learning (see Figure 2). The **Standard Mode** displays all available information for the question, including the image, sound, and pinyin. The **Multiple Choice Mode** asks users to select the correct answer from a number of options, chosen randomly by the system from answers to other cards in the chapter. The **Sentences Mode** asks users to type in the example sentences given in the questions rather than the English translation of the character. However, there is only a handful of flashcards that contains sentences in the three built-in learning modules. Users may find this learning mode less useful due to the absence of example sentences which would create a meaningful context for vocabulary learning. The **Listening Comprehension Mode**

presents only the pronunciation, without showing the calligraphy, of the Chinese character pronounced; this learning mode is useful for practicing listening skills. The **Image Recognition Mode** tests users' recognition of the character calligraphies without Pinyin or audio stimulus.

2. Learning Options

In addition to the *Learning Modes*, several *Learning Options* can be specified for the current learning session (see Figure 3). Some useful options that can be set/unset are: 1) a **Countdown Timer**, which sets a specific response time for answering questions depending on the difficulty of the character presented; 2) **Display Statistics**, which shows statistics about a user's progress through a learning module (see further discussion below); 3) **Display Images**, which displays the calligraphies associated with the character; and 4) **Show Correct Answers**, which shows the correct answer after the user keys in the response.

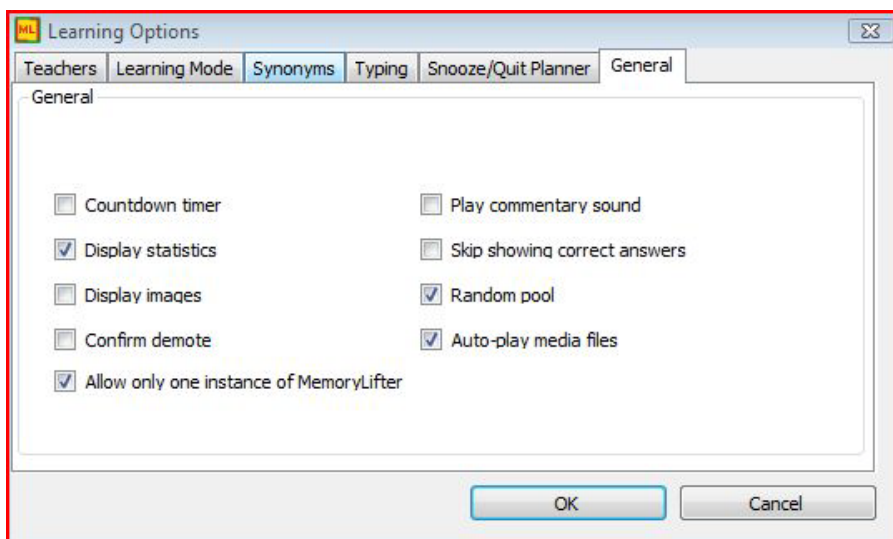


Figure 3. Learning options.

Progress statistics

Progress through a learning module can be tracked by selecting *Statistics* under the *Learn* menu item. Several useful statistics are presented in the form of line-graphs and pie charts. For example, 'Knowledge of Learning Module' shows the development of users' knowledge of a specific learning module over time (see Figure 4). The changes in the distribution of the flashcards in the boxes are measured against the total time spent on a learning module up to that point. This information is useful as it helps users keep track of their learning trajectory and determine their progress. Feedback from a Chinese learner who tried out the program indicates that learners will appreciate the statistics function provided in the software because the figures are easy to interpret and motivate learners to continue their learning.

Given that the ideal goal of the Box System is to master all the flashcards in the highest numbered box, it would be useful for learners to know the number of cards remaining in each box as they go through it. The 'current distribution' statistics (see Figure 5) show the exact number of cards in each box within the chapters that users select for learning. The number of correct and incorrect responses and the percentage of known words are also calculated to give users a precise picture of their progress in their current learning session. These figures are useful as they provide learners with a sense of how much they have learned and how many more characters they need to work on in order to fully acquire them in the chapters specified.

