Hypertext-Based EFL/ESL Reading[2]

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Introduction

Hypertext is a unique computer application for written language. Nelson (1992) coined the term *hypertext* to describe non-sequential reading and writing displayed on a computer screen. Also, it is a psychological construct that enables information to be quickly and easily accessed in the order needed each time it is needed. As will be explained below, learning to use hypertext provides various benefits for students. Learners use this technology to pick and choose blocks of text by interacting with the computer.

Hypertext is a way to navigate through electronically-stored texts on computer networks. A URL (Uniform Resource Locator, which provides the address to a document on the World Wide Web (www) address, may, for example, direct the user to a site with different EFL/ESL (English as a Foreign/Second Language) reading materials. Each lesson will also be linked to other activities such as identifying the meaning of the words, and associated exercises and answers.

This paper looks at the effects of hypertext as a medium of learning English through reading comprehension, including pedagogical aspects and the relationship between attitude towards and the use of hypertext. It summarizes a pilot study of the use of hypertext in a university level reading course in EFL.

Several major questions are the basis for this paper and the pilot study:

1. Will students have a more positive attitude towards reading comprehension in EFL by using hypertext?

2. Will the teaching of reading comprehension using hypertext result in greater gains in proficiency than teaching with traditional text-based materials?

[2] This is a refereed article.

An overview of hypertext

Heim (1993) describes hypertext as follows:

> *Hypertext today is a mode of interacting with texts, and not a specific tool for a single purpose. You can realize what hypertext is, or can be, by sitting down with it for only half an hour. Once caught in the interactive nature of the thing, you can begin to imagine an immense range of possible applications* (p. 29).

The term *hypertext* has now been expanded to include a wide range of computer applications, such as interactive books, encyclopedias, online materials and other forms of nonlinear reading and writing, created using computer technology. Interactive text where the reader chooses different paths of action at critical points is the most basic type of hypertext. The so-called different paths of action are *pre-programmed* by the *author* of the hypertext.

As a reader jumps to different passages in a single text or in different texts, multi-linear hypertext presents multiple points of view. Fowler (1994) states: *No piece of hypertext ever sings solo; it always collaborates in a cacophonous choir with all of the other nodes of the network in which it is implicated* (p. 18). Multi-linear reading requires students to make critical choices about what passages of text or points-of-view they will access next.

In large networked systems, students can select texts that are stored on different computer systems around the world. For example, one use of the world wide web is as a hypertext information retrieval system.

Keyword links connect the documents together into an associative information web. He and Napp (1994) describe this connection as follows: Every keyword or important concept is linked through hypertext with another set of knowledge modules. This actually simulates association - the most important learning capability of the human mind (p. 33). However, the associations in these systems are not random. They are structured, and systematically designed. For example, a student could search for information on a specific subject, such as vegetarian recipes. A list of categories and choices might then be displayed on the computer screen. Recipes could be selected by type of vegetable or course, such as carrots or desserts. Each category might have a directory list of recipes. Once the selection is made, the program would access the information from the remote computer and display the selected recipe on the screen. This structured design aspect of hypertext reduces the number of choices that could be made at any given stage, (e.g. the main list might contain items such as Soups or Salads, and only by choosing one of these, could a person get to the list of soups or salads).

However, hypertext is more than a software program, or an authority language, or just making decisions. Hypertext is a psychological construct that enables information to be quickly and easily accessed in the order needed, each

time it is needed. Hypertext works as a network of blocks of information (nodes) connected to each other (links). The reader can jump from node to node by clicking on a pre-defined part of the information which could be a word, or a phrase, etc. Hypertext with added graphics and sounds is *Hypermedia*.

The pros and cons of hypertext

Using hypertext has both advantages and disadvantages. The application of hypertext empowers students to interact with blocks of text, and picking and choosing topics of interest by navigating through hypertext documents. Students must learn to navigate and explore the text in order to read documents. Using text navigational skills changes the students into active information explorers, blazing trails through the information space.

Heim (1993) offers another advantage of hypertext reading: *Instead of a linear, page-by-page, line-by-line, book-by-book approach, the user connects information in an intuitive, associative manner. Hypertext fosters a literacy that is prompted by jumps of intuition and association* (p. 30). Hypertext designs eliminate alternatives by linking together texts based on a topic. They enable students to select texts based on a related topic, so they may not be overwhelmed with information. As a result, students can gain a greater sense of control, which helps to maintain their interest in the texts.

Hypertext eliminates the process of *manual search* to find the cross-referenced texts listed in a book. Cross-references are automatically linked to a document. With a click of the mouse button, a linked source of an author's note will appear on the screen. This type of access to multiple texts improves critical thinking skills as readers can decide if the note warrants careful reading or if the reader should return to the main text. Moreover, students have access to multiple texts with different points of view. In contrast, many printed books either tend to present a single vision or present different points of view in different chapters or on different pages, which makes it difficult for the student to compare and analyze them.

Learning to use hypertext provides some key benefits for students. Hypertexts instruct students by presenting verbal and visual information on a topic. Thus, some students may better understand the material they are supposed to learn.

