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(54) Title: AUTOMATED LANGUAGE ACQUISITION SYSTEM AND METHOD

(57) Abstract: The present invention provides a system and method for language teaching that involves training to an automatic level a set of core vocabulary items, and then presenting learned items in combination as a means of implicitly teaching grammar. In one aspect, a method for teaching a language, consistent with the invention, comprises: (a) while displaying to a learner a graphical representation of a vocabulary item comprising at least one word, playing to the learner an audio recording comprising the spoken form of the vocabulary item; and (b) while displaying to a learner both a graphical representation of the vocabulary item and the written form of the vocabulary item, playing to the learner an audio recording comprising the spoken form of the vocabulary item.

1                    **AUTOMATED LANGUAGE ACQUISITION SYSTEM AND METHOD**

2                    **BACKGROUND OF THE INVENTION**

3                    **Field of the Invention**

4                    The present invention relates generally to language teaching and acquisition,  
5                    and more particularly, to an automated system and method for teaching and learning a  
6                    second or foreign language.

7                    **Language Acquisition Market**

8                    The market for second and foreign language acquisition products is broad and  
9                    growing, providing a multi-billion dollar market opportunity within the \$2 trillion  
10                    education and training sector. There is a demonstrated need for such products in several  
11                    major market segments, including the education, corporate, government, and consumer  
12                    markets, both in the United States and worldwide.

13                    Educational institutions comprise the largest segment of the market opportunity.  
14                    On a global basis, elementary through university level institutions teach English as part  
15                    of their required curriculum, and over 1 billion students are enrolled in schools  
16                    worldwide. The demand for effective materials for learning English outside the United  
17                    States is growing in an ever-expanding global economy. In the United States, English  
18                    as a Second Language (ESL) is growing in educational institutions due to an influx of  
19                    immigrants, as well as increasing governmental regulations requiring students with  
20                    limited English proficiency to move more quickly from bilingual and/or support  
21                    classrooms to English-only classrooms. Currently in the United States, 2.8 million  
22                    public school students are either in bilingual or ESL classrooms, as well as over 1.9  
23                    million adult ESL students. There are also 5 million foreign language students in  
24                    United States high schools every year, making up 41% of all high school students. In  
25                    addition, more than 1 million students are enrolled in foreign language courses in  
26                    United States colleges and universities each semester. Thus, from the aggregate of

1 these figures, it can be reasonably estimated that over 1 billion students per year  
2 worldwide are engaged in learning a language.

3 The educational market dramatically showcases the failure of existing language  
4 learning programs. Many who have attempted to learn a foreign language in a  
5 classroom setting experience disappointment in regard to known methods. Virtually no  
6 one acquires a language from the classroom setting. While it is often believed that  
7 "living in the country" will facilitate learning the native language, the reality is that  
8 even living in the country is not enough for most adults. For example, living in the  
9 United States today are millions of adults who are enrolled in ESL classrooms, yet are  
10 still not functional in English, despite both studying the language and living in the  
11 culture.

12 While the difficulties faced by adults learning a second or foreign language may  
13 not be surprising, there is much evidence that it is also not easy for children. For  
14 example, using today's methods and products, it currently takes over five years for  
15 children who are not proficient in English to move from a bilingual or ESL classroom  
16 to a regular classroom. In the states of California and Arizona, laws have recently  
17 passed that withdraw state support for bilingual education, beginning a trend that will  
18 likely continue into other states with large immigrant populations. Thus, additional  
19 stress is placed on state-funded ESL programs, where, e.g., the state of Arizona spent  
20 \$211 million during the 1998-99 academic year. Thus, a time- and cost-effective  
21 method for teaching language is clearly needed for both ESL and foreign language  
22 students.

23 In the corporate market, foreign language acquisition products are also in  
24 demand. Due to international expansion, corporations increasingly require personnel  
25 who speak more than one language. As world economics are based on a global  
26 marketplace, corporations are quickly establishing an international presence in multiple  
27 countries, thus requiring bilingual or multilingual capabilities from personnel at all  
28 levels.



1 and drills until the language is sufficiently rehearsed for responses to be automatic. The  
2 problem with the audiolingual method of language learning is that learners become  
3 skilled at pronouncing the new language, but often find themselves unable to  
4 understand native speakers.

5 The communicative approach was developed in the 1980s and 1990s in  
6 response to, and following perceived failures of, the audiolingual method, which failed  
7 to stress the communicative uses of language. The communicative approach focuses  
8 primarily on the interactive nature of communication and involves an attempt to  
9 recreate the natural setting, emphasizing the learner's ability to use the language  
10 appropriately in specific situations, so as to make the learner "communicatively  
11 competent". One of the main challenges of the communicative approach is to integrate  
12 the functions of a language ( conveying and requesting information, problem solving,  
13 social exchanges) with the correct use of structures, i.e., how communicative fluency  
14 may be combined with linguistic accuracy. In an effort to meet this challenge, teachers  
15 of the communicative approach organized teaching units according to the  
16 communicative "notions" a learner requires in order to communicate successfully.  
17 Such "notions" are employed on a regular basis by people in performing various  
18 functions in various situations. For example, people will apologize for being late.  
19 *Concepts of notions include, e.g., time, frequency, motion, quantity, and location.*  
20 Notions are less directly correlated with lexical items. For example, the notion of  
21 possession may be expressed by a verb (to have), a prepositional construction (of +  
22 nominal group), a genitive case or a possessive pronoun. The problem with the  
23 communicative approach is that it is meant to "recreate" the natural environment in the  
24 classroom; however, the classroom is not a 24-hour 7-day a week experience and thus  
25 lacks sufficient real-world feedback to facilitate language acquisition sufficiently.

#### 26 Definitions

27 As used herein, the following terms have the meaning given below:

28 "Article" – The term for a word used with a noun that shows if something is

1 definite or not. In English, “a” and “an” are indefinite articles, and “the” is the definite  
2 article.

3 “Automatic processing” – This refers to the performance of a task without  
4 conscious or deliberate effort, making use of knowledge in long-term memory.

5 “Determiner” – The term used for a word used with a noun that limits its  
6 meaning in some way. For example, in the noun phrase “the dog”, “the” is the  
7 determiner.

8 “Explicit” – The term for the direct manner in which the meaning of the core  
9 vocabulary words in each lesson is taught.

10 “Foreign language” – A language that is learned where the language plays no  
11 major role in the community and is learned primarily in the classroom. For example,  
12 French learned in the United States is learned as a foreign language.

13 “Implicit” – The term for the indirect manner in which the structure of the  
14 language is taught, without explanation of rules for the language.

15 “Language skills” – The term that describes the four ways language can be  
16 used: reading, writing, listening, and speaking.

17 “Native-like proficiency” – The ability to speak, listen, read, and write like a  
18 native speaker of some language.

19 “Phrasal structure” – The term used to describe groupings of words, such as “a  
20 book” and “is reading”.

21 “Productive skills” – The term generally used to describe speaking and writing.

22 “Receptive skills” – The term generally used to describe listening and reading.

23 “Second language” – A language that is learned in a country in which the  
24 language plays a major institutional and social role in the community. For example,  
25 English as a second language is learned in the United States, England, South Africa,  
26 Australia, etc.

27 “Translation” – The use of the native language to explain the foreign/second  
28 language meaning.

29 “Vocabulary” – This term includes single words (“book”, for example),

1 compound words (“bookmark”, for example), and idioms (“give up”, for example).

2 “Word” – As used herein, this term may refer to either a word or a phrase  
3 comprising more than one word.

#### 4 **SUMMARY OF THE INVENTION**

5 The present invention provides a system and method for training processes in  
6 second language learners that are automatic for native speakers. The method assumes  
7 the following hierarchy of language acquisition skills: listening precedes speaking,  
8 reading is dependent on understanding the relationship between sounds and spelling,  
9 and writing follows the ability to read. Methods for learning foreign language  
10 consistent with the invention are based on the novel notion that certain concepts from  
11 psycholinguistic research have applicability to pedagogy.

12 The four aspects of the present invention that distinguish the invention from  
13 known language acquisition methods are: identifying the differences in automatic  
14 language function between native and nonnative speakers of a language; building the  
15 base components of language necessary for effective listening and speaking; avoiding  
16 any translation from the native language, (use of the native language creates  
17 interference and slows down processing time); and using a technology platform to  
18 accomplish the large number of repetitions and automation that are essential for long-  
19 term, comprehensive language skills. In one variant of the method consistent with the  
20 invention, software running on a conventional personal computer is employed, either  
21 alone or in conjunction with workbook-type printed materials, thereby enabling the  
22 learner to practice and use the language as it is being acquired.

23 The present invention derives in part from research that reveals the differences  
24 between native and nonnative speakers of a language. This superficially resembles the  
25 contrastive analysis technique of the early 1970s, which made linguistic comparisons of  
26 two languages in attempt to predict the difficulties of second language learners based  
27 on the similarities and differences between the native language of the learner and the  
28 language being learned. Instead, the method of the present invention focuses on

1 differences in automaticity between native and nonnative speakers and trains language  
2 learners to automatically recognize the sounds and core vocabulary of a language. In  
3 addition, the method of the present invention implicitly trains basic grammatical  
4 structures using the already-trained core vocabulary before moving to larger contexts.  
5 As a result, learners will experience significant improvement , including functional use  
6 of grammatical structure, as well as the ability actually to speak the language and  
7 engage in meaningful dialogues with others.

8 In one embodiment, the method of the present invention incorporates a series of  
9 software programs that facilitate the building of automatic processes necessary for  
10 functional language use. Initially, the software trains the basic subcomponents of  
11 language, such as sounds, words, and short phrases, and builds upon that foundation for  
12 each subsequent program in a series. The software requires no prior knowledge for use  
13 or comprehension of the material, thereby making the instruction appropriate for  
14 individuals of any age group or educational background. The method of the present  
15 invention emphasizes listening and speaking skills first, while emphasizing reading and  
16 writing skills after the learner has built a substantial knowledge base. Additionally, the  
17 method has applicability universally, to speakers of any language, since no translation  
18 is involved in the acquisition process. Thus, the present invention has utility for  
19 teaching any language and is appropriate for learners of all ages and backgrounds, since  
20 a method consistent with the invention may be used even at the most basic level of  
21 language acquisition, and thus, the learner requires no prior knowledge of the language.

22 It is contemplated that the invention has utility in the educational, corporate,  
23 governmental and consumer markets. Educational market applications include  
24 institutions worldwide, such as elementary, secondary, and college level courses  
25 teaching foreign languages. Corporate market applications include companies  
26 participating in a growing global market, with rapid international expansion requiring  
27 bilingual/multilingual personnel. Governmental market applications include  
28 governmental agencies dealing with foreign affairs, the diplomatic and intelligence

1 community, and the military. Consumer market applications include individuals who  
2 travel abroad, relocate, want to learn another language, and students wishing to “test  
3 out” of a college language requirement. The methods of the invention may be embodied  
4 in various language acquisition programs, e.g., English as a second language (ESL),  
5 English as a foreign language (EFL), Spanish, French, Russian, Japanese, or Mandarin  
6 Chinese. Other embodiments of the invention may employ special purpose programs,  
7 e.g., for needs of a particular job or field, such as science or law, so as to allow the  
8 learner to develop special skill sets. The invention may be embodied in various  
9 tangible media, e.g., CD-ROM.

10 In one aspect, a method for teaching a language, consistent with the invention,  
11 comprises: (a) while displaying to a learner a graphical representation of a vocabulary  
12 item comprising at least one word, playing to the learner an audio recording comprising  
13 the spoken form of the vocabulary item; and (b) while displaying to a learner both a  
14 graphical representation of the vocabulary item and the written form of the vocabulary  
15 item, playing to the learner an audio recording comprising the spoken form of the  
16 vocabulary item.

17 In another aspect, a method for teaching a language, consistent with the  
18 invention, comprises: successively presenting each of a set of words or phrases to a  
19 learner by having the learner hear the words or phrases spoken while viewing  
20 corresponding graphical icons visually representing the words or phrases; successively  
21 presenting each of the set of words or phrases to the learner by having the learner hear  
22 the words or phrases spoken while viewing both corresponding graphical icons visually  
23 representing the words or phrases and the written form of the words or phrases; and  
24 successively presenting each of a set of sentences and/or short phrases to the learner,  
25 each the sentence and/or short phrase comprising at least one word or phrase of the set  
26 of words or phrases, by having the learner hear the sentences and/or short phrases  
27 spoken while viewing corresponding graphical icons visually representing the sentences  
28 and/or short phrases.

29 In apparatus form, a system for teaching a language, consistent with the

1 invention, comprises a computer system having a screen, an audio output device, and at  
2 least one memory device; a set of vocabulary items stored in the memory device, each  
3 vocabulary item comprising at least one word; a first set of machine-readable  
4 instructions stored in the memory device, the first set of machine-readable instructions  
5 for displaying on the screen a graphical representation of one vocabulary item, and  
6 substantially simultaneously playing via the audio output device an audio recording  
7 comprising the spoken form of the vocabulary item; and a second set of machine-  
8 readable instructions stored in the memory device, the second set of machine-readable  
9 instructions for displaying on the screen a graphical representation of one vocabulary  
10 item and the written form of the vocabulary item, and substantially simultaneously  
11 playing via the audio output device an audio recording comprising the spoken form of  
12 the vocabulary item.

13 In another aspect, a system for teaching a language, consistent with the  
14 invention, comprises a computer system having a screen, an audio output device, and at  
15 least one memory device; stored data comprising a set of vocabulary items stored in the  
16 memory device, a plurality of audio files, and a plurality of graphics files, each  
17 vocabulary item comprising at least one word, at least one the audio file corresponding  
18 to and comprising a spoken representation of each vocabulary item, at least one  
19 graphics file corresponding to and comprising a visual representation of each  
20 vocabulary item; a first set of machine-readable instructions stored in the memory  
21 device, the first set of machine-readable instructions for selecting one vocabulary item  
22 from the set of vocabulary items and reading the item and the corresponding graphics  
23 file and the corresponding audio file from the memory device; a second set of machine-  
24 readable instructions stored in the memory device, the second set of machine-readable  
25 instructions for displaying on the screen the graphics file corresponding to the selected  
26 vocabulary item, and substantially simultaneously playing via the audio output device  
27 the audio file corresponding to the selected vocabulary item; and a third set of machine-  
28 readable instructions stored in the memory device, the third set of machine-readable  
29 instructions for displaying on the screen the vocabulary item and the graphics file

1 corresponding to the selected vocabulary item, and substantially simultaneously playing  
2 via the audio output device the audio file corresponding to the selected vocabulary  
3 item.

4 In a further aspect, a system for teaching a language, consistent with the  
5 invention, comprises a computer system having a screen, an audio output device, and at  
6 least one memory device; stored data comprising a set of vocabulary items stored in the  
7 memory device, a plurality of audio files, and a plurality of graphics files, each  
8 vocabulary item comprising at least one word, a plurality of the audio files  
9 corresponding to and comprising spoken representations of each vocabulary item  
10 spoken by a plurality of speakers, at least one graphics file corresponding to and  
11 comprising a visual representation of each vocabulary item; a first set of machine-  
12 readable instructions stored in the memory device, the first set of machine-readable  
13 instructions for selecting one vocabulary item from the set of vocabulary items and  
14 reading the item and one corresponding graphics file and one corresponding audio file  
15 from the memory device; a second set of machine-readable instructions stored in the  
16 memory device, the second set of machine-readable instructions for displaying on the  
17 screen the graphics file corresponding to the selected vocabulary item, and substantially  
18 simultaneously playing via the audio output device the audio file corresponding to the  
19 selected vocabulary item; a third set of machine-readable instructions stored in the  
20 memory device, the third set of machine-readable instructions for displaying on the  
21 screen the vocabulary item and the graphics file corresponding to the selected  
22 vocabulary item, and substantially simultaneously playing via the audio output device  
23 the audio file corresponding to the selected vocabulary item; a fourth set of machine-  
24 readable instructions stored in the memory device, the fourth set of machine-readable  
25 instructions for executing the second and/or third set of machine-readable instructions a  
26 plurality of times for the vocabulary item, wherein the audio files corresponding to and  
27 comprising spoken representations of each vocabulary item spoken by different  
28 speakers, selected from the plurality of different speakers at random, are played over  
29 the course of the execution a plurality of times; and a fifth set of machine-readable

1 instructions stored in the memory device, the fifth set of machine-readable instructions  
2 for executing the first, second, third, and fourth sets of machine-readable instructions  
3 for each vocabulary item of the set.

4 In yet another aspect, a method for teaching a language, consistent with the  
5 invention, comprises: presenting, in rapid succession, each of a set of words or phrases  
6 to a learner by playing for the learner audio recordings of the words or phrases, while  
7 substantially simultaneously showing to the learner corresponding graphical icons  
8 visually representing the words or phrases; wherein the native language of the learner is  
9 not employed at any time during the performance of the method, and wherein the  
10 language being taught is the exclusive language used during the performance of the  
11 steps of the method, with the exception of providing instructions for the learner in the  
12 native language of the learner that the learner must follow in order to learn using the  
13 method.

14 In still another aspect, a method for teaching a language, consistent with the  
15 invention, comprises: presenting, in rapid succession, each of a set of words or phrases  
16 to a learner by playing for the learner audio recordings of the words or phrases, while  
17 substantially simultaneously showing to the learner both corresponding graphical icons  
18 visually representing the words or phrases and the written form of the words or phrases;  
19 wherein the native language of the learner is not employed at any time during the  
20 performance of the method, and wherein the language being taught is the exclusive  
21 language used during the performance of the steps of the method, with the exception of  
22 providing instructions for the learner in the native language of the learner that the  
23 learner must follow in order to learn using the method.