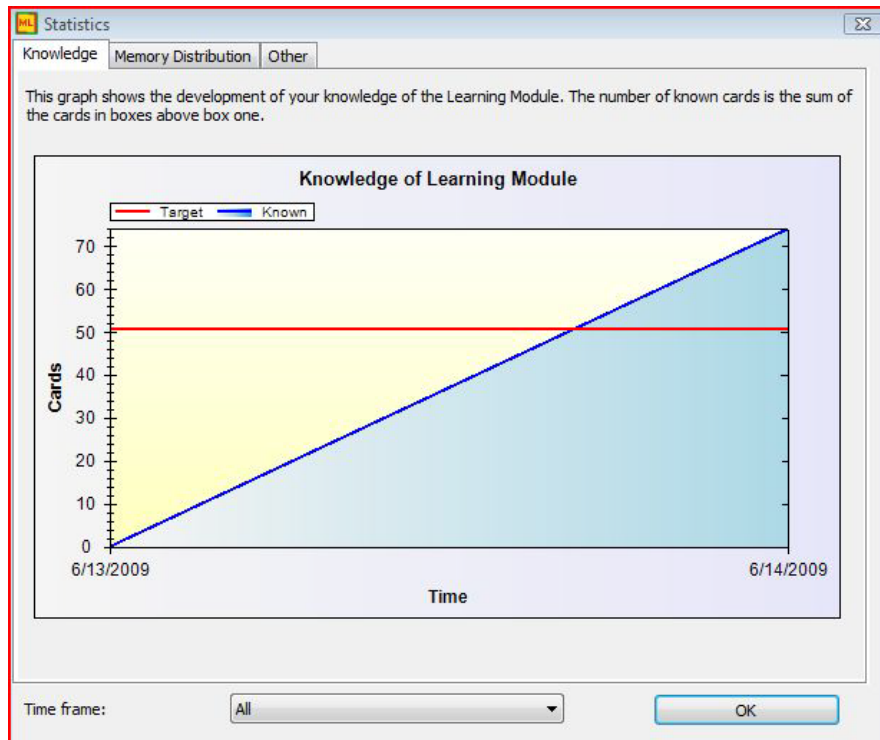


Figure 4. Knowledge of learning module.

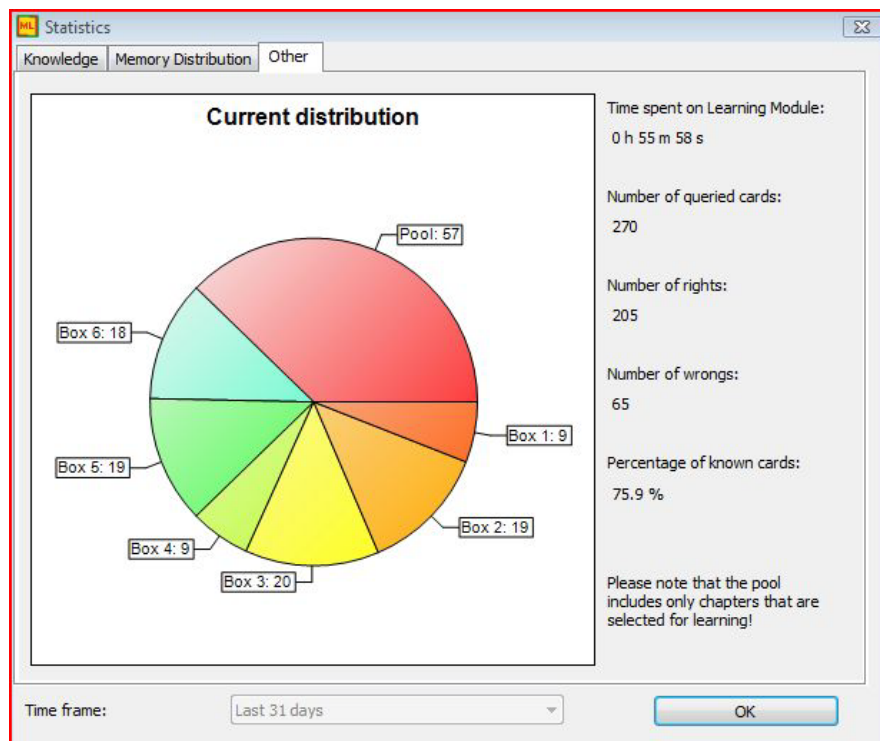


Figure 5. Card distribution.

The progress of an individual's learning through a module is saved on the accompanying USB stick along with the modules, unless users reset the learning progress saved in the corresponding learning module. This means that one copy of the software can ideally be used for tracking one individual's progress. While storing the progress data on the USB stick is very convenient for self-study, this feature does make the software less user-friendly when it is used in a classroom or language lab setting with multiple users. Unless one copy of the software is obtained for each student, teachers who use the software as supplementary teaching material cannot track each individual student's progress using the statistics provided by the software. In this case, other formative assessment tools, such as traditional pen and paper quizzes need to be employed in order to assess students' learning progress.