Like traditional text approaches, hypertext can be used as self-study and text review. After students learn to read hypertext literature, they are not dependent upon a teacher to use relevant hypertext instructional materials.

Students can also use hypertext instruction beyond a semester or a course to reinforce skills and concepts. Information presented in the course can be applied to a project in a different course by accessing hypertext literature. Study

materials from different courses can further be linked in a hierarchical manner, thus allowing students to set their own pace, allowing them also to go back and forth between the materials, for quick reference.

Some other benefits of using hypertexts are that students potentially play a more active role as readers than is possible with traditional textbooks. Students are required to make decisions about the information they are accessing and reading on the computer. Consequently, learning with this technology becomes more student-centered. Because hypertext is student-centered, hypertext systems are generally called learning systems, rather than teaching systems.

Hypertext learning systems introduce an exploratory or discovery method of learning into the classroom. Students who learn to use hypertexts become active learners. Hypertext develops learner autonomy and helps the learners to take on an active role in and more responsibility for their learning.

At the same time, while students are becoming more mentally active, they are also interacting with new ways of presenting information through computer-based technologies.

Academic projects combining reading and writing can incorporate hypertext-reading skills (Bolter, 1992; Landow, 1992). The reader has the option to explore various reading paths by pursuing the links (as explained above). Icons, pictures, arrows, buttons, and scroll bars guide the reader through the nonlinear sequences of text and images. Hypertext writers include these visual nonverbal navigation cues within their texts. Navigation cues indicate reading paths and they need to be easily understood by readers. Designing visual elements to guide readers through a text is an integral part of the hypertext writing process (Bolter, 1992; Landow, 1992).

Though hypertext can provide students with a new type of interactive learning experience, it also has one major disadvantage. It can easily become a barrier for the students who are not familiar with the technology. They need to know the ways of accessing reading in order to use hypertext well.

Relationship between hypertext and reading comprehension: key points

A number of key concepts identified in the relationship between hypertext and reading comprehension are: comprehensible input, the communicative aspect, explorative construction, and non-linear reading.

A key concept in the relationship between hypertext and reading is *comprehensible input*. Research in the field of foreign language acquisition suggests that comprehensible input and interaction are possible elements in acquiring a foreign language (Krashen, 1985). The Internet can be a very useful tool to help students to acquire proficiency in reading through lively interaction.

The learner needs to have the chance to explore new territories, via the foreign language. This is often not possible in the traditional text-based language class, because of the lack of instructional time and the lack of individualized practice sessions. The Internet is a good supplementary tool due to its potential as a supplier of varied input.

Another key element to consider is the *communicative aspect of reading*. According to Widdowson (1985), the reader applies a schematic frame or scenario to the textual object, samples the information it represents, and makes whatever modifications necessary to incorporate information not previously accounted for in the structure of his knowledge. In Widdowson's view, reading may be seen as a separate ability that can be investigated and taught in disassociation from other aspects of language behavior, but as the polarization of a general interpretive process, underlying all communicative activity. He believes that reading should be regarded as an interaction between the writer and the reader, mediated through the text.

Hypertext reading introduces an *explorative method* of learning into the classroom. Students learning to use hypertext are actively involved in the learning process. As students become more mentally active, they choose their own paths through this hypertext space, by consciously selecting links to follow up on and links to ignore. A major point here is that the students are in control and can use their own initiative dynamically. In contrast, in traditional book-based learning methods, students have to read in a linear fashion, with little or no control over what to read next.

Another concept is *meaning construction*.. Lee and Schallert (1997) provide this explanation:

> *One prevalent view of reading identifies it as a meaning construction activity served by lower level processes associated with word decoding and recognition, and by higher level processes associated with bringing relevant prior knowledge to bear on the reading. (p. 714)*

If reading comprehension is viewed as a multiplication of word recognition abilities and general language comprehension abilities, then reading comprehension can be divided into two parts: a word recognition part, which is bottom-up driven, and a comprehension part, which is highly interactive and top-down driven.. Unlike traditional reading methods, hypertext reading forces the reader to make choices (e.g. what links to follow). The user cannot read blindly; he or she has to think, and thus there is a constant activation of higher level processes.

Still another key concept in the relationship between reading and hypertext is reading in a nonlinear way. To use hypertext, students need to learn how to navigate through electronic space. Navigation is a nonlinear process with multiple paths, while books are linear, structured by the written word, and with a single

path. Nelson (1992) describes writing in the following way: Ordinary writing is sequential for two reasons. First, it grew out of speech and speech-making which have to be sequential... Second, because books are not convenient to read except in a sequence (p. 29).

Hypertext is nonlinear and creates a new type of reading environment. This setting supports the development of interactive learning materials and interactive learning.

Hypertext documents are different from printed texts in three ways: First, hypertext requires that the students be familiar with computers and know how to access the hypertext information. Second, hypertexts present information in the form of verbal text and nonverbal images. Hypertext inevitably includes a higher percentage of nonverbal information (Landow, 1992). Hypertexts might use icons (and animations) that are not found or cannot be put in printed texts. Third, hypertext presents information best suited for non-linear reading. The ability of hypertext to *link* various pieces of information makes it possible for the reader to pick and choose topics or click on an iconic button, and access information about the text. Thus, students are now *experiencing a text as part of a network of navigable relations* (Landow, 1992, p. 126) instead of as a linear sequence of ideas. It is this characteristic of hypertext that creates an interactive style for reading information, and consequently alters the process of reading. Therefore, hypertexts are basically distinct from printed texts, and they change a student's instructional experience with texts by requiring a student to learn reading interactively.