#### 24 **BRIEF DESCRIPTION OF THE DRAWINGS**

25 Figure 1 is a flowchart illustrating an overview of an exemplary multi-week, five-  
26 days-per-week language acquisition program consistent with the present invention;

27 Figure 2 is a flowchart illustrating the steps of an exemplary Day 1 of a multi-  
28 week language acquisition program consistent with the invention;

1           Figure 3 is a flowchart illustrating the steps of an exemplary Day 2 of a multi-  
2 week language acquisition program consistent with the invention;

3           Figure 4 is a flowchart illustrating the steps of an exemplary Day 3 of a multi-  
4 week language acquisition program consistent with the invention;

5           Figure 5 is a flowchart illustrating the steps of an exemplary Day 4 of a multi-  
6 week language acquisition program consistent with the invention;

7           Figure 6 is a flowchart illustrating the steps of an exemplary Day 5 of a multi-  
8 week language acquisition program consistent with the invention;

9           Figure 7 is a screen view illustrating an exemplary menu screen in an exemplary  
10 fourth week (or “unit”) of a multi-week language acquisition program consistent with the  
11 invention;

12           Figure 8 is a screen view illustrating an exemplary icon view in an exemplary Day  
13 1 of one week of a multi-week language acquisition program consistent with the  
14 invention;

15           Figure 9 is a screen view illustrating another exemplary icon view in an  
16 exemplary Day 1 of one week of a multi-week language acquisition program consistent  
17 with the invention;

18           Figure 10 is a screen view illustrating an exemplary icon and written word view in  
19 an exemplary Day 2 or Day 3 of one week of a multi-week language acquisition program  
20 consistent with the invention;

21           Figure 11 is a screen view illustrating another exemplary icon and written word  
22 view in an exemplary Day 2 or Day 3 of one week of a multi-week language acquisition  
23 program consistent with the invention;

24           Figure 12 is a screen view illustrating an exemplary first segment in an exemplary  
25 Day 4 of one week of a multi-week language acquisition program consistent with the  
26 invention;

27           Figure 13 is a screen view illustrating an exemplary second segment in an  
28 exemplary Day 4 of one week of a multi-week language acquisition program consistent  
29 with the invention;



1 the learner through more complex grammatical structures and expressions. The  
2 software of an exemplary third disc will again include over about 1000 new vocabulary  
3 words and expressions, including idiomatic expressions, and is intended to allow the  
4 working adult the opportunity to function in the second language. The software of an  
5 exemplary fourth disc, with another about 1000 words, is intended for the advanced  
6 language learner. For ESL/EFL students, it will also prepare them for the Test of  
7 English as a Foreign Language (TOEFL) Examination, a standardized test widely used  
8 to measure the English-language proficiency of foreign students wishing to enter  
9 American universities. In this embodiment, the software may contain various types of  
10 presentations corresponding to each lesson, e.g., vocabulary and structure presentations,  
11 auditory presentations, visual presentations, and combinations of the foregoing. The  
12 software may be used alone or with a workbook (which may enhance effectiveness due  
13 to continued exposure to the materials trained in each lesson, thereby strengthening the  
14 long-term retention of the language). An exemplary weekly lesson begins with a  
15 presentation of 90 new vocabulary items, which total 1,350 when compounded over an  
16 exemplary 15-week program. New words and phrases may always be presented in the  
17 same manner, so the learner is quickly familiar with the method, thus lowering the  
18 anxiety often associated with foreign language learning.

19 In a method consistent with the invention, the same program teaching English in  
20 the U.S. as a second language can be used globally to teach English as a foreign  
21 language. As demonstrated by research, a piece of information requires approximately  
22 16 to 20 repetitions to be committed to long-term memory. With the computer as the  
23 platform for instruction instead of an instructor, this large number of repetitions can be  
24 quickly and easily achieved, which greatly accelerates the learning process. The  
25 computer also allows for multiple speakers that pronounce each word so that students  
26 understand a range of slightly different pronunciations for a word.

27 Advantageously, the method of the present invention places the onus of  
28 teaching on the materials, which may be embodied in one or more of the following

1 media: computer systems, other hardware and/or software-based systems, paper-based  
2 textual materials (e.g., flash cards, workbooks), videocassettes, video discs, DVDs,  
3 multimedia (e.g., Microsoft PowerPoint™), slides, recorded digital and/or analog audio  
4 (e.g., DAT, audio cassette, compact disc, compressed digital audio files), etc. The  
5 responsibility of presentation is thereby removed from the individual(s) overseeing the  
6 process (e.g., professor or teacher). The method is further characterized in that it is not  
7 directed at different learning styles, since research supports that functional  
8 communication in any language is dependent on specific automatic processes.  
9 Automatic recognition of small subcomponents (e.g., sounds, and then words) leads to  
10 the ability to combine them into larger grammatical structures (e.g., phrases), which  
11 leads to the ability to create sentences, and so on.

12 First Principle Underlying the Invention: Sufficiency of Core Vocabulary

13 Learning one's native language is rarely difficult or problematic: children just  
14 do it. In general, all they need is exposure to a language and they learn it. By the age of  
15 six, they have a vocabulary of roughly 13,000 words and have mastered the "rules of  
16 grammar". This is not the experience, however, of most second language learners. After  
17 some "critical age", learning a second or foreign language is tedious, frustrating, and  
18 even after many years, rarely results in native-like proficiency. Thus, there is a stark  
19 contrast between successful learning of the first language and only marginally  
20 successful learning of a second language. There are some obvious differences between  
21 the two situations: the age of the learner, the needs of the learner, and the  
22 communicative context of learning. Those in the business of teaching a second  
23 language have taken this latter point seriously. Currently in vogue is the strategy of  
24 teaching language in the "context of communication", using whole texts or dialogues,  
25 following the rationale that this is how children learn. The rationale is that children are  
26 not presented with random vocabulary words; they hear sentences and they hear them  
27 in the context of some event in the world that they are able to perceive.

28 However, the problem in using this approach with second language learners is

1 that it is too often done without enough exposure to vocabulary; the second language  
2 learner is bombarded by a series of unfamiliar words and ultimately gets very little out  
3 of the experience, as they can neither learn the new vocabulary words nor the grammar  
4 structures that contain them. The point about first language acquisition that many  
5 language teaching practitioners have failed to appreciate is that although young children  
6 do indeed hear full sentences in context, they have already had at least a year of very  
7 rich exposure to the core vocabulary and sound system of the native language. The  
8 importance of building a foundation of spoken words has support from researchers,  
9 who have argued that the greatest impediment to good listening skills in a second  
10 language is poor vocabulary. Language learners need a firm foundation of spoken  
11 words before they can get anything out of entire narratives or texts, and this belief is  
12 reflected in the approach of the present invention. In exemplary initial lessons  
13 consistent with the invention, 90-100 words per week are taught, and each word is  
14 repeated 16-21 times, thereby building a solid base of spoken words.

15 Second Principle Underlying the Invention: Avoiding Translation

16 A second major problem with current language pedagogy is that too much  
17 reliance is often placed on translation. In language classes, second language  
18 vocabulary is typically paired with translations into the learner's native language.  
19 Software packages for language instruction make the same mistake: the native language  
20 is used as a teaching tool. Recent research has shown that the use of the native  
21 language interferes with the use of a second language, and the present invention omits  
22 the native language from the teaching process altogether, thereby avoiding  
23 "competition" from the native language.

24 Third Principle Underlying the Invention: Automatic Processing

25 A third problem with conventional language acquisition relates to failures of  
26 automatic processing. When people converse in their native language, there are many  
27 subconscious processes that come into play. Listening and understanding comprises  
28 the steps of identifying words (given an unbroken stream of speech), combining their

1 meanings, taking into account various “grammatical” aspects of the utterance (e.g., the  
2 order of words), and so forth. Much of this work is performed quickly and without  
3 thinking, which is fortunate, since this allows time to think about the meaning of an  
4 utterance (extracting and conveying meaning is, after all, the goal of communication;  
5 language is just the medium used).

6 Psycholinguistics, as a field, has developed an enormous number of techniques  
7 for examining sentence production and comprehension (“sentence processing”) during  
8 processing, using timing measures, for example, to examine the time it takes to initiate  
9 an utterance, to recognize a word, or to understand a complex sentence. One  
10 assumption behind much of the work in this area is that years of speaking and  
11 understanding have resulted in the automaticity of the cognitive routines that are  
12 required to comprehend language (that is, to recognize the words in an unbroken stream  
13 of speech, to understand what each word means, and to figure out what the particular  
14 sequence of words means) and to produce language (given an intended meaning, to find  
15 the appropriate words and put them in the right order). This automaticity allows one to  
16 focus one’s attention on the content of what one says and hears, just as automaticity in  
17 driving a car allows one to focus one’s attention on the surrounding traffic and turns in  
18 the road, rather than on the proper way to shift gears.

19 In short, for most people, the mechanics of language have become automatic.  
20 The only way for processes to become automatic, whether it is communicating in a new  
21 language or learning to drive a car, is through practice and repetition. Therefore, the  
22 present invention provides the learner with many more exposures to the same words  
23 and phrases (and eventually sentences, dialogues, texts) than they are typically given in  
24 other language learning situations, so as to develop automatic recognition of base  
25 components of the target language.

26 Fourth Principle Underlying the Invention: Initial Emphasis on Listening

27 A fourth problem with conventional language acquisition methods is an

1 emphasis on speaking. Ultimately, of course, learners need to practice speaking before  
2 they will perform adequately in everyday communicative contexts. Initially, however,  
3 learners may find it difficult and embarrassing to utter new sounds and words, and this  
4 could impede the learning process. At the early stages of learning, the emphasis need  
5 not be on speaking, because honing listening skills carries over to production. For  
6 example, research has demonstrated that training people to discriminate the foreign  
7 sounds they hear not only improves how well learners hear the sounds of the new  
8 language, but also improves how well they say the new sounds. For this reason, the  
9 present invention principally emphasizes listening skills from the outset, thereby  
10 improving production by improving perception.

#### 11 General Methodology

12 Following the foregoing four principles, the present invention comprises a  
13 training method that, in one embodiment, begins with the presentation of pictures of  
14 basic vocabulary items. At first, the pictures are paired with auditory tokens of the new  
15 labels so that students can learn the spoken versions before they see the printed version.  
16 This is important for two reasons: (a) many target learners know how to read in their  
17 native language and will be tempted (unconsciously) to read the second language word  
18 with their native language pronunciation; and (b) for European languages (including  
19 English), the sound systems differ more than the alphabetic (or "orthographic")  
20 systems, so students need more exposure to spoken language. By following the spoken  
21 version with the spoken + written version, students are implicitly taught how to read in  
22 the second language.

23 Throughout the learning process, students are encouraged to utter the words  
24 they hear, not to focus on their productions, but because vocalizing facilitates learning.  
25 During this initial period of intensive vocabulary training, students have regular  
26 opportunities to test their knowledge. Self-testing may occur (e.g., at the beginning of a  
27 session, on the fourth day of each five-day session), or may not occur at all, since the  
28 method of the present invention does not require any form of testing in order for the

1 method to succeed. In a method consistent with the invention, it may be desirable for  
2 students to be tested “cold”, i.e., after at least a day’s absence, since, if they have just  
3 been practicing the vocabulary to be tested, these items may still be in what is referred  
4 to as “short term memory”, rather than “long term memory”. Students may be presented  
5 with three different ways to self-test vocabulary: (1) a number of icons appear visually  
6 (e.g., on a computer screen), and students are asked to say the word corresponding to  
7 each icon; (2) a word is presented auditorily (e.g., through headphones), and students  
8 must match it to one of a number of icons; and (3) a word is presented visually (e.g., on  
9 a computer monitor), and students must match it to one of a number of icons. After  
10 training a base of 90 words, combinations of these words are presented in short phrases  
11 and sentences, and then students may be allowed to self-test again, using the same or  
12 similar methods as for the words. One or more of the methods may require  
13 modification, e.g., since any given icon could conceivably correspond to an infinite  
14 number of multi-word descriptions, and the learner should not be expected to determine  
15 which is appropriate without being provided a list from which to choose. (E.g., a  
16 graphic of an exhausted-looking man sitting at a typewriter might be used to represent  
17 “he is working” or “the man is typing” or “the businessman is tired”, etc.)

#### 18 Exemplary Five-Session General Embodiment

19 An exemplary language acquisition program or method consistent with the  
20 invention comprises one or more (e.g., 15) lessons. Each lesson is subdivided into a  
21 number of sessions to be used at predetermined intervals (e.g., a lesson comprising five  
22 days, to be used daily during five different days). Each lesson is designed to teach a set  
23 of core vocabulary words (e.g., 90), alone or in phrase and/or sentence combinations, as  
24 well. The core vocabulary words for the lesson are used in all of the sessions of that  
25 lesson, and the teaching of those words become the base for the implicit teaching of  
26 grammatical structures. The learner’s native language is never used, and the fact that  
27 the words of the lesson are taught without reference to or need for the learner’s native  
28 language facilitates faster processing (recognition, identification) of the new language  
29 vocabulary by eliminating interference from the native language.

1           In the first session of this exemplary embodiment, the core vocabulary words  
2 are taught using simultaneous, sequential, and rapid presentation of all of the words  
3 (e.g., 90 words/phrases in 3 minutes). For example, the learner sees (e.g., on a  
4 computer screen) a graphic of a dog and hears “a dog” (e.g., through a speaker or  
5 headphones) at same time. Students are presented with “a dog” in the auditory  
6 presentation, so that the phrasal structure (article + noun), for example, is taught  
7 implicitly while explicitly teaching the new label (the word “dog”). For languages  
8 with gender, such as Spanish and most European languages, this facilitates gender  
9 identification implicitly and automatically. The learner hears all of the core vocabulary  
10 words for that lesson spoken by a first speaker, while viewing graphics corresponding  
11 to those words. Next, the learner hears all of the core vocabulary words for that lesson  
12 spoken by a second speaker, while viewing graphics corresponding to those words, and  
13 the same may be repeated for a third speaker, fourth speaker, etc. Because there is  
14 variability between native speakers of every language, each word is spoken by multiple  
15 speakers so that the learner’s brain adapts to the multiple regional accents and personal  
16 speech styles or anomalies of native speakers. The set of words may then be presented  
17 several more times (e.g., 3), in the same manner, or alternatively, with randomization of  
18 order of presentation and speaker. During the first session, the written form is not  
19 presented to the learner, so as to prevent potential interference of native language  
20 orthography/sound relationship. It is advantageous to the learning process if each word  
21 is heard by the learner about 7 times during the first session, and if the session  
22 comprises at least 4 native speakers speaking approximately 90 words, over  
23 approximately 30 minutes. In this manner, the learner develops a new lexicon.

24           In the second session of this exemplary embodiment, the language acquisition  
25 techniques of the first session are repeated in a similar manner, i.e., the core vocabulary  
26 words are taught using simultaneous, sequential, and rapid presentation of all of the  
27 words (e.g., 90 words/phrases in 3 minutes). The main difference in the second session  
28 is the integration in the second session of written forms of the core vocabulary words.  
29 The learner sees the written form of the words (e.g., on a computer screen) for the first

1 time, for all vocabulary words in the lesson. The written form of each word/phrase  
2 heard is displayed along with the graphic, while the learner hears the word spoken.  
3 Presentation of the words and speakers may be random in the second session, or may be  
4 ordered, as in the first session. As with the first session, the learner hears all words  
5 spoken a number of times, e.g., (hearing each of 90 words 7 times, over about 30  
6 minutes). The written form is added in the second session to help learners begin to  
7 learn the relationship between the orthography (spelling) and the sound system of the  
8 language. The goal of the present invention, in its various embodiments, is to make the  
9 base components of language “automatic”. This is done with the understanding that  
10 those who must stop and think before understanding what they hear are not functional  
11 in the language, much less competent. Native speakers of all language speak quickly  
12 (at a rate of about 3-4 words per second), and thus, in order for second language  
13 learners to function in that language, they must process language quickly.

14 In the third session of this exemplary embodiment, the language acquisition  
15 techniques of the second session may be repeated in a similar manner, wherein learners  
16 see the graphical representation of a word/phrase plus the corresponding written  
17 word/phrase on the screen, while hearing it being spoken (e.g., through headphones).  
18 Again, multiple speakers (e.g., 4) may be used, each repeating each word/phrase a  
19 number of times (e.g., 7), over approximately 30 minutes. This additional repetition for  
20 reinforcement is based, in part, on research that indicates students need to be exposed to  
21 a new vocabulary word 20 times for it to become part of long-term memory.  
22 Additionally, although students are not instructed to repeat what they hear in the first  
23 three sessions (and repetition is not an explicit component of the present invention), a  
24 pilot study employing software enabling a method consistent with the invention showed  
25 that people naturally do so anyway, as all 24 participants in the study were observed  
26 repeating what they heard without explicitly being instructed to do so.

27 The fourth session of this exemplary embodiment is for self-testing, whereby a  
28 learner may find out whether or not he or she has learned the words. The self-testing  
29 may comprise one or more of the following three tests: listening comprehension test,

1 reading comprehension test, and pronunciation test. For the listening comprehension  
2 test, the learner matches words/phrases heard to the corresponding graphic (e.g., on a  
3 computer screen). For example, the learner may be instructed to click on a generic  
4 graphic appearing on one side of the screen to hear a word, and then click on the icon  
5 on the other side of the screen matching that word. Words might be grouped according  
6 to how they sound so that students would be required to know fairly precisely what  
7 each word sounds like. If the match is correct, the learner is given proper feedback, e.g.,  
8 by making the generic and corresponding graphics disappear, or by otherwise  
9 distinguishing the correctly identified graphic. This is done for all the words in the  
10 lesson to test the learner's auditory recognition of each word. For the reading  
11 comprehension test, the learner matches written words/phrases (e.g., displayed on  
12 screen) to the corresponding graphic (e.g., displayed on a computer screen). For  
13 example, the learner may be instructed to click on a written word/phrase appearing on  
14 one side of the screen to hear a word, and then click on the icon on the other side of the  
15 screen matching that word, or drag the word/phrase onto the appropriate graphic. If the  
16 match is correct, the learner is given proper feedback, e.g., by making the written  
17 word/phrase and corresponding graphics disappear or the graphic would change in  
18 some standardized way. This is done for all the words in the lesson to test the learner's  
19 written recognition of each word. For the pronunciation test, the learner is given the  
20 opportunity to pronounce words/phrases displayed (e.g., on a computer screen) along  
21 with the corresponding graphic (e.g., on a computer screen). For example, the learner  
22 may be presented with a set of graphics corresponding to words/phrases being tested,  
23 and may be instructed to click on the appropriate graphics to eliminate those  
24 words/phrases with which the learner is already familiar. The learner is given the  
25 opportunity to pronounce "out loud" the graphics representing the words he or she  
26 is eliminating, at which point the corresponding icon "disappears" from the screen. This  
27 is done for all the words in the lesson to test the learner's pronunciation of each word.  
28 One or more of the foregoing tests may comprise a review component, wherein, a  
29 learner may select an option for reviewing the words missed, or not recognized, using

1 one or more techniques from the first, second, and/or third sessions. The foregoing  
2 testing sequence is based on the principle that knowing a language means: auditory  
3 recognition, written recognition, and the ability to say the word. Testing may also occur  
4 by pen and paper, e.g., using materials such as workbooks or standardized tests. While  
5 the inventors of this method believe that perceptual skills must precede production  
6 skills in language acquisition, and that automatic use of the language is necessary for  
7 functional communication, it should be understood that testing may be omitted  
8 altogether in certain embodiments of the present invention and is not central to the  
9 success of the present invention, but is explained herein only by way of example.

