USING THE ADVENTURE FORMATS FOR CALI
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ABSTRACT

Because adventure games can be highly interactive and so absorbing that users commonly spend hours in a session, they are well suited to CALI, as long as the level of language on the screen is low enough and as long as the parser can recognize naturally-formed commands. This article attributes the success of the adventure format to the Input Hypothesis and the Affective Filter Hypothesis and sets up criteria for instructional evaluation of foreign language adventures.

KEYWORDS: affective filter, collaborative software, reading, writing, glossary, dictionary, games, adventure games, German

Over fifty percent of the foreign language software available in 1984 for computer assisted language instruction (CALI) was drill tutorial. As a whole series of new collaborative CALI software demonstrates, that particular software bias is coming to an end. Collaborative CALI[1], such as adventure games, responds to the initiative of the user so that the course of the action has a twofold determination, choices of the user and choices built into the software. The result is comprehensible input of the best type: the user does not think about the language in use, but only about the action and where it might lead next. Provided that the language is easy enough, collaborative software creates an optimal setting for language acquisition according to the Input Hypothesis.[2]

The first adventure game, called Colossal Cave, was created by William Crowther just after mapping parts of Mammoth Cave in Kentucky. A micro-computer version is in the public domain as Adventure.[3] This game and the ones that followed it employ a sentence analyzer to understand commands, which the user types in using more or less natural English. The object of the game is to explore the subterranean world of the game and find the hidden treasure without getting killed by unanticipated hazards.

The best selling adventure, Zork, the Great Underground Empire, was created at MIT in the middle 1970s. Here is an excerpt from the commercial version:[4]

Zork begins:	WEST OF THE HOUSE. You are standing in an open field west of a white house with a boarded front door. There is a small mailbox here.
You type:	Look in the mailbox.
Zork responds:	The small mailbox is closed.
You type:	Open it.
Zork responds:	Opening the mailbox reveals a leaflet.
You type:	Read the leaflet.
Zork responds:	WELCOME TO ZORK! Zork is a game of adventure, danger and low cunning. In it you will explore some of the most amazing territory ever seen by mortals. No computer should be without one!

And you are off to explore the Underground Empire! Notice that this game understands commands beginning with the verb; that it can handle pronouns; and that the responses are canned and usually quite natural sounding.

Motivation

Adventure games have a great deal to offer foreign language students. They are intrinsically motivating in the sense prescribed by Malone[5] in that they incorporate his three motivational categories: challenge, fantasy, and curiosity.

Adventures are *challenging* because they demand some skill (acquired by practice) and because their outcomes are not predictable. Forgetting the pedagogical reasons for the exercise, the students repeat the adventure, looking for the best ending or the answer to the puzzle, reached by a sequence of correct decisions. There is never only one set of correct decisions nor one sequence leading to a successful completion of the game. Because adventure games cover the same subplots in varying orders as the players make individual decisions in search of clues, student users voluntarily read more than they would if assigned a linear text, and their comprehension can be expected to increase with each repetition.

Malone's second category, *fantasy*, is defined by a need for the users' imagination in filling in details of the setting

for the software. This category ranges from the prerequisite knowledge of properties of darts and balloons for the fraction teaching game, Dart, to the complex conversational prerequisites of ELIZA, or the setting for adventure games. Here again, students are more interested in playing then in noticing that they are acquiring the cultural information built into the adventure. Thus we have the opportunity of teaching culture when we design an adventure.

Randomization, which plays a part in making adventures challenging—consider the appearances of the thief in Zork—is also a factor in Malone's third element, *curiosity*. The turns of action in a good adventure are novel and sometimes unpredictable, holding interest until the game is over. By offering various ways to reach the treasures needed to win, truly complex adventures like Zork encourage repeat plays even after one has successfully gathered all the treasures.

A Typical Foreign Language Adventure

So far, most foreign language adventures have been in French, but were unavailable for review for this article. As an example of a foreign language adventure, Munich[6], which is in German, is fairly typical. Here the users are tourists who have six days to see twelve tourist attractions. They are allowed to make decisions about how to reach the points of interest and when to eat or sleep or change money, but many of these choices have randomized responses, so that their effectiveness is not guaranteed, and some outcomes are quite surprising. The students type in single word commands and it takes a student on the average of ten tries before winning the first time, then another fifteen or twenty to master the game. Once mastered, the game may be played in about ten minutes. Meanwhile, of course, the student is reading German, understanding it, and responding, however simply, in the language. Also, the student has learned the names of Munich tourist attractions as well as the facts that Bavarian is a difficult dialect for students to comprehend and that the police are generally helpful, but passers-by and taxi drivers may or may not be so obliging.