An exploratory study of the use of hypertext in an EFL reading class

The choice of the topic for this study — hypertext and the teaching of EFL reading comprehension — resulted from both an interest in hypertext and a dissatisfaction with the current situation in Iran's foreign language teaching classes.

Learning English in Iran means little more than acquiring a thorough knowledge of grammatical rules and vocabulary, with little development in communication skills. Most students are able to reproduce grammatical rules and apply them in translation exercises. However, true internalization of a language goes beyond just learning the grammar.

Theories of communicative language teaching and learner autonomy are widespread and generally accepted in teacher training programs. Yet, in practice, they have still not been put to use in many Iranian schools and universities. During my own teacher training program, I was taught the importance of these theories; however, during teaching practice, I soon discovered that reality was quite different. The majority of English teachers were not convinced of the

benefits of these current pedagogical theories and relied heavily on grammar translation teaching strategies.

Some teachers recognize the importance of communication and learner autonomy in language teaching. In addition, they realize that the benefits outweigh the inconveniences caused by the adjustments teachers have to make. These teachers have shifted from grammar translation teaching to communicative, student-centered language learning. However, the use of information and communication technologies (ICT) is still not prevalent, even though it would be a very effective way of implementing/facilitating this shift.

Furthermore, the great enthusiasm about the potential of hypertext for language learning has not yet been matched by research on what actually occurs in the online classroom. Much of the published literature on this topic consists of anecdotal teacher reports. A small number of published systematic studies have reported on narrow pieces of data, such as the outcome of particular class sessions or students' use of particular discourse features. However, language learning is a complex social and cultural phenomenon, even more so when it involves new technologies that connect the classroom and students to the world (Kilian, 1994).

This study aims to be a practical starting point for language teachers seeking to integrate the Internet into the foreign language curriculum. The following is a brief overview of the pilot study. I am willing to share more information about the study upon request. I welcome ideas and information about other additional studies as well.

The pilot study

The following sections offer capsule information on key aspects of the study: the purpose, the subjects, the research questions, the instruments, the materials, the procedures, the activities used, as well as the preliminary data analysis and findings, the interpretation of the results and (at least some of) the pedagogical implications.

Purpose of the study

The purpose of this study was to determine whether the use of hypertext could substantially contribute to the instruction of EFL reading.. The focus of the research was the medium of learning: one group used hypertext from the web and the other group used the same texts, but printed out from the web. As such, this study aimed to be a practical starting point for teachers and universities seeking to integrate hypertext into the foreign language classrooms.

Subjects

Forty undergraduate students were selected from a population of 300 students at Zanjan Azad University, and then divided into Experimental and Control Groups. The initial pool of students for both groups was selected based on the following common student characteristics:

1. Education: All of the participants were in their fourth year of college education. They had already accumulated at least 100 credits.

2. Native language: The native language of most of the students was Farsi (Persian).

3. Duration: Equal time was spent teaching both groups - ten weeks, two 90-minute sessions per week.

Once chosen, the forty students were randomly assigned to either the Experimental or the Control Groups. In the Control Group, 13 subjects were male and 7 female, and in the Experimental Group 11 subjects were male and 9 female. The Experimental Group received EFL reading instruction through hypertext, and the Control Group received EFL reading instruction with the same texts, but printed out.

Research Questions

1. Will students improve their attitude towards reading comprehension in English as a foreign language when hypertext is used, as compared to just printed text?

2. Will the teaching of reading comprehension using hypertext result in greater gains in proficiency as compared to teaching with traditional printed text-based materials?

Instruments

In this study a variety of instruments were used:

- The paper-based version of the TOEFL (Test of English as a Foreign Language) reading comprehension proficiency test was administered as a pre-test to both Experimental and Control Groups. The TOEFL was used because it is a standardized test with known validity and reliability. The test consisted of 40 questions on reading comprehension. This was used to ensure that the two groups were homogeneous.

- An attitude survey (Appendix 1 – Attitude Test) based on a 4-point scale (from 1=Agree Strongly, to 4=Disagree Strongly) was constructed by the

researcher and administered to both the Experimental and the Control Groups, once before instruction started and once after the instruction. This was to measure the students' attitudes towards EFL reading comprehension classes.

- Another survey, (Appendix 2) containing 46 items, was given only to the subjects in the Experimental Group, who were asked to agree or disagree with each statement. A 4-point scale was used (from 1=Agree Strongly, to 4=Disagree Strongly). The questionnaire was administered at the end of the students' ten-week instruction period. This was to evaluate the usefulness of hypertext in EFL reading classes. As the Control Group was instructed using print-based materials, this survey was not given to them.

- Two post-tests were administered, both consisting of 40 reading comprehension questions. One was based on the material which was covered during instruction in both groups. The second post-test was a TOEFL reading comprehension proficiency test similar to the one used as a pre-test (Appendix 3). All subjects in both groups were administered the post-tests.