10 The fifth session of this exemplary embodiment is used to place the  
11 words/phrases of each lesson (and any of preceding lessons) in larger texts. As with the  
12 individual words/phrases of Days 1-3, short sentences and/or short phrases comprising  
13 the core vocabulary words of Days 1-3 are taught using simultaneous, sequential, and  
14 rapid presentation of all of the words (e.g., 60 phrases/short sentences in 3 minutes).  
15 The sentences/short phrases are displayed (e.g. on a computer screen) to the learner  
16 while displaying a corresponding graphic and playing a recording of a native speaker  
17 speaking the sentence/short phrase. In this manner, grammatical structures (e.g.,  
18 phrasal structures, verb tenses, pronouns, question forms, and comparisons) may be  
19 taught. Additionally, small dialogues reinforce the use of the structure and vocabulary  
20 (e.g., so that first and second person can be used). The use of longer texts, such as  
21 paragraphs, or short stories incorporating the vocabulary, may be included. The fifth  
22 session typically comprises solely vocabulary that has been explicitly taught in the  
23 current or previous lessons, except for vocabulary that has no concrete sense. For  
24 example, grammatical words like prepositions, pronouns, and conjunctions must be  
25 taught in context, as well as a verb such as “loves”, or other abstract words having no  
26 graphic easily identifiable to the learner. Such new words, not previously presented to  
27 the learner, may be used (sparingly) in the fifth session with the support of previous  
28 lessons and sessions, so as to make them logical and self-explanatory.

1           Specific Exemplary Embodiment – Fifteen-Week, Five-Days-Per-Week Cycle

2           Another exemplary embodiment of a language acquisition method consistent  
3 with the invention comprises one or more CD-ROMs containing 15 weeks of lessons  
4 comprising around 1350 words and phrases, which is roughly equivalent to the  
5 information one would experience in the first year of a university language class, or two  
6 years of high school language classes. In this embodiment, using the software requires a  
7 minimal time commitment of 30 minutes of time per day, 5 days per week, each day  
8 corresponding to a “session”, as set forth in the foregoing described embodiment. The  
9 “Dolch” word list (or “Dolch Basic Sight Vocabulary”) may be employed, which is a  
10 list of 220 words consisting mainly of function words that have little meaning on their  
11 own, but which show grammatical relationships of the words in sentences. Included in  
12 this list are conjunctions, prepositions, articles, and pronouns, as well as commonly  
13 used verbs, adjectives, and adjectives. From 50 to 75 percent of all words used in  
14 school textbooks, library books, newspapers, and magazines are in the Dolch list.

15           Overview of Fifteen-Week, Five-Days-Per-Week Cycle

16           Turning now to Figure 1, a flowchart 100 illustrates an overview of an  
17 exemplary multi-week, five-days-per-week language acquisition program consistent  
18 with the present invention. As shown, the program, comprising five-day weeks, begins  
19 at step 102. In this exemplary embodiment, on Days 1-3 of each weekly lesson, the  
20 learner builds vocabulary, learns phrasal structures, and becomes exposed to the sound  
21 system of the language. Initially, on Day 1 of the week, pictures of basic vocabulary  
22 items are paired with auditory pronunciations rapidly displayed/played (e.g., 90 words  
23 in 3 minutes), at step 104. As time progresses, on Days 2 and 3 of the week, auditory  
24 pronunciations and vocabulary icons are paired with written words in the target  
25 language, at steps 106 and 108, and are rapidly displayed/played (e.g., 90 words in 3  
26 minutes). On Day 4, self-testing occurs, at step 110, to ensure that the information has  
27 been retained in long-term memory. On Day 5, the words from prior lessons are  
28 introduced at sentence level or above (text, dialogue, etc.), so as to teach grammar and  
29 syntax, at step 112, which occurs in a manner similarly to Days 1-3, with rapid

1 display/play of the sentences/phrases/graphics (e.g., 60 sentences/short phrases in 3  
2 minutes). At step 114, if it is the last week of the program, as determined at step 114,  
3 the program ends, at step 116. If further weeks of the program remain, the learner  
4 advances to the next week of the program, at step 118, and this five-day cycle repeats in  
5 this manner from week to week, each week introducing about 90 new words and  
6 phrases.

7 Day 1 of Fifteen-Week, Five-Days-Per-Week Cycle

8 Figure 2 is a flowchart 200 illustrating the steps of an exemplary Day 1 of a  
9 multi-week language acquisition program consistent with the invention. Day 1  
10 comprises the presentation of vocabulary by category at phrase level. This means that,  
11 for example, where acceptable as determined by native speakers, vocabulary words are  
12 presented with a determiner, such as a definite article, indefinite article, or quantifier.  
13 This has multiple functions: First, phrases will readily be combined to form sentences:  
14 e.g. “a boy” + “is eating” = “a boy is eating”. Second, this type of presentation provides  
15 information about the use of singular and plural nouns (e.g. “a book” vs. “pants”). This  
16 day’s lesson includes presentation of the vocabulary by category (food, transportation,  
17 etc.) and by speaker. Learners hear all the vocabulary, by category, pronounced by the  
18 first speaker, then the second, third, etc. The learner is thus exposed to 90 new words  
19 (e.g., “dog”, “dogs”) and phrases (e.g., “a dog”, “some grapes”). Specifically, this is  
20 accomplished by playing an audio clip of the word or phrase being spoken, while  
21 simultaneously visually presenting a pictorial representation (an “icon”) to the learner,  
22 one word/phrase at a time, rapidly (e.g., 90 words in 3 minutes). Each word or phrase  
23 is spoken by five different native speakers, and each speaker says all 90 words before  
24 the next voice is heard. This entire process is repeated seven (or another predetermined  
25 number of) times.

26 As shown, the day begins at step 202. The first (or next) native speaker is  
27 selected from the group of five native speakers, at step 204. The first (or next) word or  
28 phrase is selected from among the Day 1 group comprising 90 new words and phrases,  
29 at step 206. The icon corresponding to the selected word or phrase is shown, at step

1 208, and simultaneously, a recording is played for the learner, the recording comprising  
2 the selected native speaker saying the selected word or phrase, at step 210. If all 90  
3 words/phrases have not yet been displayed and spoken by the currently selected native  
4 speaker, which determination is made at step 212, control returns to step 206 for  
5 selection of the next word or phrase. If all 90 words/phrases have been displayed and  
6 spoken by the currently selected native speaker, as determined at step 212, a further  
7 determination is made whether recordings of all five native speakers have been played,  
8 at step 214. If not, control returns to step 204 for selection of the next native speaker.  
9 If recordings of all five native speakers have been played, as determined at step 214, a  
10 further determination is made whether seven (or another predetermined number of)  
11 repetitions of 90 words/phrases and five native speakers per word/phrase have  
12 occurred, at step 216. If not, control returns to step 204, and the entire foregoing  
13 process repeats in its entirety. If all 90 words/phrases have been spoken by five native  
14 speakers per word/phrase, as determined at step 216, Day 1 ends, at step 218.

15 Day 2 of Fifteen-Week, Five-Days-Per-Week Cycle

16 Figure 3 is a flowchart 300 illustrating the steps of an exemplary Day 2 of a  
17 multi-week language acquisition program consistent with the invention. Day 2  
18 comprises exposing the learner to the same 90 words and phrases as Day 1, again by  
19 playing an audio clip of the word or phrase being spoken, while simultaneously visually  
20 presenting an icon to the learner. Unlike Day 1, while the icon is shown to the learner,  
21 the written form of the word or phrase is simultaneously displayed, rapidly (e.g., 90  
22 words in 3 minutes). As with Day 1, each word or phrase is spoken by five different  
23 native speakers, and each speaker says all 90 words before the next voice is heard. This  
24 entire process is repeated seven (or another predetermined number of) times.

25 As shown, the day begins at step 302. The first (or next) native speaker is  
26 selected from the group of five native speakers, at step 304. The first (or next) word or  
27 phrase is selected from among the Day 1 group comprising 90 new words and phrases,  
28 at step 306. At step 308, the icon corresponding to the selected word or phrase is

1 shown, the written word/phrase is displayed on screen, and simultaneously, a recording  
2 is played for the learner, the recording comprising the selected native speaker saying  
3 the selected word or phrase, at step 310. If all 90 words/phrases have not yet been  
4 displayed and spoken by the currently selected native speaker, which determination is  
5 made at step 312, control returns to step 306 for selection of the next word or phrase. If  
6 all 90 words/phrases have been displayed and spoken by the currently selected native  
7 speaker, as determined at step 312, a further determination is made whether recordings  
8 of all five native speakers have been played, at step 314. If not, control returns to step  
9 304 for selection of the next native speaker. If recordings of all five native speakers  
10 have been played, as determined at step 314, a further determination is made whether  
11 seven (or another predetermined number of) repetitions of 90 words/phrases and five  
12 native speakers per word/phrase have occurred, at step 316. If not, control returns to  
13 step 304, and the entire foregoing process repeats in its entirety. If all 90 words/phrases  
14 have been spoken by five native speakers per word/phrase, as determined at step 316,  
15 Day 2 ends, at step 318.

16 Day 3 of Fifteen-Week, Five-Days-Per-Week Cycle

17 Figure 4 is a flowchart 400 illustrating the steps of an exemplary Day 3 of a  
18 multi-week language acquisition program consistent with the invention. Day 3  
19 comprises exposing the learner to the same 90 words and phrases as Day 1, again by  
20 playing an audio clip of the word or phrase being spoken, while simultaneously visually  
21 presenting an icon to the learner, rapidly (e.g., 90 words in 3 minutes). In certain  
22 embodiments, while the icon is shown to the learner, sometimes the written form of the  
23 word or phrase is simultaneously displayed, and sometimes the written form of the  
24 word or phrase is not displayed at all. Unlike Days 1 and 2, the words and phrases are  
25 spoken by different speakers, and the order of words/phrases, as well as the speakers,  
26 are selected at random from among the 5 native speakers. This entire process is  
27 repeated seven (or another predetermined number of) times.

28 As shown, the day begins at step 402. The first (or next) native speaker is

1 selected at random from the group of five native speakers, at step 404. The first (or  
2 next) word or phrase is selected from among the Day 1 group comprising 90 new words  
3 and phrases, at step 406. At step 408, the icon corresponding to the selected word or  
4 phrase is shown, and sometimes the written word/phrase is also displayed on screen.  
5 Simultaneously, a recording is played for the learner, the recording comprising the  
6 selected native speaker saying the selected word or phrase, at step 410. If all 90  
7 words/phrases have not yet been displayed and spoken by the currently selected native  
8 speaker, which determination is made at step 412, control returns to step 406 for  
9 selection of the next word or phrase. If all 90 words/phrases have been displayed and  
10 spoken by the currently selected native speaker, as determined at step 412, a further  
11 determination is made whether recordings of all five native speakers have been played,  
12 at step 414. If not, control returns to step 404 for selection of the next native speaker.  
13 If recordings of all five native speakers have been played, as determined at step 414, a  
14 further determination is made whether seven (or another predetermined number of)  
15 repetitions of 90 words/phrases and five native speakers per word/phrase have  
16 occurred, at step 416. If not, control returns to step 404, and the entire foregoing  
17 process repeats in its entirety. If all 90 words/phrases have been spoken by five native  
18 speakers per word/phrase, as determined at step 416, Day 3 ends, at step 418.

19 Day 4 of Fifteen-Week, Five-Days-Per-Week Cycle

20 Figure 5 is a flowchart 500 illustrating the steps of an exemplary Day 4 of a  
21 multi-week language acquisition program consistent with the invention. As shown in  
22 the flowchart 500, Day 4 comprises a self-assessment exercise. In this exercise, three  
23 self-assessment exercises are presented to the learner. First, nine icons at one time  
24 appear on the screen, and the learner is instructed to click on the icons he or she is  
25 already familiar with. The icons not selected are then represented auditorily, in icon  
26 form and in word form, as review. After all 90 icons are offered for review, the learner  
27 may self-test his or her listening comprehension, as follows: Nine speaker icons appear  
28 to the left of the screen while nine icons corresponding to words/phrases to be tested

1 appear to the right, and the learner presses first on a speaker icon to hear a word and  
2 then presses on the icon that matches what he or she heard. Finally the learner may  
3 self-test his or her reading comprehension, as follows: nine words or phrases appear to  
4 the left of the screen while nine icons appear to the right, and the learner must drag  
5 each of the words/phrases over to the matching icon.

6 As shown, the day begins at step 502. Words/phrases are selected, nine at a  
7 time, from among the Day 1 group of 90 words/phrases, at step 503, and the first  
8 segment of the Day 4 session takes place, which begins with step 504, in which the  
9 learner is shown icons representing the selected group of 9 words/phrases (or, the  
10 remaining words/phrases from the group of 9), and the learner is asked to eliminate  
11 (and, optionally, to pronounce) those words/phrases from the group of 9 that he/she  
12 already knows. At step 506, a determination is made whether the learner has eliminated  
13 all words/phrases from the group. If so, a determination is made at step 510 whether all  
14 groups of 9 words/phrases have been shown to the learner. If not, control returns to  
15 step 503, and the next group of 9 words/phrases is selected. If, at step 506, it is  
16 determined that the learner has not eliminated all words from the group, i.e., one or  
17 more words/phrases remain that the learner does not know, then the first (or next)  
18 word/phrase is selected from among the non-eliminated words/phrases, at step 512.  
19 Next, at step 514, the icon corresponding to the selected word/phrase is shown, along  
20 with the written form of the word/phrase. At step 516, a recording is played of a  
21 randomly selected native speaker saying the selected word/phrase while the icon and  
22 written form are displayed. At step 518, a determination is made whether all non-  
23 eliminated words/phrases from the group of 9 have been displayed in icon and written  
24 form and heard. If not, control returns to step 512 for selection of the next word/phrase.  
25 If so, then control returns to step 504 for repetition of the presentation to the learner of  
26 the remaining words/phrases from the group of 9, for elimination/pronunciation.

27 If, at step 510, a determination is made that all groups of 9 have been shown to  
28 the learner, the second segment of the session takes place, which begins at step 520,

1 wherein the first (or next) group of words/phrases from among the Day 1 group  
2 comprising new words/phrases is selected. At step 522, on one side of the screen, a  
3 group of 9 identical icons (e.g., an icon of a speaker) is shown to the learner, each icon  
4 corresponding to one of the group of 9 selected words/phrases. On the other side of the  
5 screen, at step 524, the appropriate icons corresponding to the 9 selected words/phrases  
6 are shown. For each of the 9 words/phrases, at step 526, as the “speaker” icon on one  
7 side of the screen is clicked by the learner, a recording of the associated word/phrase is  
8 played (e.g., by a randomly selected native speaker), and the learner is given the  
9 opportunity to select the icon displayed on the other side of the screen that matches the  
10 word/phrase played. Optionally, at step 527, a recording may be played of a native  
11 speaker selected at random saying each of the missed words/phrases, while the  
12 corresponding icon and written form of each is displayed. At step 528, a determination  
13 is made whether all 90 words/phrases have been tested auditorily. If not, control returns  
14 to step 520 for selection of the next group of 9 words/phrases for auditory testing.

15           Once all 90 words have been auditorily tested, as determined at step 528, the  
16 third segment of the session takes place, which begins at step 530, wherein the first (or  
17 next) group of words/phrases from among the Day 1 group comprising new  
18 words/phrases is selected. At step 532, on one side of the screen, the written  
19 words/phrases corresponding to each of the group of 9 selected words/phrases are  
20 displayed to the learner. On the other side of the screen, at step 534, the appropriate  
21 icons corresponding to the 9 selected words/phrases are shown. For each of the 9  
22 words/phrases, at step 536, the learner is given the opportunity to select the icon  
23 displayed on the other side of the screen that matches the word/phrase played (e.g., as  
24 each word/phrase from one side of the screen is dragged to the other side of the screen  
25 onto the corresponding icon, or by sequentially clicking on the written word/phrase,  
26 then the corresponding icon). Optionally, at step 537, a recording may be played of a  
27 native speaker selected at random saying each of the missed words/phrases, while the  
28 corresponding icon and written form of each is displayed. At step 538, a determination  
29 is made whether all 90 words/phrases have been tested for reading comprehension. If

1 not, control returns to step 530 for selection of the next group of 9 words/phrases for  
2 reading comprehension testing. Once all 90 words have been tested for reading  
3 comprehension, as determined at step 538, the day ends, at step 540.

4 Day 5 of Fifteen-Week, Five-Days-Per-Week Cycle

5 Figure 6 is a flowchart 600 illustrating the steps of an exemplary Day 5 of a  
6 multi-week language acquisition program consistent with the invention. As shown in  
7 the flowchart 600, Day 5 differs from the other days, in that the words/phrases  
8 previously taught, trained, and self-assessed in Days 1-4 are now incorporated into  
9 short phrases and sentences, instead of isolated presentation of the words/phrases  
10 themselves. In a first segment of Day 5, as with the individual words/phrases in Days 1-  
11 3, there is multiple presentation of icons depicting each sentence/short phrase, and  
12 learners hear the sentences spoken by several native speakers. The sentences/short  
13 phrases may be presented both with and/or without the written words, and, as with  
14 Days 1-3, the presentation occurs rapidly (e.g., 60 sentences/short phrases in 3  
15 minutes). Day 5 may also comprise a second, self-assessment segment for the short  
16 phrases and sentences, including one or more assessment methods from Day 4.

17 As shown, the day begins at step 602. The first segment of Day 5 begins with  
18 step 604, wherein the first (or next) native speaker is selected at random from the group  
19 of five native speakers. The first (or next) word or phrase is selected from among the  
20 group of sentences/short phrases comprising combinations of words/phrases from Days  
21 1-3, at step 606. At step 608, the icon corresponding to the selected sentence/short  
22 phrase is shown, and the written sentence/short phrase is also displayed on screen.  
23 Simultaneously, a recording is played for the learner, the recording comprising the  
24 selected native speaker saying the selected sentence/short phrase, at step 610. If all of  
25 the sentences/short phrases have not yet been displayed and spoken by the currently  
26 selected native speaker, which determination is made at step 612, control returns to step  
27 606 for selection of the next sentence/short phrase. If all of the sentences/short phrases  
28 have been displayed and spoken by the currently selected native speaker, as determined

1 at step 612, a further determination is made whether recordings of all five native  
2 speakers have been played, at step 614. If not, control returns to step 604 for selection  
3 of the next native speaker. If recordings of all five native speakers have been played, as  
4 determined at step 614, a further determination is made whether seven (or another  
5 predetermined number of) repetitions of all of the sentences/short phrases and five  
6 native speakers per sentence/short phrase have occurred, at step 616. If not, control  
7 returns to step 604, and the entire foregoing process repeats in its entirety. If all of the  
8 sentences/short phrases have been spoken by five native speakers per sentence/short  
9 phrase, as determined at step 616, the second segment of Day 3 takes place.