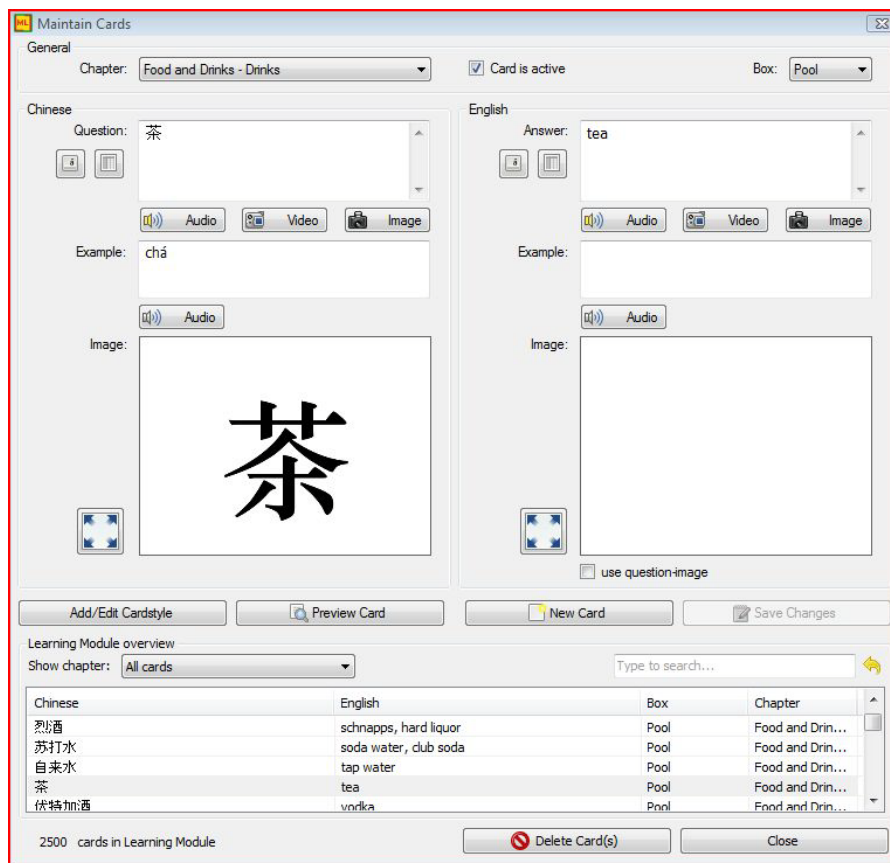


Figure 6. Creating or editing a card.

Authoring system

One major feature of the *Multimedia Learning Suite* is the MemoryLifter program, which allows users to create and add new flashcards to existing chapters, new chapters to existing learning modules, or even develop an entirely new learning module in addition to the existing learning modules (see Figure 6). Conversely, newly created flashcards, chapters, and modules can also be easily deleted from the software.

The dialog box shown in Figure 6 allows users to specify a question, and add images, audio, or video files for the question from the local machine by browsing for files (all common image formats are supported; .mp3, .wav, and .mid formats are supported for audio; .avi and .wmv formats are supported for video). Audio recordings can be made on the fly if the computer is equipped with a microphone. Users can also add media items to the answer field if available. A default visual style, such as font, colors, and margins

of the cards, can be set as preferred. Once a new flashcard is created, it can be moved to a particular chapter and within a chapter to a particular box. New learning modules are created as folders at a location that users specify. These folders can be transferred to any other computer and then opened by the MemoryLifter software on the student's computer. The complete process of creating and using new flashcards is very intuitive and user-friendly. Users with basic working knowledge and computer literacy will be able to create their own flashcards after a few trials. If users encounter problems when creating their own flashcards, the [Forum & Community](#) section on the MemoryLifter website provides an accessible channel for users to pose questions and receive timely answers.