Materials

The reading materials for the courses were chosen as a result of Internet searches and suggestions from ESL/EFL teachers from around the world.

The basic materials were the same for both groups, but the groups were taught differently. I selected different readings from three levels: beginning, intermediate, and advanced from the site http://user.gru.net/Richardx /index.html, (permission given by the author in 2001). These reading passages had a number of different topics such as the Titanic, John a carpet fitter, and the Internet. (An excerpt of one reading and the post-achievement test based on it is found in Appendix 3.)

Procedures

The subjects were chosen and randomly assigned to the Experimental and Control Groups to ensure homogeneity between the two groups. The reading course lasted ten weeks, covering twenty 90-minute classes. Each group was introduced to the study by receiving the same orientation to the overall plan. In the first session, the Attitude Test (Appendix 1) was distributed to the students in both groups. Then the TOEFL reading comprehension proficiency test consisting of forty questions was administered to all participants before the actual instruction began. Care was taken not to mix the instruction processes between the two groups. However, it was practically impossible to keep the students from each group separate outside class hours. One could only hope that they heeded

the instructor's advice and kept their class-related discussions with the members of the other group to a minimum.

The Experimental Group then received instruction at the Computer Center in the Institute for Advanced Studies in Basic Sciences (IASBS). These students were given general instructions on how to operate the computers and work with hypertext and were advised to familiarize themselves with the use of the computers. The researcher was present to answer any of the students' questions and monitor their progress. This took two days because it was important that the learners be familiar with using the Internet. Since the Control Group was assumed to be already familiar with printed material, no such similar training was given to them.

Activities – Experimental (Hypertext Use) Group and Control Group

Three kinds of activities were used for both groups: pre-reading, reading activities, and post activities. However, the method varied for the two groups. The most important difference between the two ways of teaching was that the Control Group used linear text in the classroom, whereas the Experimental Group used non-linear hypertext.

With both groups I tried to keep the conditions as similar as possible. The difference between the two groups was the media of the materials and how they were used. The Experimental Group used texts on the computer (no printed material at all) while the Control Group used printed copies of the same texts. During the teaching sessions for each group there were three kinds of activities:

Pre-reading activities

Both of the groups used the following pre-reading activities:

- Brief introductory information about the texts/topics. Both the Experimental and Control Groups were given the same information about the books. The only extra information that the Experimental Group had to be given was how to access the information on the computer.

- Visual material (colored pictures) was used to activate the students' background knowledge. For the Experimental Group, colored pictures were given through the hypertext to activate the students' background knowledge about the topic. For example, in the lessons entitled "Leonardo's Workshop," one of Leonardo Da Vinci's famous paintings was included as a way to make the students think. For the Control Group, pictures were used in the same way, but in print or poster form. Here is the link: http://user.gru/richardx/read3.html.

- Some of the vocabulary was presented with pictures. For example, in the lesson entitled "Live Bell," different forms of water were shown using various pictures. For example, water as ice, as water vapor, and as liquid water. Both groups were given the same pictures (The Experimental Group, hypertext pictures, and the Control Group, printed pictures).
  See: http://www1.umn.edu/bellmuse/mnideals/watershed/watershed.html

- Explanations were given about very difficult words such as "prairie" or "beating the odds" before the students encountered them in the reading passage. The researcher decided on the selection of difficult words on the basis of the results of the TOEFL test. (This is more uniform, as it applies to both groups).

Reading activities for the two groups

In this section I will mention some of the activities that were used during the reading phase for both groups..

- Skimming.
- Using a speaker attached to one of the computers, the students listened to the passage read by a native speaker. For the Control Group a tape recorder was used instead of the computer or the students were asked to read the texts aloud sentence by sentence. Similarly, the Experimental Group was asked to read the texts aloud from the computer screen.
- The students in the Experimental Group checked the meanings of new words by clicking the mouse on the hypertext word, which was linked to the definition. In the Control Group the students were asked to cross out the words whose meaning they did not know, and check them in the dictionary.
- The students in both groups endeavored to understand the meaning of the passage by using collaborative strategies such as students helping each other.
- Students in the Control Group were encouraged to use a dictionary to look up the meaning of new words. The researcher asked for the meanings of the words and explained further only those which seemed to cause misunderstanding. Students in the Experimental Group had vocabulary links within the text to give the meanings. As with the Control group, the researcher explained the meanings of words that were still causing confusion for the students, even after they had checked the meaning through hypertext.
- Where necessary, the researcher gave explanations about the meaning of the passage for both groups.

Post-reading activities for both groups

For both groups one of the following activities was used with each reading text:

- Multiple choice comprehension questions
- A multiple-choice quiz
- Writing a summary of the story (on paper by the Control Group, on the computer by the Experimental Group)
- Gap fill exercises
- Précis writing
- Recreating the story sentence by sentence through writing (paper/computer).

The researcher checked the answers for the Control Group while for the users of hypertext there was no need for this since the answers were automatically corrected through the Internet, and different feedback was given for correct and incorrect answers. If the answers were correct, the web page automatically displayed phrases such as "all correct," "well done," "very good," or "excellent," "your grade is 100." If the answers were wrong, phrases such as "failed," "try again," or "redo" were displayed on the web page. Similar feedback was used orally by the researcher for the Control Group as well.