10 Step 618 begins the second segment of Day 5, wherein sentences/short phrases  
11 are selected, nine at a time, from among the new phrases/sentences presented in the first  
12 segment. At step 620, the learner is shown icons representing the selected group of 4  
13 sentences/short phrases (or, the remaining sentences/short phrases from the group of 4),  
14 and the learner is asked to eliminate (and, optionally, to pronounce) those  
15 sentences/short phrases from the group of 4 that he/she already knows. At step 622, a  
16 determination is made whether the learner has eliminated all sentences/short phrases  
17 from the group. If so, a determination is made at step 632 whether all groups of 4  
18 sentences/short phrases have been shown to the learner. If not, control returns to step  
19 618, and the next group of 4 sentences/short phrases is selected. If, at step 622, it is  
20 determined that the learner has not eliminated all sentences/short phrases from the  
21 group, i.e., one or more sentences/short phrases remain that the learner does not know,  
22 then the first (or next) sentence/short phrase is selected from among the non-eliminated  
23 sentences/short phrases, at step 624. Next, at step 626, the icon corresponding to the  
24 selected sentence/short phrase is shown, along with the written form of the  
25 sentence/short phrase. At step 628, a recording is played of a randomly selected native  
26 speaker saying the selected sentence/short phrase while the icon and written form are  
27 displayed. At step 630, a determination is made whether all non-eliminated  
28 sentences/short phrases from the group of 4 have been displayed in icon and written  
29 form and heard. If not, control returns to step 624 for selection of the next

1 sentence/short phrase. If so, then control returns to step 620 for a repetition of the  
2 presentation to the learner of the remaining sentences/short phrases from the group of 4,  
3 for elimination/pronunciation. If, at step 632, a determination is made that all groups of  
4 4 have been shown to the learner, Day 5 ends at step 634.

#### 5 Exemplary Screen Views

6 Figures 7 through 16 are exemplary screen views that a learner might see in an  
7 exemplary session of a multi-week language acquisition program consistent with the  
8 invention. It should be recognized that the screen views, which generally correspond to  
9 the embodiment described hereinabove with respect to Figures 1 through 6, are not to  
10 be construed as limiting the present invention to any particular screen views, and are  
11 provided merely for illustrative purposes.

12 Figure 7 is a screen view 700 illustrating an exemplary menu screen in an  
13 exemplary fourth week (or "unit") of a multi-week language acquisition program  
14 consistent with the invention. As shown, the unit number 701 is displayed, along with  
15 clickable choices for the five days/sessions 702-706 that the unit comprises. Similar  
16 such menus may be provided for making selections at other times, including, e.g., to  
17 select the week or unit number. Alternatively, in a software-based method consistent  
18 with the invention, the software may be appropriately adapted to store for one or more  
19 learners the progress of the learner in the overall program, thus permitting the learner to  
20 return to a point following that at which he or she left off upon his or her last use, and  
21 thereby alleviating the need for the learner to remember the current  
22 unit/week/lesson/session/day number. An "exit" button 707 or similar feature may be  
23 provided to permit the learner to elect to exit the program, depending on the  
24 embodiment of the software and its intended use (e.g., classroom, home, Internet-based,  
25 etc.).

26 Figure 8 is a screen view 800 illustrating an exemplary icon view in an  
27 exemplary Day 1 of one week of a multi-week language acquisition program consistent

1 with the invention. As shown, an icon 801 representing the selected word/phrase is  
2 displayed without any accompanying text, and during this display, a recording of native  
3 speaker saying the corresponding word/phrase is played. In the screen view 800  
4 shown, the spoken phrase corresponding to the displayed icon 801 is “a backpack”,  
5 which teaches the learner the word “backpack” plus the appropriate determiner, which  
6 is the indefinite article “a” in this case. A “stop” button 802 or similar feature may be  
7 provided to permit the learner to elect to exit the current session and return to the  
8 previous menu.

9 Figure 9 is a screen view 900 illustrating another exemplary icon view in an  
10 exemplary Day 1 of one week of a multi-week language acquisition program consistent  
11 with the invention. As shown, an icon 901 representing the selected word/phrase is  
12 displayed without any accompanying text, and during this display, a recording of native  
13 speaker saying the corresponding word/phrase is played. In the screen view 900  
14 shown, the spoken phrase corresponding to the displayed icon 901 is “a glass of milk”,  
15 a phrase incorporating several words at a time to be acquired by the learner. A “stop”  
16 button 902 or similar feature may be provided to permit the learner to elect to exit the  
17 current session and return to the previous menu.

18 Figure 10 is a screen view 1000 illustrating an exemplary icon and written word  
19 view in an exemplary Day 2 or Day 3 of one week of a multi-week language  
20 acquisition program consistent with the invention. As shown, an icon 1001  
21 representing the selected word/phrase is displayed, along with the corresponding text of  
22 the word/phrase 1002, and during this display, a recording of native speaker saying the  
23 corresponding word/phrase is played. In the screen view 1000 shown, the written and  
24 spoken phrase corresponding to the displayed icon 1001 is “a bicycle”, a phrase  
25 incorporating both a core vocabulary word (“bicycle”) and its corresponding determiner  
26 (the indefinite article “a”). A “stop” button 1002 or similar feature may be provided to  
27 permit the learner to elect to exit the current session and return to the previous menu.

28 Figure 11 is a screen view 1100 illustrating another exemplary icon and written

1 word view in an exemplary Day 2 or Day 3 of one week of a multi-week language  
2 acquisition program consistent with the invention. As shown, an icon 1101  
3 representing the selected word/phrase is displayed, along with the corresponding text of  
4 the word/phrase 1102, and during this display, a recording of native speaker saying the  
5 corresponding word/phrase is played. In the screen view 1100 shown, the written and  
6 spoken phrase corresponding to the displayed icon 1101 is “the teacher”, a phrase  
7 incorporating both a core vocabulary word (“teacher”) and its corresponding determiner  
8 (the definite article “the”). A “stop” button 1102 or similar feature may be provided to  
9 permit the learner to elect to exit the current session and return to the previous menu.

10 Figure 12 is a screen view 1200 illustrating an exemplary first segment in an  
11 exemplary Day 4 of one week of a multi-week language acquisition program consistent  
12 with the invention. As shown, nine icons 1201 are displayed, each representing a word  
13 or phrase from Days 1-3 of the lesson. In this screen view 1200, the learner is given the  
14 opportunity to click on the icons 1201 for which he or she already knows the  
15 appropriate corresponding word/phrase to eliminate them from the screen view 1200,  
16 and optionally to pronounce “out loud” the word/phrase prior to eliminating it. Once  
17 the learner has eliminated the words he or she already knows, he or she may click on a  
18 “forward” button 1202, which leads the learner to successive screen views (e.g.,  
19 resembling Figures 10 or 11), one at a time, of each the words/phrases he or she has not  
20 already learned and its corresponding icon, and at the same time, a recording is played  
21 of a native speaker saying each of the words, as well. A “stop” button 1203 or similar  
22 feature may be provided to permit the learner to elect to exit the current session and  
23 return to the previous menu.

24 Figure 13 is a screen view 1300 illustrating an exemplary second segment in an  
25 exemplary Day 4 of one week of a multi-week language acquisition program consistent  
26 with the invention. As shown, nine icons 1301 are displayed, each representing a word  
27 or phrase from Days 1-3 of the lesson, and “speaker” icons 1302 are displayed adjacent  
28 the nine icons 1301, each “speaker” icon 1302 representing the audio recording of a

1 word/phrase corresponding to one of the icons 1301. In this screen view 1300, the  
2 learner is given the opportunity to click on the “speaker” icons 1302, at which time a  
3 recording is played of a native speaker saying a word/phrase corresponding to one of  
4 the icons 1301. The learner must then select the appropriate icon 1301 and is given  
5 appropriate feedback to indicate whether the choice was correct. For the missed  
6 words/phrases, the learner may be shown successive screen views (e.g., resembling  
7 Figures 10 or 11), one at a time, of each the words/phrases he or she missed and its  
8 corresponding icon, and at the same time, a recording is played of a native speaker  
9 saying each of the words, as well. A “stop” button 1303 or similar feature may be  
10 provided to permit the learner to elect to exit the current session and return to the  
11 previous menu.

12 Figure 14 is a screen view 1400 illustrating an exemplary third segment in an  
13 exemplary Day 4 of one week of a multi-week language acquisition program consistent  
14 with the invention. As shown, nine icons 1401 are displayed, each representing a word  
15 or phrase from Days 1-3 of the lesson, and the written words/phrases 1402  
16 corresponding to each of the icons 1401 are displayed adjacent the nine icons 1401. In  
17 this screen view 1400, the learner must drag (or otherwise match) each written  
18 word/phrase 1402 to the appropriate icon 1401 and is given appropriate feedback to  
19 indicate whether the choice was correct. For the missed words/phrases, the learner may  
20 be shown successive screen views (e.g., resembling Figures 10 or 11), one at a time, of  
21 each the words/phrases he or she missed and its corresponding icon, and at the same  
22 time, a recording is played of a native speaker saying each of the words, as well. A  
23 “stop” button 1403 or similar feature may be provided to permit the learner to elect to  
24 exit the current session and return to the previous menu.

25 Figure 15 is a screen view 1500 illustrating an exemplary icon and written  
26 sentence/short phrase view in the first segment of an exemplary Day 5 of one week of a  
27 multi-week language acquisition program consistent with the invention. As shown, an  
28 icon 1501 representing the selected sentence/short phrase is displayed, along with the

1 corresponding text of the sentence/short phrase 1502, and during this display, a  
2 recording of native speaker saying the corresponding sentence/short phrase is played.  
3 In the screen view 1500 shown, the written and spoken sentence/short phrase  
4 corresponding to the displayed icon 1501 is “She looks happy”, a sentence  
5 incorporating a vocabulary word from previous Days 1-3 (“happy”), and implicitly  
6 teaching a grammar structure using the verb “looks”, along with the proper use of the  
7 subjective case pronoun “she”. A “stop” button 1503 or similar feature may be  
8 provided to permit the learner to elect to exit the current session and return to the  
9 previous menu.

10 Figure 16 is a screen view 1600 illustrating an exemplary second segment in an  
11 exemplary Day 5 of one week of a multi-week language acquisition program consistent  
12 with the invention. As shown, nine icons 1601 are displayed, each representing a  
13 sentence/short phrase from the first segment of Day 5. In this screen view 1600, the  
14 learner is given the opportunity to click on the icons 1601 for which he or she already  
15 knows the appropriate corresponding sentence/short phrase to eliminate them from the  
16 screen view 1600, and optionally to pronounce “out loud” the sentence/short phrase  
17 prior to eliminating it. Once the learner has eliminated the sentences/short phrases he or  
18 she already knows, he or she may click on a “forward” button 1602, which leads the  
19 learner to successive screen views (e.g., resembling Figures 15), one at a time, of each  
20 the sentences/short phrases he or she has not already learned and its corresponding  
21 icon, and at the same time, a recording is played of a native speaker saying each of the  
22 sentences/short phrases, as well. A “stop” button 1603 or similar feature may be  
23 provided to permit the learner to elect to exit the current session and return to the  
24 previous menu.

#### 25 Exemplary Vocabulary and Lesson Content

26 Figure 17 is a table 1700 listing ninety exemplary vocabulary words that are  
27 taught in Days 1-3 and tested in Day 4 of an exemplary first week of a multi-week  
28 language acquisition program consistent with the invention. As shown, the words

1 taught may include words relating to, e.g., animals, body parts, clothing, colors, food,  
2 sports, transportation, household items, activities, occupations, etc. In this exemplary  
3 word set, the words that are underlined are further used in Day 5, in combination with  
4 one another and/or with other words not listed in table 1700. Although the words listed  
5 are only English words, those skilled in the art should recognize that the words (and  
6 determiners, as appropriate) could be those of any language (e.g., “un chien” / ”une  
7 chienne” in French, or “un perro” / ”une perra” in Spanish).

8 Figure 18 is a table 1800 listing fifty exemplary sentences/short phrases 1802  
9 that are taught in Day 5 of an exemplary first week of a multi-week language  
10 acquisition program consistent with the invention. As shown, the sentences/short  
11 phrases 1802 comprise the underlined words from table 1700, in combination with one  
12 another and/or with other words. Table 1800 also includes a brief description 1801 of  
13 the grammatical structures being implicitly taught by means of teaching the  
14 sentences/short phrases 1802 shown.

15 Figure 19 is a table 1900 listing the lesson contents of an exemplary fifteen-  
16 week language acquisition program consistent with the invention. As shown, the  
17 program comprises fifteen weekly lessons 1901, each with a set of topics/vocabulary  
18 1902 to be taught, as well as a verb tense to be used 1903, grammatical structures to be  
19 taught 1904, types of dialogues to be used 1905, and descriptions to be used 1906 over  
20 the course of the lesson.

#### 21 First Case Study

22 The success of a language acquisition program consistent with the invention has  
23 been shown in a research study utilizing such a program. The purpose of the study was  
24 to see if the software consistent with the invention could: (a) accelerate the acquisition  
25 of vocabulary, and (b) speed up auditory processing time in adult learners of English  
26 currently enrolled in beginning ESL community college courses. Knowing enough  
27 vocabulary words and recognizing them quickly is necessary for understanding spoken

1 language, which is a continual stream of speech, i.e., when speaking, people do not stop  
 2 between words when saying them. Participants in the study included 24 females and 8  
 3 males, ranging from 18 to 78 years of age, who had lived in the U.S. from 3 months to  
 4 25 years, and who spoke five native languages: Spanish, Russian, Czech, Korean, and  
 5 Japanese. The test participants in this study used a software-based learning acquisition  
 6 method consistent with the invention (containing 360 vocabulary words) for 30 minutes  
 7 per day, 4 days per week for 4 weeks, with total software time from participants  
 8 ranging from 2-8 hours. 126 of the 360 total vocabulary words were selected as words  
 9 for pre- and post testing. All 126 words were very common words. All participants in  
 10 the study, 24 test subjects and 8 controls spent a minimum of 8 hours each week in ESL  
 11 classes. Only the test group used the software (averaging 6.67 hours over four weeks);  
 12 the control group did not. Participants in the study took the same test prior to and  
 13 following use of the software. Control subjects did not use the software, but took the  
 14 same test two times, four weeks apart. The results of the study are summarized in the  
 15 table below:

Participants	% Correct Words		Response time for test	
	Pre	Post	Pre	Post
<b>Test group (p&lt;.001)</b>	72	89	17.3 minutes	12.5 minutes
<b>Control group (p&lt;.25)</b>	82	82	13.9 minutes	12.8 minutes

16 The results of this study show that: (a) the average participant learned 64 new  
 17 vocabulary words in 6.67 hours using software in a language acquisition method  
 18 consistent with the invention, without memorization, and retained them in long-term  
 19 memory; (b) the average participant also reduced his/her processing time by 25%,  
 20 something that cannot consciously be achieved. By contrast, the control subjects did not  
 21 learn any of the common words in the test either in the classroom or their environment,  
 22 nor did they improve their processing time, despite spending a minimum of 8 hours per  
 23 week in the classroom and living in an English-speaking country. Although the results

1 reported are the average for all participants, there were 2 participants who knew the  
2 fewest words prior to using the software who learned approximately 270 and 290 words  
3 in 5.5 and 7.5 hours, respectively, based on the pre-post percentages. These subjects  
4 demonstrate the true potential for the method of the invention because they are the ones  
5 who can show the greatest improvement; in other words, students who come in  
6 knowing all 126 test words cannot demonstrate that they have learned new vocabulary.  
7 The results of this study are compelling because they demonstrate that: (1) being in the  
8 country where a language is spoken is not enough to become proficient in a second  
9 language; (2) being in a classroom, under the best of circumstances, is not enough,  
10 either; (3) people of all ages can learn new vocabulary, and retain it, at an accelerated  
11 rate with the right method; (4) people of all ages can improve the time it takes to  
12 process language with the right method; and (5) the method of the present invention  
13 leads to an improved rate of vocabulary acquisition and processing time.

#### 14 Second Case Study

15 14 students participated in a 4-weekend ESL course at a community college,  
16 using the same software-based learning acquisition method, consistent with the  
17 invention, as described in the First Case Study, hereinabove. They spent an average of  
18 28 total hours using the software, and, on average, reached lesson 12 (out of 15).  
19 Assessment was carried out with a standardized test, the Combined English Language  
20 Skills Assessment in a Reading Context (CELSA). This test contains short written  
21 dialogues and texts. Approximately once per sentence, a word is selected to appear  
22 within a multiple-choice box with three other words. Students must indicate which of  
23 the four words is the correct one within the sentence context. It is important to note that  
24 the majority of cases test the student's knowledge of grammatical words (e.g., "She  
25 thinks she [would / will / doesn't / looks] like to continue studying"). The method of the  
26 present invention does not explicitly teach grammar, so any improvement indicates that  
27 students have learned this information implicitly, just as do children learning a native  
28 language. This is, of course, a core element of the approach of the present invention.  
29 The CELSA test has two equivalent forms (so that any one student could be tested

1 twice, once on each variant). Students were tested at the onset of the course and on the  
2 next to last (seventh) day of the course, half with Form 1 first and half with Form 2  
3 first. Analysis of test scores shows the mean improvement to be 3 points (roughly one  
4 third of a “proficiency level”). Statistical analysis reveals that this difference is  
5 significant:  $t(13) = 2.3036$ ,  $p = .038$ .