Advantages and Disadvantages

The tendency to repetition and the variety of plot sequences are two advantages which computerized reading has over books; a third advantage is the availability of a computerized glossary, which saves time looking up words in a standard dictionary. Glossary subroutines make use of the computer's ability to leave one program, run a subroutine, and return to the same point in the original program. Wyatt[7] suggests an ingenious expansion of the computerized glossary, an interactive dictionary:

> "The student, reading a passage on the video screen..., encounters an unfamiliar word. To obtain dictionary help, the word is typed into the computer. Instead of giving direct assistance, the computer gives a multiple choice of several possible meanings and invites the student to use context and morphology clues, if present, to deduce the word meaning. Each time students resort to the computerized dictionary, they are asked to develop their skills in handling new expressions. The whole process can take less time than locating the word in a standard dictionary."

We would add two further refinements: conducting the whole routine if possible in the target language and offering synonyms or antonyms on request as an alternative to glosses. Though this idea is intriguing, and we are sharing it with you for that reason, we wonder if it might not detract from the student's involvement in the text. Therefore, for Munich, we decided instead to offer only translations in context for each word. These give a quick fix with the briefest distraction from the text at hand.

A common objection to adventure games as instructional material is that they employ pidgin or unacceptable language. In actual fact, the canned responses given by the computer are generally written in natural sounding and grammatical language, and are thus an excellent source of comprehensible input. There may, however, be some unnatural language in reference to antecedents. For example, Zork generally refers to nouns in complete noun phrases, no matter how many times the nouns have been used in recent clauses, hence both computer references in the example above to the mailbox, the first and third, include the modifier small, where one would normally expect only a pronoun or the article and the noun, which does then finally appear in the next reference. Since it is unlikely that adventure games would be a student's only source of foreign language input, it is equally unlikely that this kind of overcomplete reference would have an undesirable influence on a student's growing competence. The issue of ungrammaticalness arises mainly with the user's commands. Zork accepts abbreviate commands, such as w instead of go west, and its parser ignores articles, so that take emerald is just as effective as take the emerald. Punctuation is also generally ignored. Do we, as language teachers, want to sanction pidgin input, such as noun phrases without articles? In the author's opinion, as long as we regard the game as a reading exercise, rather than as a conversation, and as long as our students recognize that they are not writing natural language, the advantages outweigh the disadvantages. The instructional goal of adventure games can be purely passive while advancing the goal of acquisition.

Though it is certainly supportable that the standard passive adventure game has a place in language instruction, we will soon have an active alternative. Whereas the standard adventure games reject only material they cannot parse, SPION, an adventure game by Ruth and Alton Sanders of Miami and Wright State Universities,[8] insists on grammatical

input. The prototype for SPION contains a lexicon, a parser, and a semantic interpreter as well as the game program itself. When SPION rejects grammatically unacceptable input, it offers an error message keyed to the type of error, so that users are encouraged to modify or totally recast their input according to what the computer perceives is wrong. Programs like this will be a real asset to language learning; monolingual Zork is quite oblivious to users' grammatical errors. PILOT-SPION, a version written with PILOT, is running already and a string matching version will be available in 1985 from Conduit.[9] In this version of the game, the student is confronted with multiple choice questions, which must be answered in full sentences, giving active practice as well as passive comprehension. Acceptable responses are those which match the program's string sets exactly. This game is more complex than Munich and keeps students absorbed for several hours.