The hypertext students had to follow the instructions and directions given for using the computer program, such as "log in," "go," "click," "continue," "sign in," "sign out," "next question," "let's go," "log out," "log in to start the game," "type in your name," "correct quiz," or "redo quiz," etc. (The activities here were already available at http://user.gru.net/Richardx/index.html).

Each lesson was followed by a different kind of reading activity.

Data Analysis and Findings

There was no significant difference in the results of the students' attitude survey and in the TOEFL tests that were given to both groups at the beginning of the course: 18.2 was the mean for the Control Group, and 17.8 was the mean for the Experimental Group for the TOEFL tests. For the attitude tests, the corresponding values were 16.8 and 17.05 respectively.

Statistics for TOEFL Test (Before experiment)

Variable	Number of Subjects	Mean from 40	SD
PRE – TEST, TOEFL			
Experimental	20	17.8	5.422
Control	20	18.2	5.11
Mean Difference =- 0.4			

Test for Equality of Variances: F= 3.04			P =0.26	
T-test for Equality of Means				
Variances	T= value	df	One-tail	SE of Diff
Equal	0.745	38	0.75	10.92
Unequal	0.745	32.7	0.75	10.92

To= 0.745 Tc=1.69

The two groups had similar ranges in the results on the TOEFL at the beginning of the study. Since obtained T (0.745) was less than critical T (1.69), there was no significant difference in their initial ability level for reading comprehension, with regard to the TOEFL test.

Statistics for Attitude Test (Before experiment)

Variable	Number of Subjects	Mean from 40	SD
ATTITUDE 1			
Experimental	20	16.8	5.96
Control	20	17.05	5.22
Mean Difference = -.25			
T-test for Equality of Variances: F=1.380		P=0.25	

T-test for Equality of Means				
Variances	T= value	df	One-tail	SE of Diff
Equal	-.141	38	0.972	0.789
Unequal	-.141	36.28	0.972	0.789

To= .141 Tc=1.69

The two groups had similar ranges of attitude test results at the beginning of the study. Since obtained T (0.141) was less than critical T (1.69), there was no significant difference in their ability level for reading comprehension at the beginning of the treatment, as reflected in the Attitude Test. Combined with the similar results for the TOEFL test, it can be safely said that the two groups were similar in capabilities at the beginning of the study.

Statistics for Attitude Test (After experiment)

Variable	Number of Subjects	Mean from 40	SD
ATTITUDE 2			
Experimental	20	29	8.49
Control	20	24	8.22
Mean Difference = 5			

Test for Equality of Variances: F=1.14			P = 0.77	
T-test for Equality of Means				
Variances	T= value	df	One- tail	SE of Diff
Equal	2.11	38	0.02	0.872
Unequal	2.11	35.38	0.02	0.872

To= 2.11 Tc=1.69

Statistics for Achievement Test (After experiment)

Variable	Number of Subjects	Mean from 40	SD
ACHIEVEMENT TEST			
Experimental	20	34.15	5.56
Control	20	28.65	6.028
Mean Difference = 5.5			

Test for Equality of Variances: F=1.17			P=0.73	
T-test for Equality of Means				
Variances	T= value	df	One-tail	SE of Diff
Equal	-2.99	38	0.07	4.52
Unequal	-2.99	37.8	0.07	4.52

To= 2.99 Tc=1.69

Statistics for TOEFL Test (After experiment)

Variable	Number of Subjects	Mean from 40	SD
Post Test, TOEFL			
Experimental	20	23.1	2.09
Control	20	20.2	5.6
Mean Difference = 2.9			

Test for Equality of Variances: F=7.26			P=0.0001	
T-test for Equality of Means				
Variances	T= value	df	One-tail	SE of Diff
Equal	-2.33	38	0.003	5.6
Unequal	-2.33	24.1	0.003	5.6

To= 2.33 Tc=1.69

In contrast, at the end of the course, there were differences in the attitudes, as well as on the TOEFL and achievement tests between the two groups. The final exam consisted of an achievement test based on the material covered in the class and the reading comprehension section of a TOEFL exam. Based upon the TOEFL exam and achievement test, 29 is the mean for the Experimental Group and 24 is the mean for the Control Group To= 2.11 Tc=1.69 for the attitude, since the obtained T score is higher than the Critical T score the treatment given to the hypertext group has caused a positive change in attitude, 34.15 the mean for the Experimental Group on the post achievement test, 28.65 the mean for the Control Group on the post achievement test, To= 2.99 , Tc=1.69 again since the obtained T score is higher than the critical T score hypertext has affected their reading comprehension ability and the Experimental Group students have performed better on the final test.