#### 6 Alternative Embodiments

7 Those skilled in the art will recognize that, although the embodiments described  
8 herein generally comprise five sessions per lesson, or four or five “days” per week, a  
9 language acquisition method and/or software consistent with the invention is not  
10 constrained to any particular number of weeks, lessons, sessions, or days. It should be  
11 further recognized by those skilled in the art that some embodiments of the invention  
12 may not exactly follow the structure described in the exemplary embodiments set forth  
13 herein, e.g., five sessions per lesson. For example, one or more sessions might be  
14 omitted altogether, presented in a different sequence, combined with other sessions or  
15 other techniques for language acquisition not central to the invention, shortened, or  
16 otherwise modified. Additionally, although the words/phrases per lesson/week are  
17 typically described herein as being around or at 90, it should be recognized that such  
18 numbers are given by way of example, and not as numeric limitations on the method of  
19 the invention. Further, different graphics representing the same words/phrases may be  
20 used to depict the words/phrases at different times in the lessons (e.g., “a teacher”  
21 might be depicted sometimes as a young woman teacher with glasses sitting at a desk,  
22 sometimes as an older man standing next to a blackboard holding a piece of chalk, etc.).

23 It should be further recognized that the terms “simultaneous” and  
24 “simultaneously”, when used in the context of graphical display, display of vocabulary  
25 items, and/or playing of recordings of spoken vocabulary items, are not meant to be  
26 absolute limitations, but are merely provided as exemplary methods consistent with the  
27 invention. For example, a vocabulary item may be spoken, and then the corresponding  
28 image may be displayed after the recording is over, or an image may be shown, and  
29 then the corresponding vocabulary item spoken once the image is no longer being

1 displayed. Alternatively, the written form of a vocabulary item may be displayed, and  
2 then the recording of that item played, and only after that, the image might be shown.  
3 Thus, it is only necessary that the graphical displays of vocabulary items, displays of  
4 the written form of vocabulary items, and/or playing of recordings of spoken  
5 vocabulary items occur sufficiently proximate to one another and without intervention  
6 of other, unrelated spoken words, displayed images, or written words, so as to present a  
7 logical connection to the learner between these events (the phrase “substantially  
8 simultaneously”, as used herein, embodies this concept). The present invention does  
9 not require that pure simultaneity occur with respect to these events, although the  
10 simultaneous occurrence of these events is appreciably one means of logically  
11 connecting one or more of: a recording of a spoken vocabulary item, a display of a  
12 graphic corresponding to that vocabulary item, and/or a display of the written form of  
13 that vocabulary item.

14 The terms “rapid” and “rapidly” herein refer generally to events (i.e.  
15 substantially simultaneous playing of recording of vocabulary item and showing of  
16 graphic and/or written form of vocabulary item) that occur at a rate of approximately  
17 thirty vocabulary items per minute (or 90 words/phrases over three minutes), or  
18 alternatively, events separated by a time frame of approximately 750 milliseconds. (   
19 Those skilled in the art will recognize that embodiments of the present invention may  
20 comprise events at rates varying from the foregoing thirty events per minute (or gaps of  
21 750 milliseconds between events), and that the scope of the present invention and the  
22 terms “rapid” and “rapidly” are also intended to cover variances on the order of  
23 anywhere from +/- .0001 second to +/- 60 seconds with respect to the foregoing rates.

24 It should also be understood that the rapid/successive/simultaneous events  
25 described in the foregoing paragraphs may either occur at predetermined intervals, as  
26 described above, or else alternatively, only upon command by the learner (e.g., via a  
27 mouse click or press of a key on the keyboard) to advance to the next event (in a  
28 manner akin to a slideshow or filmstrip). In certain embodiments, the learner may be  
29 provided with a command (e.g., via a mouse click or press of a key on the keyboard)

1 for repeating the current event/vocabulary item, or one or more previous  
2 events/vocabulary items, and that the scope of the present invention is intended to cover  
3 all such embodiments. Moreover, any such automatic intervals may be user-selectable,  
4 such that the learner may specify the timing of the events, given a range of available  
5 timings (e.g., 0 to 5000 milliseconds; or 2 to 90 words/phrases a minute).

6 Those skilled in the art will appreciate that the testing portions of the  
7 embodiments described herein may be eliminated altogether from certain embodiments  
8 of the invention, and that it may be desirable, in certain methods of teaching a language  
9 consistent with the invention, to include no testing exercises in such a teaching  
10 program, as it should be understood that the testing portions do not necessarily aid in  
11 learning and may only serve to provide feedback regarding subject matter learned.

12 Moreover, it should be understood that, although the present invention is  
13 described herein as comprising both audio and visual components, certain learners will  
14 learn better using only the audio or only the visual portions of a program consistent  
15 with the invention, which is one reason why both audio and visual components are  
16 provided. However, learners having certain disabilities, e.g., blindness or deafness,  
17 may take advantage of only the visual or only the audio portions of a program  
18 consistent with the invention. Thus, teaching a "first" language, such as sign language,  
19 may be facilitated with a program consistent with the invention, wherein the audio  
20 components of the program are not employed by the learner during the teaching  
21 process.

22 The term "vocabulary item" as used herein may refer to a word (e.g., "boy"), a  
23 short word phrase (e.g., a noun and a corresponding article, such as "a boy"), another  
24 set of words (e.g., "toy truck"), a longer phrase (e.g., a verb phrase, such as "he  
25 sleeps"), a sentence (e.g., "The men are swimming."), or even non-words, such as  
26 interjections and onomatopoeias (e.g., "chirp", "buzz", "moo", "whistle", "hum",  
27 "screech", "bang", "ding dong", "boo hoo", "phooey", "whoopee", "cheers", etc.).

28 While the invention is described herein as relating to the teaching of one or  
29 more first or foreign languages, the utility of the invention as applied to language

1 acquisition is provided herein only as an example of data capable of interacting with the  
2 invention and should not be construed so as to limit the use of the invention solely in  
3 such a setting. While the discussion herein presumes the use of the invention with  
4 respect to language teaching and learning, it is anticipated that the invention may have  
5 utility in other contexts, as well. It should further be recognized that, while the present  
6 invention is described herein as relating to language acquisition, the methods described  
7 herein may also may have applicability to learning other subjects for which such an  
8 information acquisition method may be appropriate, e.g., social studies or sciences. Is  
9 this enough for a global filing? It seems to me as though the focus of all the auxiliary  
10 uses is the L2 learner, even though that's not necessarily a requirement. For example,  
11 software that could teach social studies to L2 4<sup>th</sup> graders could also teach to L1 4<sup>th</sup>  
12 graders, since the focus would be vocabulary and content. What do you think? I'd like  
13 to see more here.

14 It will be appreciated by those skilled in the art that although the functional  
15 components of the exemplary embodiments of the system of the present invention  
16 described herein may be embodied as one or more distributed computer program  
17 processes, data structures, dictionaries and/or other stored data on one or more  
18 conventional general purpose computers (e.g. IBM-compatible, Apple Macintosh,  
19 and/or RISC microprocessor-based computers), mainframes, minicomputers,  
20 conventional telecommunications (e.g. modem, DSL, satellite and/or ISDN  
21 communications), memory storage means (e.g. RAM, ROM) and storage devices (e.g.  
22 computer-readable memory, disk array, direct access storage) networked together by  
23 conventional network hardware and software (e.g. LAN/WAN network backbone  
24 systems and/or Internet), other types of computers and network resources may be used  
25 without departing from the present invention. One or more networks discussed herein  
26 may be a local area network, wide area network, internet, intranet, extranet, proprietary  
27 network, virtual private network, a TCP/IP-based network, a wireless network, a  
28 modem-based telephonic network, an interactive telephonic, videoconference, or  
29 videotext-type network accessible to learners by a combination video and telephone

1 device, or a combination of one or more of the foregoing.

2 The invention as described herein may be embodied in a standalone computer  
3 environment or in a computer residing on a server system, and input/output access to  
4 the invention may comprise appropriate hardware and software (e.g. personal and/or  
5 mainframe computers provisioned with Internet wide area network communications  
6 hardware and software (e.g. CQI-based, FTP, Netscape Navigator<sup>TM</sup> or Microsoft  
7 Internet Explorer<sup>TM</sup> HTML Internet browser software, and/or direct real-time TCP/IP  
8 interfaces accessing real-time TCP/IP sockets) for permitting human users to send and  
9 receive data, or to allow unattended execution of various operations of the invention, in  
10 real-time and/or batch-type transactions. Likewise, the system of the present invention  
11 may be a remote internet-based server accessible through conventional communications  
12 channels (e.g. conventional telecommunications, broadband communications, wireless  
13 communications) using conventional browser software (e.g. Netscape Navigator<sup>TM</sup> or  
14 Microsoft Internet Explorer<sup>TM</sup>). Thus, the present invention may be appropriately  
15 adapted to include such communication functionality and internet browsing ability, e.g.,  
16 using Java applets, active scripting, or other web-based means for transmitting  
17 graphics, text and/or software between an end user's web browser and one or more host  
18 machines. Additionally, those skilled in the art will recognize that the various  
19 components of the server system of the present invention may be remote from one  
20 another, and may further comprise appropriate communications hardware/software  
21 and/or LAN/WAN hardware and/or software to accomplish the functionality herein  
22 described.

23 Each of the functional components of the present invention may be embodied as  
24 one or more distributed computer program processes running on one or more  
25 conventional general purpose computers networked together by conventional  
26 networking hardware and software. Each of these functional components may be  
27 embodied by running distributed computer program processes (e.g., generated using  
28 "full-scale" relational database engines such as IBM DB2<sup>TM</sup>, Microsoft SQL Server<sup>TM</sup>,  
29 Sybase SQL Server<sup>TM</sup>, Oracle 7.3<sup>TM</sup>, or Oracle 8.0<sup>TM</sup> database managers, and/or a

1 JDBC interface to link to such databases) on networked computer systems (e.g.  
2 comprising mainframe and/or symmetrically or massively parallel computing systems  
3 such as the IBM SB2™ or HP 9000™ computer systems) including appropriate mass  
4 storage, networking, and other hardware and software for permitting these functional  
5 components to achieve the stated function. These computer systems may be  
6 geographically distributed and connected together via appropriate wide- and local-area  
7 network hardware and software. In one embodiment, program data may be made  
8 accessible to the user via standard SQL queries for analysis and reporting purposes.

9 Primary elements of the invention may be server-based and may reside on  
10 hardware supporting an operating system such as Microsoft Windows NT/2000™ or  
11 UNIX. Clients may include a PC that supports Apple Macintosh™, Microsoft  
12 Windows 95/98/NT/ME/2000™, a UNIX Motif workstation platform, or other  
13 computer capable of TCP/IP or other network-based interaction. In one embodiment,  
14 no software other than a web browser may be required on the client platform.

15 Alternatively, the aforesaid functional components may be embodied by a  
16 plurality of separate computer processes (e.g. generated via dBase™, Xbase™, MS  
17 Access™ or other “flat file” type database management systems or products) running  
18 on IBM-type, Intel Pentium™ or RISC microprocessor-based personal computers  
19 networked together via conventional networking hardware and software and including  
20 such other additional conventional hardware and software as may be necessary to  
21 permit these functional components to achieve the stated functionalities. In this  
22 alternative configuration, since such personal computers typically may be unable to run  
23 full-scale relational database engines of the types presented above, a non-relational flat  
24 file “table” (not shown) may be included in at least one of the networked personal  
25 computers to represent at least portions of data stored by a system according to the  
26 present invention. These personal computers may run the Unix, Microsoft Windows  
27 NT/2000™ or Windows 95/98/ME™ operating systems. The aforesaid functional  
28 components of a system according to the present invention may also comprise a  
29 combination of the above two configurations (e.g. by computer program processes

1 running on a combination of personal computers, RISC systems, mainframes,  
2 symmetric or parallel computer systems, and/or other appropriate hardware and  
3 software, networked together via appropriate wide- and local-area network hardware  
4 and software).

5 In one embodiment, source code may be written in an object-oriented  
6 programming language using relational databases. Such an embodiment may include  
7 the use of programming languages such as C++. Other programming languages which  
8 may be used in constructing a system according to the present invention include Java,  
9 HTML, Perl, UNIX shell scripting, assembly language, Fortran, Pascal, Visual Basic,  
10 QuickBasic, and Macromedia's Director™ or Shockwave™. Those skilled in the art  
11 will recognize that the present invention may be implemented in hardware, software, or  
12 a combination of hardware and software.

13 It should also be appreciated from the outset that one or more of the functional  
14 components may alternatively be constructed out of custom, dedicated electronic  
15 hardware and/or software, without departing from the present invention. Thus, the  
16 present invention is intended to cover all such alternatives, modifications, and  
17 equivalents as may be included within the spirit and broad scope of the invention as  
18 defined only by the hereinafter appended claims.

19

20 What is claimed is:

21

- 1           1.     A method for teaching a language, said method comprising:
- 2                 (a)     while displaying to a learner a graphical representation of a
- 3     vocabulary item comprising at least one word, playing to said learner an audio recording
- 4     comprising the spoken form of said vocabulary item; and
- 5                 (b)     while displaying to a learner both a graphical representation of said
- 6     vocabulary item and the written form of said vocabulary item, playing to said learner an
- 7     audio recording comprising the spoken form of said vocabulary item.
- 8           2.     A method as claimed in claim 1, said method further comprising:
- 9     repeating said steps (a) and (b) a plurality of times for said vocabulary item.
- 10          3.     A method as claimed in claim 1, said method further comprising:
- 11     repeating said steps (a) and (b) a plurality of times for each of a plurality of
- 12     vocabulary items.
- 13          4.     A method as claimed in claim 2, wherein the spoken form of said
- 14     vocabulary item of at least one said repetition of step (a) comprises the voice of a
- 15     different speaker.
- 16          5.     A method as claimed in claim 4, wherein said different speaker of the
- 17     spoken form of said vocabulary item is selected at random from a group of speakers.
- 18          6.     A method as claimed in claim 1, further comprising:
- 19     while displaying to a learner a graphical representation of a sentence or short
- 20     phrase comprising said vocabulary item combined with at least one other word, playing
- 21     to said learner an audio recording comprising the spoken form of said sentence or short
- 22     phrase.
- 23          7.     A method as claimed in claim 1, further comprising:
- 24     while displaying to a learner the written form of a sentence or short phrase and a
- 25     graphical representation of a sentence or short phrase comprising said vocabulary item
- 26     combined with at least one other word, playing to said learner an audio recording
- 27     comprising the spoken form of said sentence or short phrase.
- 28          8.     A method as claimed in claim 1, wherein the native language of the
- 29     learner is not employed at any time during the performance of the steps of said method.

1           9.     A method as claimed in claim 1, wherein the language being taught is the  
2 exclusive language used during the performance of the steps of said method.

3           10.    A method as claimed in claim 1, wherein the native language of the  
4 learner is not employed at any time during the performance of the steps of said method,  
5 with the exception of providing instructions for the learner in the native language of said  
6 learner that said learner must follow in order to learn using said method.

7           11.    A method as claimed in claim 1, wherein the language being taught is the  
8 exclusive language used during the performance of the steps of said method, with the  
9 exception of providing instructions for the learner in the native language of said learner  
10 that said learner must follow in order to learn using said method.

11          12.    A method for teaching a language, said method comprising:  
12            successively presenting each of a set of words or phrases to a learner by having  
13 the learner hear said words or phrases spoken while viewing corresponding graphical  
14 icons visually representing said words or phrases;

15            successively presenting each of said set of words or phrases to said learner by  
16 having said learner hear said words or phrases spoken while viewing both corresponding  
17 graphical icons visually representing said words or phrases and the written form of said  
18 words or phrases; and

19            successively presenting each of a set of sentences and/or short phrases to said  
20 learner, each said sentence and/or short phrase comprising at least one word or phrase of  
21 said set of words or phrases, by having said learner hear said sentences and/or short  
22 phrases spoken while viewing corresponding graphical icons visually representing said  
23 sentences and/or short phrases.

24          13.    A method as claimed in claim 12, wherein said learner controls the timing  
25 of the presentation of at least one said word or phrase in at least one said presenting step.

26          14.    A method as claimed in claim 12, wherein the presentation of at least two  
27 said words or phrases in at least one said presenting step occurs at a predetermined  
28 interval with respect to one another.

29          15.    A method as claimed in claim 14, wherein said interval is about 750

1 milliseconds between the completion of the presentation of one said word or phrase and  
2 the beginning of the subsequent said word or phrase.

3 16. A method as claimed in claim 14, wherein said interval is about 30 words  
4 or phrases per minute.

5 17. A method as claimed in claim 13, wherein said learner controls said  
6 timing by pressing a key on a computer keyboard or a button on a mouse to begin the  
7 presentation of at least one said word or phrase in at least one said presenting step.

8 18. A method as claimed in claim 12, wherein said learner is presented with a  
9 selectable option to repeat the presentation of at least one said word or phrase in at least  
10 one said presenting step.

11 19. A system for teaching a language, said system comprising:  
12 a computer system, said computer system having a screen, an audio output  
13 device, and at least one memory device;

14 a set of vocabulary items stored in said at least one memory device, each  
15 said vocabulary item comprising at least one word;

16 a first set of machine-readable instructions stored in said at least one  
17 memory device, said first set of machine-readable instructions for displaying on said  
18 screen a graphical representation of one said vocabulary item, and substantially  
19 simultaneously playing via said audio output device an audio recording comprising the  
20 spoken form of said vocabulary item; and

21 a second set of machine-readable instructions stored in said at least one  
22 memory device, said second set of machine-readable instructions for displaying on said  
23 screen a graphical representation of one said vocabulary item and the written form of said  
24 vocabulary item, and substantially simultaneously playing via said audio output device an  
25 audio recording comprising the spoken form of said vocabulary item.

26 20. A system for teaching a language, said system comprising:  
27 a computer system, said computer system having a screen, an audio output  
28 device, and at least one memory device;

29 stored data comprising a set of vocabulary items stored in said at least one

1 memory device, a plurality of audio files, and a plurality of graphics files, each said  
2 vocabulary item comprising at least one word, at least one said audio file corresponding  
3 to and comprising a spoken representation of each said vocabulary item, at least one said  
4 graphics file corresponding to and comprising a visual representation of each said  
5 vocabulary item;

6 a first set of machine-readable instructions stored in said at least one  
7 memory device, said first set of machine-readable instructions for selecting one said  
8 vocabulary item from said set of vocabulary items, for reading the written form of said  
9 vocabulary item and/or at least one said corresponding audio file and/or at least one said  
10 corresponding graphics file from said at least one memory device;

11 a second set of machine-readable instructions stored in said at least one  
12 memory device, said second set of machine-readable instructions for displaying on said  
13 screen said graphics file corresponding to said selected vocabulary item, and substantially  
14 simultaneously playing via said audio output device said audio file corresponding to said  
15 selected vocabulary item; and

16 a third set of machine-readable instructions stored in said at least one memory  
17 device, said third set of machine-readable instructions for displaying on said screen the  
18 written form of said vocabulary item and said graphics file corresponding to said selected  
19 vocabulary item, and substantially simultaneously playing via said audio output device  
20 said audio file corresponding to said selected vocabulary item.