Overall evaluation and pedagogical implications

The main strength of the *Multimedia Learning Suite* lies in its various mnemonic approaches to enhancing long-term retention of Chinese characters, such as standard text input, multiple choice, listening comprehension, and image recognition. Cognitive research on Chinese reading has well documented that, when learners identify a Chinese character, both the visual-orthographic component and phonological and semantic attributes of the character are activated rapidly in the mental representation (Tan, Hoosain, & Siok, 1996). Although the flashcards in *Multimedia Learning Suite* are patterned after traditional flashcards, they are more effective in facilitating Chinese vocabulary learning because they provide different input modalities, such as images and sounds, that enhance the learning outcome. *Multimedia Learning Suite* also allows users to create new flashcards with images, audios, and videos, and to add them to the program in a customized learning process. The fact that users can switch between different learning modes easily offers great flexibility. For example, users can choose to practice with the Image Recognition Mode and then the Listening Mode, or vice versa, depending on their learning style and interest. The statistics provided by the program can also help learners monitor their learning progress as research has shown that learning strategies, such as self-regulation and self-monitoring, are positively related to learners' self-efficacy, intrinsic motivation, and learning outcome (e.g., Pintrich, 2000; Winne & Perry, 2000; Zimmerman, 1990).

As a multimedia flashcard program, the *Multimedia Learning Suite* is ideal for individual learners to learn, memorize, and recognize Chinese characters because learners can access the program at any time based on their learning needs, without guidance or supervision by language instructors. Beginning or low-intermediate learners of Chinese, particularly those who want to acquire basic knowledge of Chinese characters, as well as improve their pronunciation, will find the software intuitive. *Multimedia Learning Suite* also provides considerable flexibility for high level learners of Chinese, who can rearrange the material by creating their own flashcards and reorient the learning process according to their priorities. In addition to individual use for vocabulary learning, the software can also serve as a supplemental assessment tool with embedded immediate feedback and statistics to regularly monitor the learning progress.

Among the wealth of Chinese language learning materials and software currently on the market, many other flashcard programs, such as [YellowBridge Online Chinese Flashcards](#) and [Declan's Chinese Flashcards](#), are available. Thus, the functions built in the *Multimedia Learning Suite* are not unique. However, what sets *Multimedia Learning Suite* apart from its competition is that almost all aspects of the learning environment can be customized to fit learners' needs. The included MemoryLifter software provides a very intuitive authoring environment for teachers as well as individual learners to create individual flashcards, chapters composed of those cards, and even entire learning modules. The ability to access one's progress over time across the learning modules is another real strength of the software because it encourages learners' self-monitoring as a successful learning strategy. Overall, *Multimedia Learning Suite* delivers what it was designed to do.

Nevertheless, several drawbacks of the software also need to be addressed. First, the introduction of strokes and stroke orders is surprisingly absent. Strokes and stroke orders are crucial in learning Chinese

characters as they represent the intrinsic regularity of the Chinese writing system while incorrectly ordered or written strokes can produce illegible or incorrect characters. As a multimedia flashcard software, this component could have been easily integrated into the program by adding stroke order animation when the target character is introduced. Second, the software supports only simplified Chinese characters. Although traditional Chinese characters are more complex than the simplified ones, they are still popular in Taiwan, Hong Kong, and many other Chinese-speaking communities in the world. It would be helpful if the software developers could make a separate version that introduces traditional Chinese characters in future program development. In this way, the program would be applicable to both learners of simplified Chinese and traditional Chinese. This last concern relates to the vocabulary inventory upon which the 3,000 Chinese characters in the current program are built. There is no introduction, either in the software package or on the MemoryLifter website, about how these characters have been selected. Users could have been better informed about the characters to be learned if the *Multimedia Learning Suite* software had provided additional information regarding the selected vocabulary's word frequency and difficulty level based on an established Chinese vocabulary list.

In a nutshell, the successful use of the software depends on the given learning context. If the software is to be used by Chinese language instructors as a pedagogical tool in the classroom, a number of decisions have to be made based on the sequences of the characters to be presented. For example, radicals should be introduced first, followed by single element pictographic characters, then multi-element characters and compound words. Nonetheless, for individual learners, since learning Chinese at the beginning level relies largely on memorization and word recognition, the software will be of great value as such learners embark on their first step toward learning Chinese.

ABOUT THE REVIEWERS

Ching-Ni Hsieh is a Ph.D. candidate in the Second Language Studies Program at Michigan State University. Her research interests include language testing, individual differences, and Chinese SLA. Ching-Ni has taught Chinese at a heritage language school in Michigan and is currently developing an online Chinese oral proficiency test.

E-mail: hsiehc12@msu.edu

Fei Fei is a Ph.D. candidate in the Second Language Studies Program at Michigan State University. She has been working on language projects at the Center of Language Education and Research (CLEAR), including Multimedia Interactive Modules for Education and Assessment, Online Chinese Pragmatics Tests, and a Business Chinese CD series.

E-mail: feifei@msu.edu

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