In addition, the analysis of the results obtained from the questionnaire (applied only to the Experimental Group) indicates the following: Fully 98% of the students believed that hypertext helped them to improve their reading ability and skill; 70% found that it was not difficult to learn to use hypertext for EFL reading; 90% of the students agreed that materials become more comprehensible by using hypertext; 89% of the students agreed that hypertext creates active learning and effective contact between students and teacher; 92% of the students agreed that hypertext helps them learn the subject matter on a deeper level, makes class fun, encourages monitoring, helps them think creatively and critically, and also helps them practice independent thinking. The students were asked to weigh their answers on a scale of 1-4, 1 being 'hypertext not helpful at all' and 4 being 'hypertext is extremely helpful'.

No such questionnaire was given to the Control Group. On the face of it, this might seem biased. But the goal was to check if the Experimental Group enjoyed and had a positive experience while learning to use hypertext. The Control Group might have enjoyed working with paper texts, but their results were clearly not as impressive as the Experimental Group's results.

Interpretation of the Results

The results suggest that the treatment given to the Experimental (hypertext use) Group positively affected the students' attitudes and performance in EFL reading. As a result of the use of hypertext tools which develops a student- centered classroom and autonomous learning environment, students in the Experimental Group were more prepared for their final exams and obtained better scores than the Control Group. This can be inferred from the results of the questionnaire.

The application of hypertext in EFL reading classes not only helps EFL students (as we can see from the results) but also improves the students'

attitudes toward reading, and leads to improved proficiency and autonomy as well.

At this point I will expand on these results. Concerning students' attitudes towards the use of reading materials, the data collected from the questionnaire show that 89% of the students asked to be given more opportunities to read using hypertext reading materials and 90% thought hypertext reading materials should be included in all classes.

As the data indicates, reading texts using hypertext materials is considered to be not only necessary for EFL/ESL reading (if the goal is to obtain higher grades), but also effective.

In addition, the analysis of the results obtained from the questionnaire (see Appendix 2) indicates the following:

Generally speaking, most of the students agreed that the use of hypertext promoted learner autonomy through the use of the web sites.

I include a number of the results with the highest percentages from the questionnaire given to the Experimental Group.

92% reported that hypertext materials empowered them to take the initiative, be creative, and work independently.

92% were willing to use the hypertext reading materials for more reading comprehension courses.

90% indicated the need for taking more hypertext-oriented reading courses.

90% enjoyed reading comprehension through the hypertext reading materials.

88% reported using hypertext reading material was/is less time consuming.

87% of the students indicated that they felt not only comfortable but also empowered to take responsibility for their own learning when they used hypertext reading materials in reading classes.

85% stated that doing reading exercises online is interesting and useful.

80% reported that hypertext reading materials were fun

While interviewing the students, I found that 76% of the participants in the Experimental Group preferred the hypertext mode of reading to what they had been exposed to previously. When asked to explain, the students gave a number of reasons. The comments below are not presented to show the efficacy of hypertext reading, but rather to show that reading in hypertext can have some additional advantages which might be outside the purview of the present research. The opinions presented are those of the students, and are mentioned here for the sake of completeness. More work is needed to gauge the psychosocial impact of hypertext reading.

First, hypertext promoted a different atmosphere when reading.

> *I am a shy girl, especially when I speak in English, I am always afraid that I will make mistakes. Using the Internet can help me solve this problem. (Student 19).*
>
> *I don't feel stressed when I'm expressing my own views and can read more freely. (Student 13)*
>
> *I don't like reading from linear text, because I may feel nervous. I don't know what to say when I look at other people's eyes. (Student 29)*
>
> *You will not need to think about others, you can express your idea bravely, and will not care about the laughing from others. (Student 10)*

Second, the hypertext provided the students an appropriate environment to think deeply and creatively.

> *What I have thought could be well organized in the computer. Text reading makes me nervous and I have fewer ideas about the topic in discussion. However, hypertext reading softens my stress and I can speak out my ideas as much as possible. (Student 5)*
>
> *Reading freely will encourage our thinking. Ideas will be more than reading text. (Student 7)*
>
> *I have more ideas when I sit in front of the computer. (Student 28)*
>
> *I feel very comfortable and relaxed and it's easier for me to think of my own ideas and to organize them. It provides me more time to think of others' opinions, while at reading text, I hardly can think about other's opinion carefully. (Student 26)*

Third, reading with the computer allowed students to think about the grammar and spelling.

> *We have to think of using the right words and grammatical sentences, doing the reading exercises when using hypertext and computer. (Student 18)*
>
> *Since we can practice our writing exercises using Microsoft word, we will pay attention to the grammar and spelling of the words and we can use spell check. (Student 3)*

Fourth, students said they were likely to read about something not directly related to the topic in reading through hypertext.

Fifth, some of the students thought that the use of hypertext helped them to improve their computer skills.

Sixth, several participants mentioned that reading through hypertext was efficient and saved more time than reading through printed text.

On the other hand some students preferred reading with a traditional paper text because they felt reading this way was more straight forward.

Some said they felt their ideas or train of thought were easily disrupted because they were not used to reading with hypertext. One participant mentioned she had to pay more attention to computer links which caused her problems in keeping her train of thought.

One point that should be made is that from among the 40 students, 14 students in the Experimental Group read materials at a higher level than students from the Control Group. Both the Experimental and Control Groups had access to advanced materials (either through hypertext, or through paper texts for the Control Group). 14 students in the Experimental Group ended up reading and accessing materials which were more advanced than those read/accessed by those in the Control Group.