21 21. A system as claimed in claim 20, said system further comprising:

22 a fourth set of machine-readable instructions stored in said at least one memory  
23 device, said fourth set of machine-readable instructions for executing said second and/or  
24 third set of machine-readable instructions a plurality of times for said vocabulary item.

25 22. A system as claimed in claim 21, said system further comprising:

26 a fifth set of machine-readable instructions stored in said at least one memory  
27 device, said fifth set of machine-readable instructions for executing said first, second,  
28 third, and fourth sets of machine-readable instructions for each said vocabulary item of  
29 said set.

1           23.    A system as claimed in claim 20, wherein said learner controls the timing  
2 of the displaying and playing in said second and/or third set of machine-readable  
3 instructions.

4           24.    A system as claimed in claim 20, wherein the displaying and playing of at  
5 least two said vocabulary items in said second and/or third set of machine-readable  
6 instructions occurs at a predetermined interval with respect to one another.

7           25.    A system as claimed in claim 24, wherein said interval is about 750  
8 milliseconds between the completion of the displaying and playing of one said  
9 vocabulary item and the beginning of the displaying and playing of the subsequent said  
10 vocabulary item.

11          26.    A system as claimed in claim 24, wherein said interval is the displaying  
12 and playing of about 30 said sets of vocabulary items per minute.

13          27.    A system as claimed in claim 23, further comprising a trigger set of  
14 machine-readable instructions stored in said at least one memory device, said trigger set  
15 of machine-readable instructions for permitting said learner to control said timing by  
16 pressing a key on a computer keyboard or a button on a mouse to begin the execution of  
17 at least one of said first, second, and third sets of machine-readable instructions with  
18 respect to at least one said vocabulary item.

19          28.    A system as claimed in claim 20, further comprising a repetition set of  
20 machine-readable instructions stored in said at least one memory device, said repetition  
21 set of machine-readable instructions for permitting said learner to repeat the execution of  
22 at least one of said first, second, and third sets of machine-readable instructions with  
23 respect to at least one said vocabulary item.

24          29.    A system as claimed in claim 21, wherein said audio files comprise  
25 recordings of each said vocabulary item spoken by a plurality of speakers; and

26                wherein said fourth set of machine-readable instructions further selects said  
27 recordings of two or more of said plurality of speakers for said vocabulary item over the  
28 course of said execution said plurality of times.

29          30.    A system as claimed in claim 29, wherein said selected speaker is selected

1 at random from said plurality of speakers.

2 31. A system as claimed in claim 20, wherein said stored data further  
3 comprises a set of combination vocabulary items, combination audio files, and  
4 combination graphics files stored in said at least one memory device, each said  
5 combination vocabulary item comprising at least one word from said set of vocabulary  
6 items and at least one other word, at least one said combination audio file corresponding  
7 to and comprising a spoken representation of each said combination vocabulary item, and  
8 at least one said combination graphics file corresponding to and comprising a visual  
9 representation of each said combination vocabulary item.

10 32. A system as claimed in claim 31, further comprising a combination set of  
11 machine-readable instructions stored in said at least one memory device, said  
12 combination set of machine-readable instructions for selecting one said combination  
13 vocabulary item from said set of combination vocabulary items and reading the written  
14 form of said combination vocabulary item and/or one said corresponding combination  
15 graphics file and/or one said corresponding combination audio file from said at least one  
16 memory device, and for displaying on said screen the written form of said combination  
17 vocabulary item and/or said combination graphics file corresponding to said selected  
18 combination vocabulary item, and substantially simultaneously playing via said audio  
19 output device said combination audio file corresponding to said selected combination  
20 vocabulary item.

21 33. A system as claimed in claim 20, wherein the native language of the  
22 learner is not employed at any time during the execution of any said set of machine-  
23 readable instructions.

24 34. A system as claimed in claim 20, wherein the language being taught is the  
25 exclusive language used at all times during the execution of said sets of machine-readable  
26 instructions.

27 35. A system as claimed in claim 20, wherein the native language of the  
28 learner is not employed at any time during the execution of any said set of machine-  
29 readable instructions, except with respect to instructions for the learner in the native

1 language of said learner that said learner must follow in order to use said system.

2 36. A system as claimed in claim 20, wherein the language being taught is the  
3 exclusive language used at all times during the execution of said sets of machine-readable  
4 instructions, except with respect to instructions for the learner in the native language of  
5 said learner that said learner must follow in order to use said system.

6 37. A system for teaching a language, said system comprising:

7 a computer system, said computer system having a screen, an audio output device,  
8 and at least one memory device;

9 stored data comprising a set of vocabulary items stored in said at least one  
10 memory device, a plurality of audio files, and a plurality of graphics files, each said  
11 vocabulary item comprising at least one word, a plurality of said audio files  
12 corresponding to and comprising spoken representations of each said vocabulary item  
13 spoken by a plurality of speakers, at least one said graphics file corresponding to and  
14 comprising a visual representation of each said vocabulary item;

15 a first set of machine-readable instructions stored in said at least one memory  
16 device, said first set of machine-readable instructions for selecting one said vocabulary  
17 item from said set of vocabulary items and reading the written form of said item and/or  
18 one said corresponding graphics file and/or one said corresponding audio file from said at  
19 least one memory device;

20 a second set of machine-readable instructions stored in said at least one memory  
21 device, said second set of machine-readable instructions for displaying on said screen  
22 said graphics file corresponding to said selected vocabulary item, and substantially  
23 simultaneously playing via said audio output device said audio file corresponding to said  
24 selected vocabulary item;

25 a third set of machine-readable instructions stored in said at least one memory  
26 device, said third set of machine-readable instructions for displaying on said screen the  
27 written form of said vocabulary item and said graphics file corresponding to said selected  
28 vocabulary item, and substantially simultaneously playing via said audio output device  
29 said audio file corresponding to said selected vocabulary item;

1 a fourth set of machine-readable instructions stored in said at least one memory  
2 device, said fourth set of machine-readable instructions for executing said second and/or  
3 third set of machine-readable instructions a plurality of times for said vocabulary item,  
4 wherein said audio files corresponding to and comprising spoken representations of each  
5 said vocabulary item spoken by different speakers, selected from said plurality of  
6 different speakers at random, are played over the course of said execution said plurality  
7 of times; and

8 a fifth set of machine-readable instructions stored in said at least one memory  
9 device, said fifth set of machine-readable instructions for executing said first, second,  
10 third, and fourth sets of machine-readable instructions for each said vocabulary item of  
11 said set.

12 38. A system as claimed in claim 37, wherein said learner controls the timing  
13 of the displaying and playing in said second and/or third set of machine-readable  
14 instructions.

15 39. A system as claimed in claim 37, wherein the displaying and playing of at  
16 least two said vocabulary items in said second and/or third set of machine-readable  
17 instructions occurs at a predetermined interval with respect to one another.

18 40. A system as claimed in claim 39, wherein said interval is about 750  
19 milliseconds between the completion of the displaying and playing of one said  
20 vocabulary item and the beginning of the displaying and playing of the subsequent said  
21 vocabulary item.

22 41. A system as claimed in claim 39, wherein said interval is the displaying  
23 and playing of about 30 said sets of vocabulary items per minute.

24 42. A system as claimed in claim 38, further comprising a trigger set of  
25 machine-readable instructions stored in said at least one memory device, said trigger set  
26 of machine-readable instructions for permitting said learner to control said timing by  
27 pressing a key on a computer keyboard or a button on a mouse to begin the execution of  
28 at least one of said first, second, and third sets of machine-readable instructions with  
29 respect to at least one said vocabulary item.

1           43.    A system as claimed in claim 37, further comprising a repetition set of  
2 machine-readable instructions stored in said at least one memory device, said repetition  
3 set of machine-readable instructions for permitting said learner to repeat the execution of  
4 at least one of said first, second, and third sets of machine-readable instructions with  
5 respect to at least one said vocabulary item.

6           44.    A system as claimed in claim 37, wherein said stored data further  
7 comprises a set of combination vocabulary items, combination audio files, and  
8 combination graphics files stored in said at least one memory device, each said  
9 combination vocabulary item comprising at least one word from said set of vocabulary  
10 items and at least one other word, at least one said combination audio file corresponding  
11 to and comprising a spoken representation of each said combination vocabulary item, and  
12 at least one said combination graphics file corresponding to and comprising a visual  
13 representation of each said combination vocabulary item; and

14           wherein said system further comprises a combination set of machine-readable  
15 instructions stored in said at least one memory device, said combination set of machine-  
16 readable instructions for selecting one said combination vocabulary item from said set of  
17 combination vocabulary items and reading the written form of said combination  
18 vocabulary item and/or one said corresponding combination audio file and/or one said  
19 corresponding combination graphics file from said at least one memory device, and for  
20 displaying on said screen the written form of said combination vocabulary item and/or  
21 said combination graphics file corresponding to said selected combination vocabulary  
22 item, and substantially simultaneously playing via said audio output device said  
23 combination audio file corresponding to said selected combination vocabulary item.

24           45.    A system as claimed in claim 37, wherein the native language of the  
25 learner is not employed at any time during the execution of any said set of machine-  
26 readable instructions, or wherein the language being taught is the exclusive language  
27 used at all times during the execution of said sets of machine-readable instructions.

28           46.    A system as claimed in claim 37, wherein the native language of the  
29 learner is not employed at any time during the execution of any said set of machine-

1 readable instructions, and wherein the language being taught is the exclusive language  
2 used at all times during the execution of said sets of machine-readable instructions;  
3 except with respect to instructions for the learner in the native language of said  
4 learner that said learner must follow in order to use said system.

5 47. A method for teaching a language, said method comprising:  
6 presenting, in rapid succession, each of a set of words or phrases to a learner by  
7 playing for said learner audio recordings of said words or phrases, while substantially  
8 simultaneously showing to said learner corresponding graphical icons visually  
9 representing said words or phrases;

10 wherein said presenting step is performed at least once without showing said  
11 learner the written form of said words or phrases, and at least once with the added step of  
12 showing to said learner the written form of said words or phrases substantially  
13 simultaneously with the playing of the corresponding audio recordings;

14 wherein the native language of said learner is not employed at any time during the  
15 performance of said method, and wherein the language being taught is the exclusive  
16 language used during the performance of the steps of said method.

17 48. A method for teaching a language, said method comprising:  
18 presenting, in rapid succession, each of a set of words or phrases to a learner by  
19 playing for a learner audio recordings of said words or phrases, while substantially  
20 simultaneously showing to said learner corresponding graphical icons visually  
21 representing said words or phrases;

22 wherein said presenting step is performed at least once without showing said  
23 learner the written form of said words or phrases, and at least once with the added step of  
24 showing to said learner the written form of said words or phrases substantially  
25 simultaneously with the playing of the corresponding audio recordings;

26 wherein the native language of said learner is not employed at any time during the  
27 performance of said method, and wherein the language being taught is the exclusive  
28 language used during the performance of the steps of said method, with the exception of  
29 providing instructions for the learner in the native language of said learner that said

1 learner must follow in order to learn using said method.

2 49. A method for teaching a language, said method comprising:  
3 presenting, in rapid succession, each of a set of words or phrases to a learner by  
4 playing for a learner audio recordings of said words or phrases, while substantially  
5 simultaneously showing to said learner, by random selection, either corresponding  
6 graphical icons visually representing said words or phrases alone, or corresponding  
7 graphical icons visually representing said words or phrases together with the written form  
8 of said words or phrases;

9 wherein the native language of said learner is not employed at any time during the  
10 performance of said method, and wherein the language being taught is the exclusive  
11 language used during the performance of the steps of said method, with the exception of  
12 providing instructions for the learner in the native language of said learner that said  
13 learner must follow in order to learn using said method.

14 50. A method as claimed in claim 47, further comprising:  
15 presenting, in rapid succession, each of a set of sentences and/or short phrases to  
16 said learner, each said sentence and/or short phrase comprising at least one word or  
17 phrase of said set of words or phrases, by having said learner hear said sentences and/or  
18 short phrases spoken while viewing corresponding graphical icons visually representing  
19 said sentences and/or short phrases.

20 51. A method as claimed in claim 48, further comprising:  
21 presenting, in rapid succession, each of a set of sentences and/or short phrases to  
22 said learner, each said sentence and/or short phrase comprising at least one word or  
23 phrase of said set of words or phrases, by having said learner hear said sentences and/or  
24 short phrases spoken while viewing corresponding graphical icons visually representing  
25 said sentences and/or short phrases.

26 52. A method as claimed in claim 47, wherein said set of words or phrases  
27 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
28 displayed at a rate of about 750 milliseconds apart.

29 53. A method as claimed in claim 48, wherein said set of words or phrases

1 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
2 displayed at a rate of about 750 milliseconds apart.

3           54. A method as claimed in claim 49, wherein said set of words or phrases  
4 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
5 displayed at a rate of about 750 milliseconds apart.

6           55. A method as claimed in claim 47, wherein said set of words or phrases  
7 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
8 displayed at a rate of about 30 words or phrases per minute.

9           56. A method as claimed in claim 48, wherein said set of words or phrases  
10 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
11 displayed at a rate of about 30 words or phrases per minute.

12           57. A method as claimed in claim 49, wherein said set of words or phrases  
13 comprises about 90 words or phrases, and wherein said words or phrases are spoken and  
14 displayed at a rate of about 30 words or phrases per minute.

15           58. A method as claimed in claim 47, further comprising:  
16 while displaying to said a learner a graphical representation of a sentence or short  
17 phrase comprising one of said words or phrases combined with at least one other word,  
18 playing to said learner an audio recording comprising the spoken form of said sentence or  
19 short phrase.

20           59. A method as claimed in claim 48, further comprising:  
21 while displaying to said a learner a graphical representation of a sentence or short  
22 phrase comprising one of said words or phrases combined with at least one other word,  
23 playing to said learner an audio recording comprising the spoken form of said sentence or  
24 short phrase.

25           60. A method for teaching a language, said method comprising:  
26 while displaying to a learner a graphical representation of a vocabulary item  
27 comprising at least one word, playing to said learner an audio recording comprising the  
28 spoken form of said vocabulary item;

1 while displaying to a learner both a graphical representation of said vocabulary  
2 item and the written form of said vocabulary item, playing to said learner an audio  
3 recording comprising the spoken form of said vocabulary item; and

4 while displaying to a learner at least a graphical representation of a sentence or  
5 short phrase comprising said vocabulary item combined with at least one other word,  
6 playing to said learner an audio recording comprising the spoken form of said sentence or  
7 short phrase.

8 61. A system for teaching a language, said system comprising:

9 a computer system, said computer system having a screen, an audio output device,  
10 and at least one memory device;

11 stored data comprising a set of vocabulary items stored in said at least one  
12 memory device, a plurality of audio files, and a plurality of graphics files, each said  
13 vocabulary item comprising at least one word, at least one said audio file corresponding  
14 to and comprising a spoken representation of each said vocabulary item, at least one said  
15 graphics file corresponding to and comprising a visual representation of each said  
16 vocabulary item;

17 said stored data further comprising a set of combination vocabulary items,  
18 combination audio files, and combination graphics files stored in said at least one  
19 memory device, each said combination vocabulary item comprising at least one word  
20 from said set of vocabulary items and at least one other word, at least one said  
21 combination audio file corresponding to and comprising a spoken representation of each  
22 said combination vocabulary item, and at least one said combination graphics file  
23 corresponding to and comprising a visual representation of each said combination  
24 vocabulary item;

25 a first set of machine-readable instructions stored in said at least one memory  
26 device, said first set of machine-readable instructions for selecting one said vocabulary  
27 item from said set of vocabulary items, for reading the written form of said vocabulary  
28 item and/or at least one said corresponding audio file and/or at least one said  
29 corresponding graphics file from said at least one memory device;

1 a second set of machine-readable instructions stored in said at least one memory  
2 device, said second set of machine-readable instructions for displaying on said screen  
3 said graphics file corresponding to said selected vocabulary item, and substantially  
4 simultaneously playing via said audio output device said audio file corresponding to said  
5 selected vocabulary item;

6 a third set of machine-readable instructions stored in said at least one memory  
7 device, said third set of machine-readable instructions for displaying on said screen the  
8 written form of said vocabulary item and said graphics file corresponding to said selected  
9 vocabulary item, and substantially simultaneously playing via said audio output device  
10 said audio file corresponding to said selected vocabulary item; and

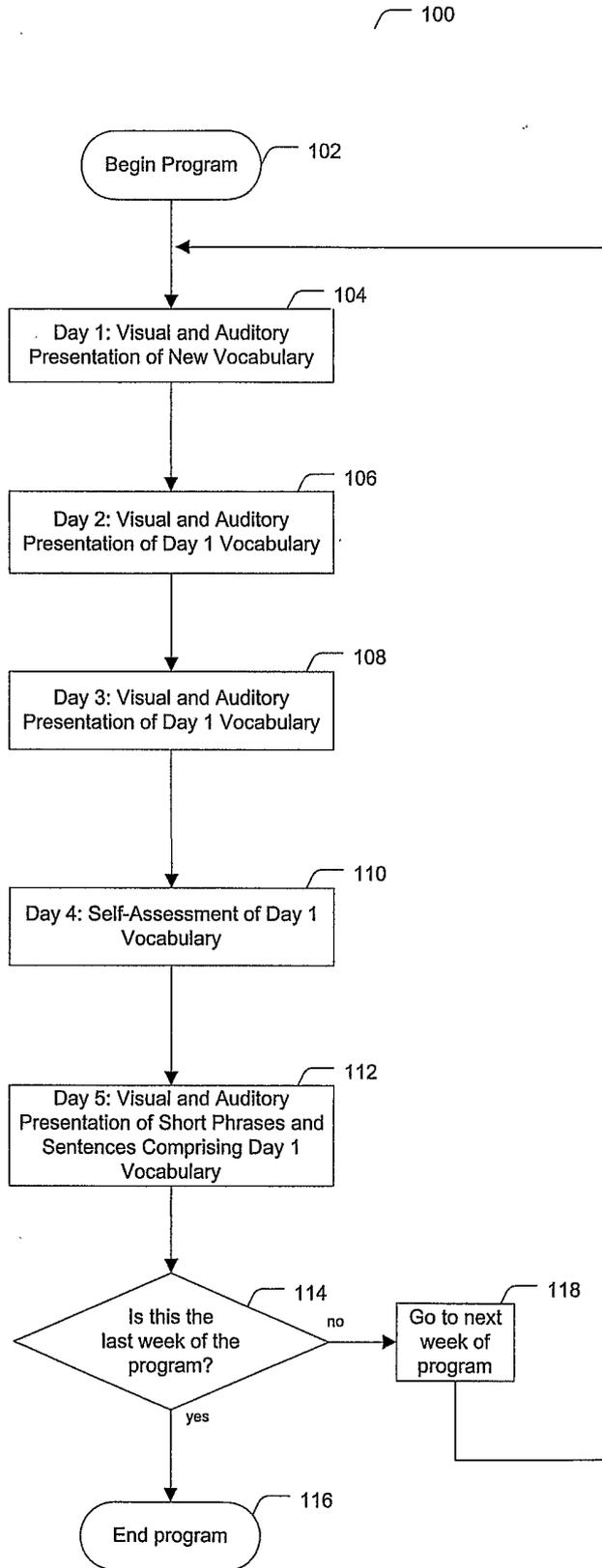
11 a combination set of machine-readable instructions stored in said at least one  
12 memory device, said combination set of machine-readable instructions for selecting one  
13 said combination vocabulary item from said set of combination vocabulary items and  
14 reading the written form of said combination vocabulary item and/or one said  
15 corresponding combination graphics file and/or one said corresponding combination  
16 audio file from said at least one memory device, and for displaying on said screen the  
17 written form of said combination vocabulary item and/or said combination graphics file  
18 corresponding to said selected combination vocabulary item, and substantially  
19 simultaneously playing via said audio output device said combination audio file  
20 corresponding to said selected combination vocabulary item.