Affective Filter

The personal involvement of the user in the texts greatly lowers the Affective Filter, the subconscious mental block posited by Dulay and Burt.[10] The Affective Filter Hypothesis correlates student attitude with success at language acquisition and was originally applied to learners' attitudes about the people whose language was being learned—thus if you think all Germans are Nazis, you may not acquire much German even though you try—but it applies equally well to attitudes about material which is enjoyable to use and which involves the user in a more or less personal way. The materials in the adventure programs are in second person and they are gender neutral, so that the reader can be the star. However superficially personal the second person in these texts may seem, it has a strong personalizing effect, which is a good pedagogical strategy. Where it is not possible to make materials gender neutral, for example in a text we are working on for German social behavior, Cultural Attache, we adapted another idiomatic feature of the computer, tracks. At the beginning of the text, the computer asks for the user's gender, then assigns the appropriate male or female track. Though some social behavior is gender neutral, so much is gender sensitive that any correct behavior program has to account for gender. The ability to adjust tracks is also exemplified in Cultural Attache in a second fashion: Users who make too many social blunders and are thus is danger of being revealed as foreigners, can request transfer to a new city, clearing the slate of transgressions and giving themselves a new start. This bail-out was not designed out of pity for socially inept students, but as a strategy to keep them reading a bit longer. Both the gender personalization of the alternative tracks and the forgiving format of locale-switching are very user-friendly, and work to lower the Affective Filter, as does the feeling of control over the computer which comes from giving commands in the adventure games.

Incidentally, we have noticed that using a student's name for praise or criticism during the program is counterproductive and raises the Affective Filter considerably. This seems to be a reaction to a feeling of loss of control when the computer owns your name. If we are right about this, it explains why people so often enter a pseudonym when asked by a computer for their name! There are probably some times, however, when it is useful to have the user's name in the computer. We encountered one in Cultural Attache: When it is time to answer the phone, one of the choices (the correct one) is the user's own name, assigned at the outset for just such an item. Of course, if students have entered a pseudonym when asked for their name, the strategy backfires and the students may misunderstand the item, give the wrong response and lose the game. This is the only time our programs ask for names, and we are considering altering the program to keep the likelihood of Affective Filtering as remote as possible. Most of these comments about the Affective Filter apply to any kind of exposure to learning material, that is: any low frustration materials which hold interest will have a low Affective Filter. Adventure games have the particular strength of user control and personalization, making them particularly valuable.

Adventure Criteria

Several features, otherwise irrelevant in discussing programs for native speakers, offer a schema for evaluating the suitability of an adventure for foreign language instruction:
a)	The foreign language characters should be easy to produce.
b)	The user's responses may be
   1) multiple choice (totally passive)
   2) one word (minimally active)
   3) command (quite active) or,
   4) other.
c)	The computer's responses should be grammatical and natural.
d)	The syntactic and idiomatic level may not be too high for the expected users.
e)	The settings should be authentic.
f)	The vocabulary should be useful for everyday communication.
g)	The computerized glossary should be easy to use.
None of the adventures we have seen can meet all of these criteria, but some do fairly well. We are preparing a review of available adventures for a forthcoming article, and hope that, for now, these criteria will be useful for adventure authors and purchasers.

Basis for Adventures

Where is the non-linear raw material for foreign language adventures to come from, the reader may wonder. Obviously not from the classics! Of course, our students have a great deal of trouble dealing with the classics at their present reading levels anyway. Krashen et al[11] estimate that normal authentic texts have a level of i + 20, where i is the level of the learner, and i + 1 is the level at which optimal language acquisition takes place, and they conclude that such texts are not greatly helpful for acquisition. There is no mention in the literature of simple codes in reading, which might

be parallel to the simple codes in speech of teacher talk, caretaker speech and foreigner talk, and yet such customized reading has been used extensively in textbooks for most of this century. Attempts to obtain permission from the copyright holders of well-known writers to simplify short stories for instructional purposes usually meet with a flat rejection, as we discovered to our dismay in editing a German reader, *Alte Legenden und neue Literatur*.[12] Fortunately for the adventure-consuming public, the adventure-producing publishers have had better success; for the last two years adventures have begun to appear which are the collaboration between a well known author and the adventure publisher.[13] We can hope that when adventures begin to appear abroad, that the adventure publishers will attempt collaborations with well known foreign writers. However, that still does not solve the i + 20 status of authentic texts, assuming that Krashen et al. are correct. This problem leaves the burden of producing foreign language materials right where it has always been—with us. If we renounce the goal of recreating great literature, there is an unlimited range of material which is interesting to young adults and revealing about the country. We have written one branching text, Nazi Hunter, and begun work on a second one involving genealogies and the search for German roots. When that is done, we would like to write an adventure about the restoration of a 14th century German castle (secret passages, hidden frescos and other surprises) based on the real experiences of an American restoration team. These are not quick to produce, but they allow their makers a lot of leeway in setting pedagogical levels for structure and vocabulary.