Furthermore, I would like to include my observation that those students who were reluctant to use hypertext readings and were less active at the beginning of the course became more active and interested at the end of the course. This may indicate a positive change in their attitude toward the use of hypertext. Of course, there is a definite correlation with the point made in the previous paragraph. Further research is needed to support this.

All of the above data support the usefulness of the Internet in the EFL/ESL classroom and show how much students enjoy using hypertext reading materials.

Pedagogical Implications

The use of hypertext for an EFL reading course has a number of pedagogical implications. First of all, teachers need to gain technical competence to coach students in the use of hypertext in EFL reading comprehension. This competence involves the installation and use of hypertext programs and materials. To solve technical problems quickly, teachers should have technical support at hand. Also teachers need to explain both the basic and complex hypertext notions clearly in order to encourage learning and stimulate progressive skills development.

This research shows that teachers should be clear about the goals, objectives and assessment techniques of using hypertext so that the objectives of the overall language course can be understood by the students. This would involve/necessitate careful preparation but would make the course more enjoyable and stimulating.

Also, teachers should be encouraged to motivate students by using existing techniques and also to invent new ways for motivating students to take responsibility for their role as active learners and to become more autonomous learners.

I also recommend that teachers establish and maintain professional contact with other "e-teachers" in their specific discipline. This would ensure a continuous flow and exchange of information. Finally, teachers should consider assuming a facilitator role rather than the traditional authoritarian teacher role.

Conclusion

To conclude, further research is needed on the effectiveness of the use of hypertext in language learning. In this pilot study, the Experimental Group taught by hypertext not only scored better on their comprehension tests than did the students in the Control Group, but there was also a greater change in their attitude towards reading comprehension in general. Based on this preliminary study, hypertext has been shown to be a powerful educational tool.

Students and teachers who overcome the barriers of hypertext literacy skills enter into a new type of literacy experience. This experience transforms students from passive learners into active information explorers. Moreover, hypertext provides a method for students and teachers to collaborate on projects interactively and exchange ideas in visual form (text or graphic explanations) as well as through verbal messages (recorded audio files).

Finally, from the teacher's standpoint, hypertext can be used during any lab session as a method of self-study, so students are not dependent on the teacher or lab assistant. Reading comprehension and learning with hypertext becomes more student-centered and increases learner autonomy.

It still remains to be seen how hypertext will influence EFL/ESL instruction in the future. Nevertheless, it seems reasonable to claim that the key to success in the future will be the successful access to and use of information. A further integration of networked computers into society is likely to take place. Global communication will become increasingly important and a good knowledge of English, as a world language, will be paramount. Therefore, students will have to acquire both computer and English language skills to be successful in the information age. (And,) As shown in this research, the integration of hypertext in the EFL/ESL classroom can be an important step in achieving this goal.

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References

Bolter, D. J. (1992). Literature in the electronic writing space. In Tuman, M.C. (ed.), *Literacy on Line*. Pittsburgh, PA: University of Pittsburgh Press. 19-42.

Bush, V. (1991). "The Inscrutable Thirties", Nyce, J. M. & Kahn, P. (dirs.) *From Memex to Hypertext: Vannevar Bush and the Mind's Machine*, Boston, MA: Academic Press, Inc.

Fowler, R. M. (1994, July). How the secondary orality of the electronic age can awaken us to the primary orality of antiquity or what hypertext can teach us about the Bible. *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century*, pp. 12-46. Retrieved in 1999 from Archived as fowler IPCTV2N3 on LISTSERV@CUNYVM.CUNY.EDU

He, P. W., & Knapp, S. D. (1994). *The teaching of the Internet and its influence on instruction: New faculty roles in new learning environments*. Presentations at the Third Conference on Instructional Technology, June 1-3, 1994, University at Albany, State University of New York, pp. 31-34. Sponsored by SUNY FACT.

Heim, M. (1993). *The Metaphysics of Virtual Reality*. New York: Oxford University Press.

Kilian, C. (n.d./1994). *How an online course works [e-mail document*]. *Toronto Globe and Mail*, November issue. Available from: ckilian@hubcap.mlnet.com

Krashen, S. D. (1985). *The Input Hypothesis: Issues and Implications*. New York: Longman.

Landow, G. P. (1992). *Hypertext: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: The Johns Hopkins University Press.

Lee, J. & Schallert, D. L. (1997). The relative contribution of L2 language proficiency & L1 reading ability to L2 reading performance. *TESOL Quarterly, 31* (4), 73-187.

Nelson, T. (1992). Open hypertext: A memoir. In Tuman, M.C. (ed.), *Literary on Line: The Promise of Reading and Writing with Computers* Pittsburgh: University of Pittsburgh Press. 43-57.

Widdowson, H. G. (1985). Reading & Communication. In Alderson, J. C. & Urquart, A. H. (eds.), *Reading in a Foreign Language.* London: Longman.

URL Reference

http://user.gru.net/Richardx/index.html

APPENDIX 1 - ATTITUDE TEST (given to both groups)

Please write the number about how you feel.