21 62. A method for teaching a language, said method comprising:  
22 presenting, in rapid succession, each of a set of words or phrases to a learner by  
23 playing for said learner audio recordings of said words or phrases, while substantially  
24 simultaneously showing to said learner corresponding graphical icons visually  
25 representing said words or phrases; and

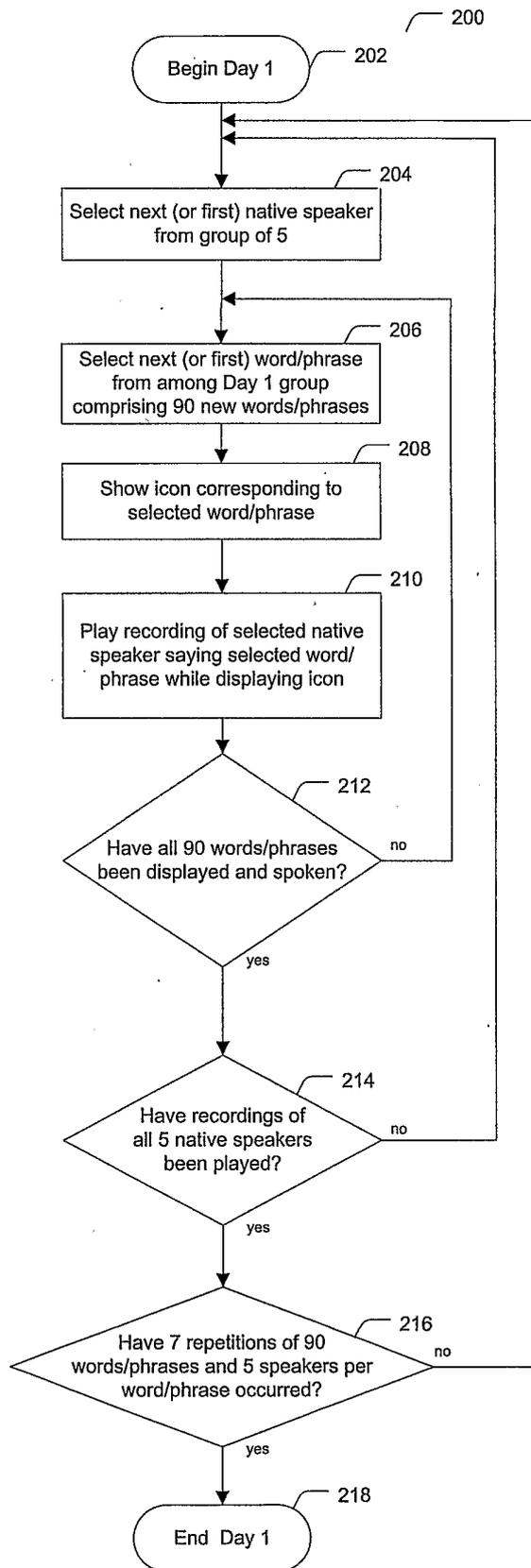
26 presenting, in rapid succession, each of a set of sentences and/or short phrases to  
27 said learner, each said sentence and/or short phrase comprising at least one word or  
28 phrase of said set of words or phrases, by having said learner hear said sentences and/or  
29 short phrases spoken while viewing corresponding graphical icons visually representing

1 said sentences and/or short phrases;  
2 wherein at least one said presenting step is performed at least once without  
3 showing said learner the written form of said corresponding word, phrase, sentence, or  
4 short phrase, and at least once with the added step of showing to said learner the written  
5 form of said corresponding word, phrase, sentence, or short phrase, substantially  
6 simultaneously with the playing of the corresponding audio recordings.

**Figure 1**



**Figure 2**



**Figure 3**

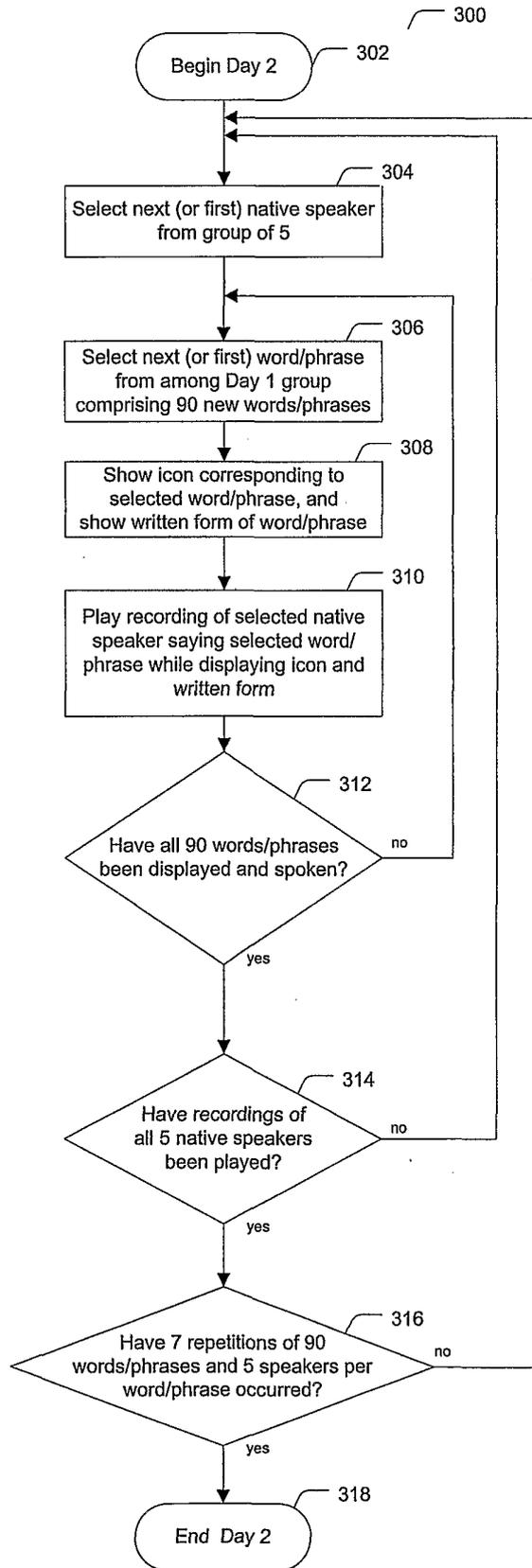


Figure 4

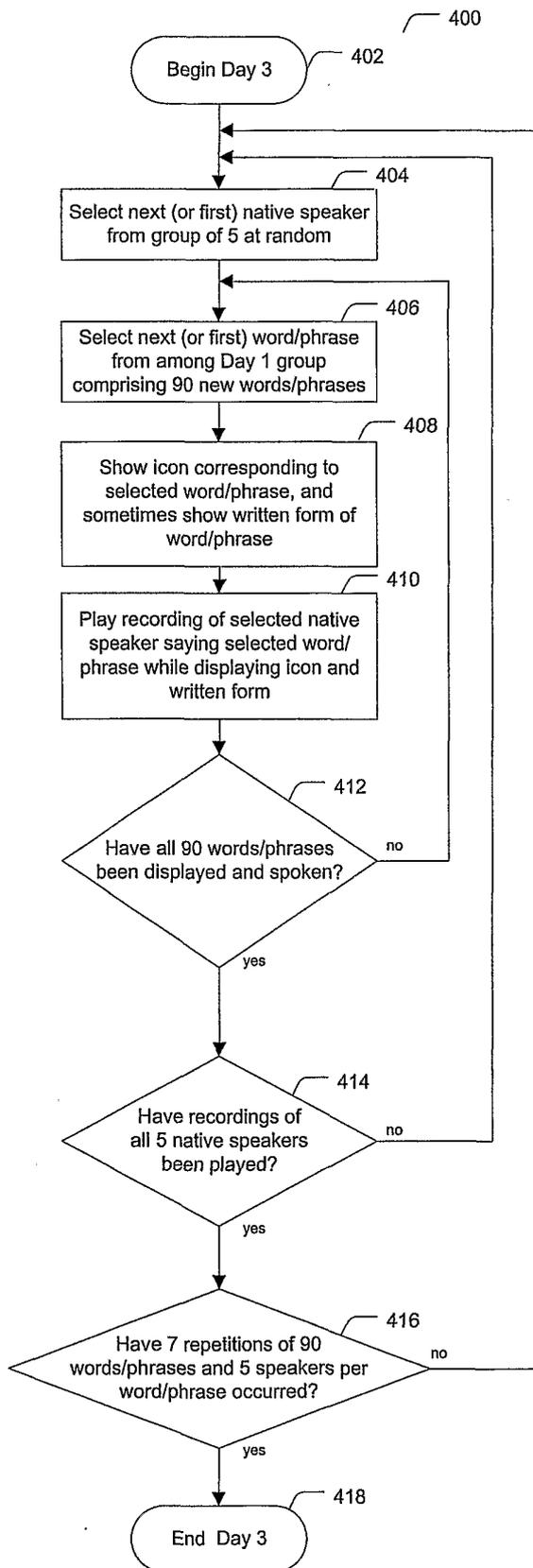


Figure 5

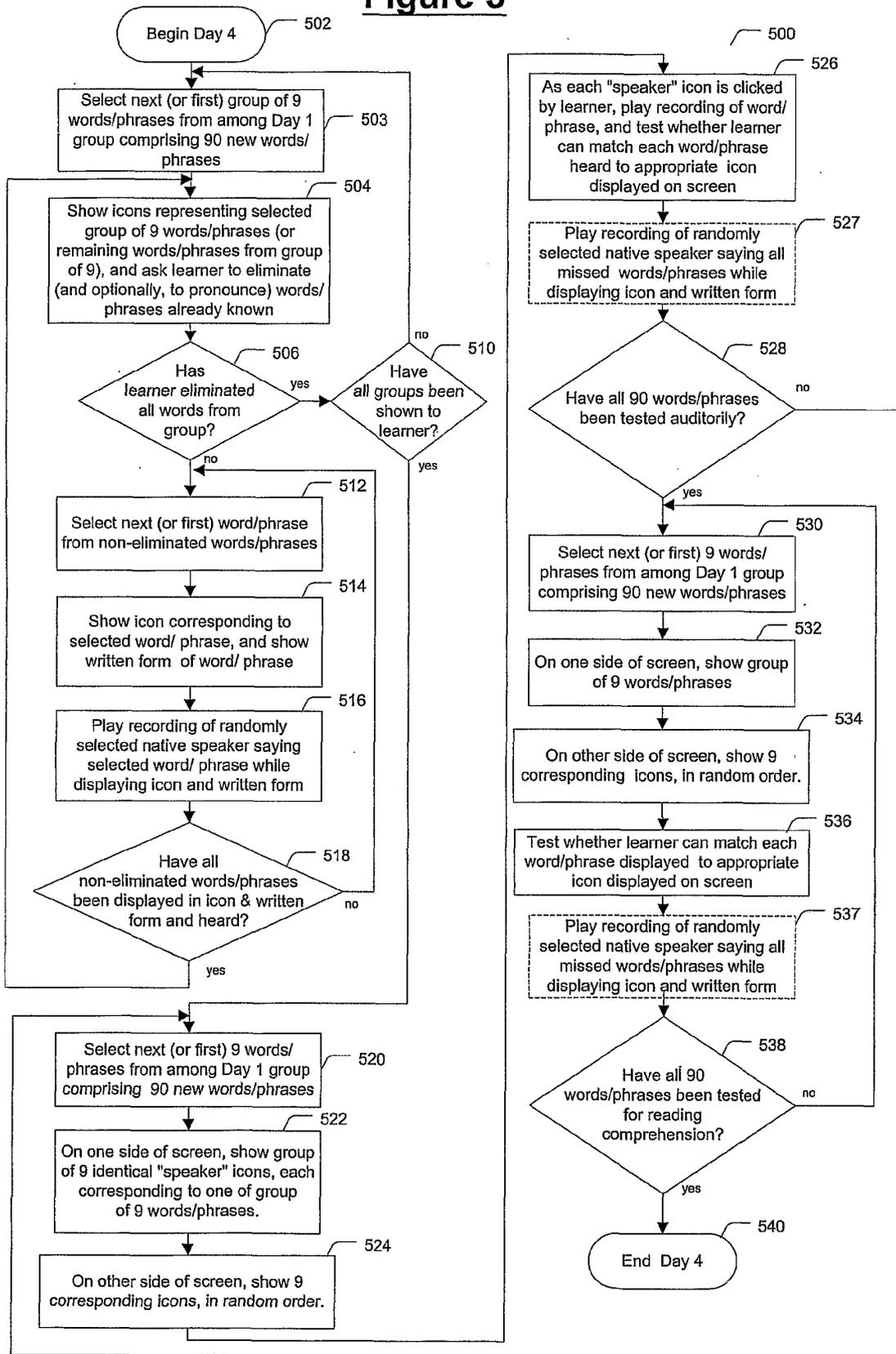
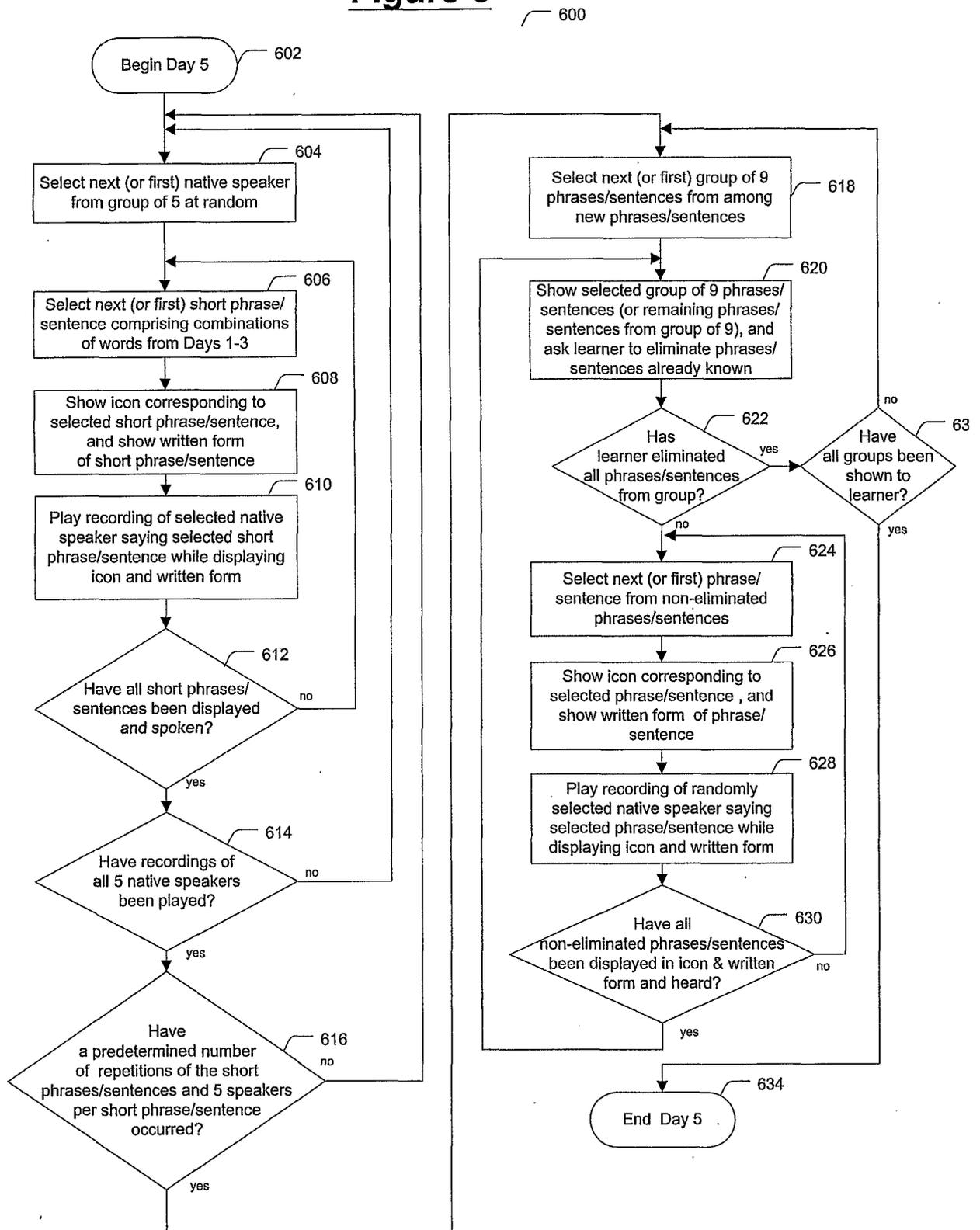
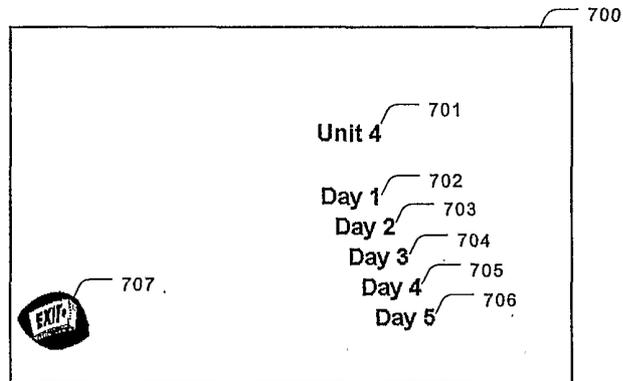