Adventure Authoring

A way of producing adventure materials without programming them is to use either of the two adventure authoring programs on the market, Adventure Writer[14] and Adventure Master[15]. My first attempt with one is called Disco Party. It begins:

INTRODUCTION: You've been in Vienna a week, beginning a program of study at the Vienna Conservatory of Music. Your fellow students have been friendly and forthcoming. To thank them and get to know them better, you decide to throw a disco party at your tiny apartment. Good Luck!

IN THE APARTMENT: Your humble abode is one room, with a clap-down folding wall bed and a kitchen nook. Besides the bed your furnishings include a desk, desk chair and easy chair. What do you want to do?

>go out

IN THE THIRD FLOOR HALL: You see doors to two other apartments, stairs going up and down. What do you want to do?

>go down

ON THE STREET, OUTSIDE GETREIDEMARKT 17 (your address): You are at the intersection of Getreidemarkt and a large and busy street, Mariahilferstrasse. What do you want to do?

From here you can go one direction to the shops in Mariahilferstrasse or another to the open market called Naschmarkt. The geography in this adventure corresponds to the city, giving some feeling for a small part of Vienna: the opposite direction from the Naschmarkt is the Art Museum, a dead-end unless you buy a poster, and down Mariahilferstrasse leads to the Ring and on to the inner city, which is full of expensive shops, also a dead end unless you luck out at the post office, getting a check from home. You can visit fellow students to borrow things you may need and you must visit the neighbors to apologize in advance for loud music. You can check your resources, win points when you get your supplies stocked, and the game is over when the party is all ready. The game contains a lot of practical vocabulary and would be useful in the second semester of German, particularly if we could compose them with foreign language characters.

Though Codewriter, another adventure authoring program, has at present no plans to incorporate additional characters, Dick Simmel, the Director of International Marketing for CBS Software, has expressed the hope that a version with foreign language characters can be produced. By the time you read this, CBS may have one ready. At least, it would be worth inquiring. If they succeed, we can pursue the really exciting aspect of these adventure authoring programs: we can let our students create adventures to play themselves or to share with their classmates, all in the target language. Considering the popularity of adventure games in English, our students can be expected to be familiar with their format. The drafting process is outstanding practice for the adventure creator, or better yet, for a collaborative group of adventure creators. Such student-written materials can then be edited by instructors, kept for future use and even shared through a student-managed adventure exchange. These adventures would be written in learners' language, so that their level would be easy, something we cannot expect from commercial products, and considering its source, the subject matter would without doubt be interesting for its intended audience.[16]

The advantage for language acquisition from using these computerized games is inherent without further involvement in foreign language courses. But it is not necessary to isolate the computer from classroom follow-ups, such as discussion of the reading or group-developed role-playing presentations of a version of the plot. The text programs described above lend themselves as subject matter for writing assignments in which students can retell their adventures in essay form, design a subplot or continuation, or relate the story to non-computerized materials about the city which is the setting of the action. For essays, assuming we can interface the text adventure and its glossary with a word processor, the students can use the text adventure's glossary backwards: typing ?English word would yield the German translation,

focusing on the particular vocabulary of the specific text. The result of the assignment would be an essay built on the vocabulary and concepts of the story as experienced. A glossary such as this would be a straightforward extension of the materials under development by the Sanders for SPION, and we can hope that future adventures designed for foreign language instruction will include them. For the time being, we can encourage students to compose an essay on the computer or to write dramatized versions of their script and to create their own adventures.[17]

Summary

Though they are called games, readings such as these merit a more central role in the curriculum than provided by the Prototype Computer-Based Reading Course point 3.5, outlined at ACTFL 1983 which said "Game-like activities would be included to make the curriculum as motivating and pleasant to use as possible."[18] Because of their built-in glossaries, the element of surprise, and the sense of user-control and second person involvement, these reading games can be central to the foreign language syllabus.

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