1: Strongly Agree 2: Agree 3: Disagree 4: Disagree strongly

1. Reading in English is fun.
2. I like to read in English.
3. I like to read in Persian.
4. Reading in English is a waste of time.
5. Reading in English is boring.
6. Reading in Persian is boring.
7. Time assigned for reading classes is very short.
8. Reading in English enables students to do better in other classes.
9. Students should take more reading courses in English.
10. Reading exercises in English is interesting, useful, and fun.
11. The reading course has been one of my worst courses.
12. It seems I can do without reading courses.
13. Other English courses are better than the reading ones.
14. Reading courses are less time consuming than other courses.
15. Readings should be related to everyday life values..
16. Reading in English is worth spending time on and it is enjoyable.
17. Most reading sessions in English, are dull.
18. Most reading sessions in Persian, are dull.
19. I enjoy reading comprehension better than listening.
20. I would like to take more reading comprehension courses.

APPENDIX 2 – QUESTIONNAIRE (given to the Experimental Group only)

Please write the number about how you feel.

1: Strongly Agree 2: Agree 3: Disagree 4: Disagree strongly

1. The Internet helps me to read better.
2. I spend more time working on reading comprehension when I use the Internet than when I use printed texts (other forms of reading).
3. When I used the Internet for reading comprehension, I was more careful about meaning, as compared to reading paper texts.
4. I could think of more ideas for my reading when I used the Internet, as compared to paper texts.
5. I like using the Internet better than reading printed texts.
6. Usually, I like to read in English through the Internet.
7. I think I am a good reader in English using the Internet.
8. When I use the Internet for reading comprehension, I pay more attention to what I'm reading about.
9. Using the Internet has helped me to become better at reading in English.
10. I feel I've learned more about reading in English from this class than I have from other English classes I've taken in which the Internet was not used.
11. I plan to continue using the Internet to read after this class is finished.
12. I pay more attention to vocabulary when I use the Internet.
13. The feeling in the class is friendly.
14. Using the Internet makes me less worried about reading because I am independently involved in the reading activity.
15. I think I can read longer passages and articles using the Internet.
16. I don't like it when I can't understand what to do when I am trying to read my passages on the Internet.
17. I can easily make changes when I use the Internet.
18. I feel I can get more individual attention from the teacher in the Internet class than I do in other non-Internet reading classes.
19. I pay more attention to organization when I use the Internet.
20. The students in this class help each other.
21. When I read using the Internet, I pay more attention to the grammar also.
22. I found it was not difficult to learn to use the Internet.
23. I was worried that I might break the computer.
24. I was worried that it would take me longer to learn to use the Internet than it would other students.
25. I think using the Internet in reading class is interesting.
26. I would like to take another reading course if I could use the Internet.
27. I get better scores on reading tests if I've practiced reading using the Internet.
28. It was difficult to learn how to use the Internet.

29. I can change my reading speed more easily and more often when I use Internet.
30. I feel that I learn better when I get individual attention from the teacher.
31. I pay more attention to spelling and punctuation when I read on the Internet.
32. I think the Internet offers effective contact between students and teacher.
33. The use of hypertext helps/encourages cooperation among the students.
34. Hypertext creates active learning.
35. Hypertext causes students to have higher expectations of themselves.
36. Using hypertext teaches practical technological skills to students.
37. The Internet provides better practice for classroom activities and lessons.
38. The use of the Internet introduces potential student benefits and outcomes when using technology in the learning process.
39. Using the Internet helps me think critically as well as work actively and independently.
40. The use of hypertext helps me improve my reading ability and skills.
41. Hypertext helps me to understand that there is a difference between "just finding something" on the net and "finding something good".
42. Materials become more comprehensible by using the Internet.
43. Using hypertext helps me to learn the subject at a deeper level because of "the hands-on" approach (Hands on: more control over what to read or not read).
44. Using computers helps to make the class fun, and encourages mentorship.
45. The use of the Internet helps me to think creatively.
46. Hypertext helps to exercise independent thinking.

APPENDIX 3 – EXCERPT OF READINGS AND POST-ACHIEVEMENT TEST

Instructions: Read the articles below and answer the questions.

The Titanic

The Titanic is a very famous ship. In 1912 it was new. It was the biggest ship in the world. It was also very beautiful and expensive. People said that it was very safe. On April 12, 1912, it started to go on its first trip. It left Southampton, England. It was going to New York. It had over 2,200 people on it. There were 1,310 passengers and 898 crew members.

On April 14, at night, there was a lot of fog. It was hard to see. The boat went very fast. It hit an iceberg. In only 2.5 hours the boat sank. There were not enough lifeboats. Many people had to swim, but the water was very cold. 1,503 people died in the cold water.

1. When was the Titanic built?
a) in 1911
b) in 1912
c) in 1913
d) in 1914

2. Why did the Titanic hit an iceberg?
a) It was hard to see because of the fog, and the boat was going fast.
b) The Captain was asleep.
c) The boat didn't hit an iceberg.
d) The Captain thought the iceberg wouldn't harm the ship.

Suggested web sites: TESL-L@cunyvm.cuny.edu, NETEACH-L@ raven.cc.ukans.edu, and TESLCA-L@ cunyvm.cuny.edu