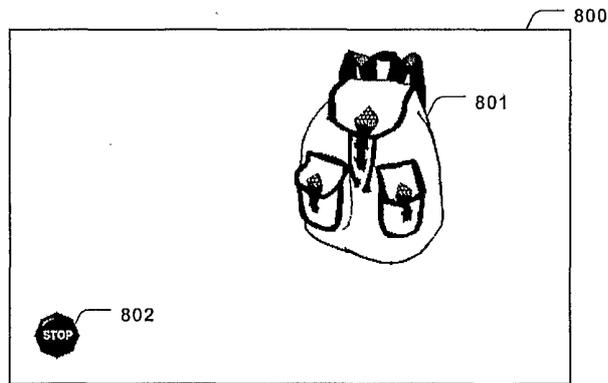
Figure 6



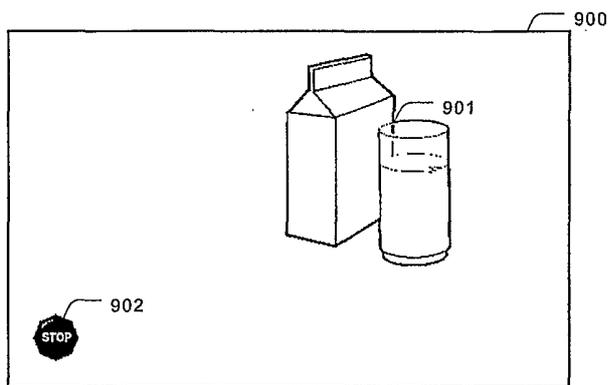
**FIGURE 7**



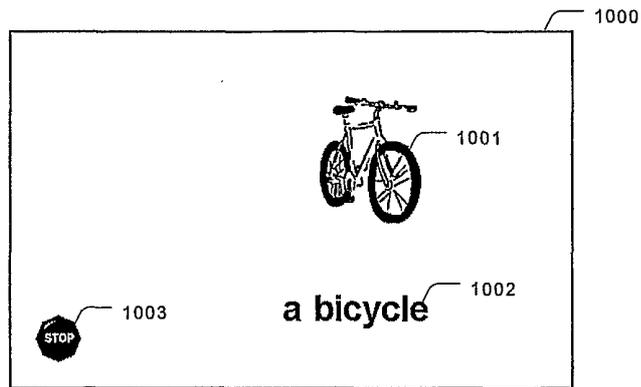
**FIGURE 8**



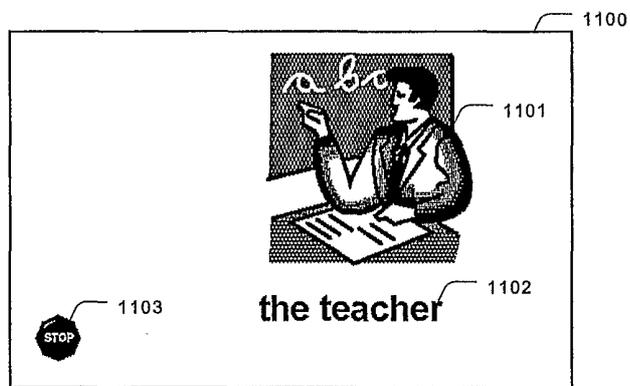
**FIGURE 9**



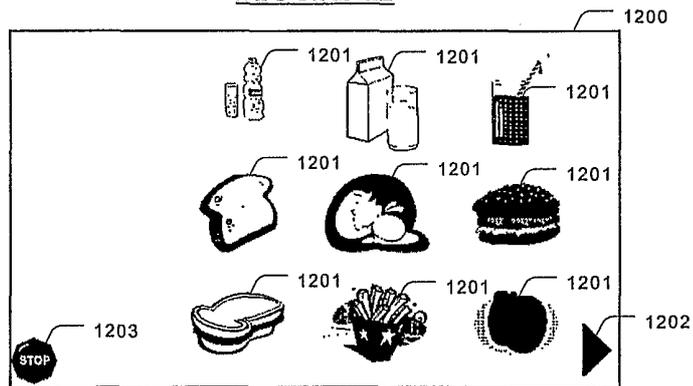
**FIGURE 10**



**FIGURE 11**

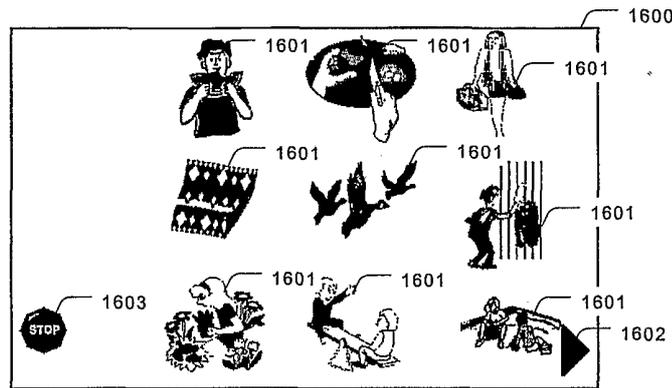


**FIGURE 12**





**FIGURE 16**



**FIGURE 17**

1. 0	24. book, a	47. football, a	70. sandwich, a
2. <u>1</u>	25. boy, a	48. french fries	71. school bus, a
3. <u>2</u>	26. <u>brown</u>	49. girl, a	72. shirt, a
4. <u>3</u>	27. bus, a	50. glass, a	73. shoes
5. <u>4</u>	28. car, a	51. golf club, a	74. shorts
6. <u>5</u>	29. <u>cat</u> , a	52. green	75. <u>skating</u>
7. 6	30. <u>chair</u> , a	53. hamburger, a	76. skirt, a
8. 7	31. clouds	54. <u>hand</u> , a	77. <u>sleeping</u>
9. 8	32. colors	55. head, a	78. snake, a
10. <u>9</u>	33. computer, a	56. jacket, a	79. <u>soccer ball</u> , a
11. animals	34. desk, a	57. jeans	80. socks
12. <u>apple</u> , an	35. <u>dog</u> , a	58. lamp, a	81. <u>swimming</u>
13. <u>arm</u> , an	36. door, a	59. leg, a	82. teacher, a
14. backpack, a	37. dress, a	60. <u>motorcycle</u> , a	83. television, a
15. baseball, a	38. ear, an	61. nose, a	84. tennis racket, a
16. basketball, a	39. <u>eating</u>	62. orange (color)	85. tree, a
17. bed, a	40. egg, an	63. <u>pencil</u> , a	86. truck, a
18. bicycle, a	41. <u>eye</u> , an	64. <u>pillow</u> , a	87. <u>walking</u>
19. bird, a	42. <u>feet</u>	65. <u>playing</u>	88. <u>white</u>
20. black	43. finger, a	66. <u>rabbit</u> , a	89. window, a
21. blanket, a	44. <u>fire truck</u> , a	67. <u>reading</u>	90. <u>yellow</u>
22. <u>blouse</u> , a	45. <u>flower</u> , a	68. <u>red</u>	
23. <u>blue</u>	46. foot, a	69. <u>running</u>	

**FIGURE 18**

1801

1802

1800

GRAMMATICAL STRUCTURE	SENTENCES/SHORT PHRASES
Noun phrases: singular; indefinite article	a blue eye a brown football a red apple a white rabbit a yellow flower
Noun phrases: plural	blue eyes brown footballs red apples white rabbits yellow flowers
Noun phrases: count nouns	five flowers four cats one apple nine eggs two feet
Noun phrases: count nouns + adjectives	three red apples four brown footballs five yellow flowers a black and white soccer ball one yellow flower
Sentences: definite article	The football is brown. The soccer balls are black and white. The fire truck is red. The eggs are white. The flowers are yellow.
Sentences: it is / it's	It is a dog. It is a cat. It's a pencil. It's a motorcycle. It's a blouse.
Sentences: this is / these are	This is a pillow This is a chair. This is an egg. These are pillows. These are chairs.
Sentences: he/she has; they have	He has two feet. She has two hands. He has brown eyes. They have blue eyes. They have two arms.
Sentences: Third person singular	She is eating. He is swimming. The boy is running. The girl is reading. The girl is playing.
Sentences: Third person plural	The boys are sleeping. They are skating. The boy and girl are running. They are eating. They are walking.

FIGURE 19

LESSON No.	TOPICS/VOCABULARY USED	VERB TENSE	GRAMMATICAL STRUCTURES TAUGHT	DIALOGUES USED	DESCRIPTIONS USED
1	<ul style="list-style-type: none"> <li>•animals</li> <li>•body parts</li> <li>•clothing</li> <li>•colors</li> <li>•food</li> <li>•sports</li> <li>•transportation</li> </ul>	<ul style="list-style-type: none"> <li>•present</li> </ul>	<ul style="list-style-type: none"> <li>•definite/indefinite article</li> <li>•noun phrases</li> <li>•it is/it's</li> <li>•this is/these are</li> <li>•he/she has/ they have</li> <li>•regular noun plurals</li> <li>•to be: 3rd person sing/pl</li> </ul>		
2	<ul style="list-style-type: none"> <li>•activities</li> <li>•body parts</li> <li>•clothing</li> <li>•household items</li> <li>•numbers</li> <li>•occupations</li> <li>•school</li> </ul>	<ul style="list-style-type: none"> <li>•present progressive</li> </ul>	<ul style="list-style-type: none"> <li>•subject pronouns</li> <li>•1st / 2nd person</li> <li>•affirmative/negative statements</li> <li>•yes/no questions and short responses</li> <li>•to be</li> <li>•to have</li> </ul>	<ul style="list-style-type: none"> <li>•introduction</li> </ul>	<ul style="list-style-type: none"> <li>•simple descriptions</li> </ul>
3	<ul style="list-style-type: none"> <li>•food</li> <li>•home</li> <li>•numbers</li> <li>•size</li> <li>•classroom/students</li> </ul>	<ul style="list-style-type: none"> <li>•present progressive</li> </ul>	<ul style="list-style-type: none"> <li>•adjectives</li> <li>•possessive</li> <li>•adjectives/pronouns</li> <li>•wh questions and responses</li> </ul>	<ul style="list-style-type: none"> <li>•counting objects</li> </ul>	<ul style="list-style-type: none"> <li>•describing physical traits</li> </ul>
4	<ul style="list-style-type: none"> <li>•outdoor activities</li> <li>•weather</li> </ul>	<ul style="list-style-type: none"> <li>•present progressive</li> </ul>	<ul style="list-style-type: none"> <li>•adjectives</li> <li>•possessive adjectives</li> <li>•yes/no questions</li> <li>•object pronouns</li> </ul>	<ul style="list-style-type: none"> <li>•interview: "do you know how to?" "can you...?"</li> </ul>	<ul style="list-style-type: none"> <li>•describing activities and weather</li> <li>•describing talents and abilities</li> </ul>
5	<ul style="list-style-type: none"> <li>•countries/cities</li> <li>•daily routine</li> <li>•days of week</li> <li>•geography</li> <li>•nationality</li> <li>•numbers</li> </ul>	<ul style="list-style-type: none"> <li>•present</li> </ul>	<ul style="list-style-type: none"> <li>•affirmative/negative statements</li> <li>•adverbs</li> <li>•possessive pronouns</li> <li>•verbs + gerund</li> <li>•verbs + infinitive</li> </ul>	<ul style="list-style-type: none"> <li>•interview: "do you like...?"</li> </ul>	<ul style="list-style-type: none"> <li>•describing daily routine and personal taste (likes and dislikes)</li> <li>•good vs. bad</li> </ul>
6	<ul style="list-style-type: none"> <li>•family</li> <li>•holidays</li> <li>•months of year</li> <li>•numbers</li> </ul>	<ul style="list-style-type: none"> <li>•present</li> </ul>	<ul style="list-style-type: none"> <li>•object pronouns</li> <li>•adverbs (often, never, rarely, sometimes)</li> <li>•yes/no questions</li> <li>•wh questions</li> <li>•irregular noun plurals</li> <li>•prepositions of location</li> <li>•yes/no questions</li> <li>•next, then, etc.</li> <li>•adverbs (fast/slow)</li> </ul>	<ul style="list-style-type: none"> <li>•invitation</li> </ul>	<ul style="list-style-type: none"> <li>•describing family</li> <li>•describing temperament</li> </ul>
7	<ul style="list-style-type: none"> <li>•daily activities</li> <li>•fun activities; zoo</li> <li>•beach, camping</li> <li>•the US/cities</li> <li>•seasons</li> </ul>	<ul style="list-style-type: none"> <li>•present</li> </ul>	<ul style="list-style-type: none"> <li>•prepositions of location</li> <li>•yes/no questions</li> <li>•next/then, etc.</li> <li>•adverbs (fast/slow)</li> </ul>	<ul style="list-style-type: none"> <li>•discussion about activities (1<sup>st</sup>, 2<sup>nd</sup>, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>•describing activities with ordinal numbers</li> </ul>
8	<ul style="list-style-type: none"> <li>•grocery store</li> <li>•money</li> <li>•numbers</li> <li>•relaxation</li> </ul>	<ul style="list-style-type: none"> <li>•simple past</li> </ul>	<ul style="list-style-type: none"> <li>•object pronouns</li> <li>•yes/no questions</li> <li>•regular and irregular past tense verbs</li> </ul>	<ul style="list-style-type: none"> <li>•discussion about yesterday's activities</li> </ul>	<ul style="list-style-type: none"> <li>•describe trip to grocery store</li> </ul>
9	<ul style="list-style-type: none"> <li>•around the house</li> <li>•health</li> <li>•wedding</li> </ul>	<ul style="list-style-type: none"> <li>•simple past</li> </ul>	<ul style="list-style-type: none"> <li>•regular and irregular past tense verbs</li> <li>•wh questions</li> </ul>	<ul style="list-style-type: none"> <li>•questions asking for repetition</li> </ul>	<ul style="list-style-type: none"> <li>•describing illness/symptoms</li> </ul>
10	<ul style="list-style-type: none"> <li>•transportation</li> <li>•wedding</li> </ul>	<ul style="list-style-type: none"> <li>•simple past</li> </ul>	<ul style="list-style-type: none"> <li>•wh questions</li> <li>•object pronouns</li> </ul>	<ul style="list-style-type: none"> <li>•interview</li> </ul>	<ul style="list-style-type: none"> <li>•reporting events</li> </ul>
11	<ul style="list-style-type: none"> <li>•locating something</li> <li>•around the house</li> </ul>	<ul style="list-style-type: none"> <li>•past progressive</li> </ul>	<ul style="list-style-type: none"> <li>•comparisons</li> <li>•prepositions of location</li> <li>•one/ones</li> </ul>	<ul style="list-style-type: none"> <li>•identifying by comparing</li> </ul>	<ul style="list-style-type: none"> <li>•describing by comparing</li> </ul>
12	<ul style="list-style-type: none"> <li>•occupations</li> <li>•at the park</li> <li>•leisure</li> <li>•locating something</li> </ul>	<ul style="list-style-type: none"> <li>•past progressive</li> </ul>	<ul style="list-style-type: none"> <li>•superlatives</li> </ul>	<ul style="list-style-type: none"> <li>•identification</li> </ul>	<ul style="list-style-type: none"> <li>•describing the "best" and "worst"</li> </ul>
13	<ul style="list-style-type: none"> <li>•grocery shopping</li> <li>•restaurant</li> </ul>	<ul style="list-style-type: none"> <li>•past progressive</li> </ul>	<ul style="list-style-type: none"> <li>•object pronouns</li> <li>•which/which one</li> <li>•which/which ones</li> </ul>	<ul style="list-style-type: none"> <li>•purchasing food</li> <li>•ordering at restaurant</li> </ul>	<ul style="list-style-type: none"> <li>•describing food taste (sweet/sour)</li> </ul>
14	<ul style="list-style-type: none"> <li>•telling time</li> <li>•music</li> <li>•sports</li> </ul>	<ul style="list-style-type: none"> <li>•immediate future</li> </ul>	<ul style="list-style-type: none"> <li>•wh questions</li> <li>•prepositions of time</li> </ul>	<ul style="list-style-type: none"> <li>•making plans</li> </ul>	<ul style="list-style-type: none"> <li>•letter describing weekend</li> </ul>
15	<ul style="list-style-type: none"> <li>•cooking/recipes</li> <li>•miscellaneous</li> </ul>	<ul style="list-style-type: none"> <li>•immediate future</li> </ul>	<ul style="list-style-type: none"> <li>•quantifiers</li> <li>•imperative</li> </ul>	<ul style="list-style-type: none"> <li>•giving/receiving directions</li> </ul>	<ul style="list-style-type: none"> <li>•recipes</li> </ul>

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/28976

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : G09B 19/06  
US CL : 434/157

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 434/157, 156

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,077,085 A (PARRY et al) 20 June 2000. See entire document.	1,9-12, 19-22, 31-37, 44-51, 58-62
X, E --- Y, E	US 6,305,942 B1 (BLOCK et al) 23 October 2001, See entire document.	1-3, 6-12, 14, 19-20-22, 24, 28, 31-37, 39, 43-51, 58-62 ----- 4-5, 15-16, 18, 25-26, 29-30, 40-41, 52-57
X --- Y	US 5,885,083 A (FERRELL) 23 March 1999, See entire document.	1-3, 6-7, 9-12, 14, 18-22, 24, 28, 31-37, 39, 43-51, 58-60, 61-62 ----- 4-5, 15, 16, 25-26, 29-30, 40-41, 52-57
A	US 5,540,589 A (WATERS) 30 July 1996. See entire document.	

Further documents are listed in the continuation of Box C.  See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 27 November 2001 (27.11.2001)	Date of mailing of the international search report <b>25 FEB 2002</b>
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer <i>FR</i> Valencia Martin-Wallace Telephone No. 703-308-1148 <i>Shigita Venev</i> <i>Paralegal Specialist</i> <i>Technology Center 3700</i>
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/28976

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,870,709 A (BERNSTEIN) 9 February 1999, See entire document.	