

ELECTRONIC LITERACY: EXPLORING TEACHER'S ROLE IN ENGLISH LANGUAGE EDUCATION

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ABSTRACT

Electronic literacy skills are essential in today's world where electronic texts are increasingly becoming the major source of educational facts, social information, argumentative issues, and entertainment in today's society. This paper highlights the difference between *electronic literacy* and *computer literacy* in the context of second language learning. The role of language teachers in an electronic environment is also emphasized as teachers are still needed to motivate, guide and act as facilitators of learning.

Introduction

We live during a time when the challenge of change is taking place in the form of literacy and learning - as digital and multimedia resources cross the threshold of our world. Literacy and language learning are being redefined by the digital communication and multimedia technologies that are quickly becoming part of the routine in our everyday lives. Theorists often assume that reading and writing computer programs is the basic skill of the computer literate person (Geisert & Futrell, 1990, Hock, 1989, Molnar, 1978, Simonson & Thompson, 1997). Current trends however, imply that educators should focus on developing students' ability to control a computer effectively and correctly with a well-written program.

As we look at the technologies found in the modern age, it is important to consider the challenges and new avenues that encircle language teaching, as we guide students' learning within electronic information environments. We have entered an era in which educators can no longer choose to ignore the responsibility of teaching with and about technological tools. Teaching students about the computer and other technological tools as part of the normal curricula together with the aim of developing their abilities to use these tools to complete language activities, will prepare them better in using the technology in the future. Hence, in the present situation, literacy does not simply mean the ability to read and write a particular language - it also involves abilities and practices related to the particular media through which texts are transmitted. Language learning within electronic environments is in fact more complexly networked than traditional print media and is able to present potentially richer and more integrated learning opportunities for both teachers and students.

Electronic Literacy: A New Perspective

The role of language literacy in today's educational system delineates that to be literate in any society; a person must be able to use written and oral language for a wide range of purposes. Literate people have a set of skills, knowledge, values, understandings, and relationships that allow them to use language for reading and writing on the job, at home, in school, traveling purposes, and so forth (Coburn, Kelman, Roberts, Snyder, Watt, and Weiner, (1982). The current demands for language competencies have shifted notions on literacy and its definition from the *Typographical Age* into the *Electronic Age*. According to Topping (1997), electronic literacy refers to language activities (reading, writing, spelling), which are "delivered, supported, accessed, or assessed through computers or other electronic means rather than on paper". The term "electronic literacy" should not be confused with "computer literacy" as the latter is more applicable to knowledge and competencies in using computers in general. From the definition provided, several dimensions of electronic literacy have been identified which includes:

- New language norms and conventions
- New ways of reading and writing text – particularly those involving multimodality
- New ways of communicating with others
- New types of speech communities and new avenues of participating in them
- New attitudes to communication and language norms

It is becoming increasingly apparent that educators and educational policy makers must be aware of the expanding definition of literacy which not only includes reading and writing of printed texts but of electronic texts as well. In the Malaysian context, the role of electronic literacy has become pertinent especially in the ESL context. Although the integration of computer technology into the Malaysian schools has been much slower (especially in the rural areas) than was once anticipated, progress is being made. The Malaysian government is making sure that schools are equipped with computers, multimedia and internet facilities to ensure students are provided with opportunities to utilize them to the maximum.

According to Shetzer and Warschauer (2000), becoming literate does not only mean being concerned about how to decode and put to paper letters and words. It also means being able to master the processes which are regarded valuable in particular societies, cultures, and contexts. In the context of the industrialized world, virtually all academic and professional writing now involves computer use. Hence, literacy has now become a shifting target, and as educators, we need to prepare students for their future rather than our past.

Until recently, English language educators could safely narrow down reading and writing activities to printed materials. The advent and rapid development of today's technology increases the possibility of doing reading and writing activities electronically with the aid of a computer. Being electronically literate in today's world does not only consider whether an ESL learner understands what a computer is and how it works effectively to accomplish a necessary task. According to Reinking (1992), it also takes into account whether the learner is able to access large databases of texts and organize the information, use the computer to create and revise texts, send and receive email electronically, and to present instructional texts on-screen instead of in printed books.

Another viewpoint on electronic literacy centers upon possessing the knowledge and skills, which include alphabetic literacies as well as at least a rudimentary grasp of a computer's interface or 'screen literacy'. From this perspective, electronic literacy also includes some specialized knowledge for issuing computer-readable commands to save a document, print it, send it out over a network or other medium. Kaplan (1995) says that an iconic and direct manipulation interface, for example, requires its user to understand the symbol system and be able to predict reliably the consequences of certain actions the user might need to make – how to scroll and bring additional text into view.

As second language teachers begin to explore the usefulness of computer technologies, such as the Internet to support reading, writing, listening and speaking activities, they begin to realize that this technology requires them to look at literacy in a new light. The idea of engaging in isolated text no longer applies for students of today as they are exposed to more fluid forms of information transfer. It is essential that ESL teachers and learners come to realize that being electronically literate in the age of information demands functional, academic, critical, and technological skills, and because technology is now viewed as both a necessary component of and a means to achieving literacy, it must become an integral part of ESL courses and the Internet used as a tool to promote linguistic skills and knowledge construction.

Being literate now means being able to integrate reading and writing, navigating through information sources, discriminating between relevant and irrelevant information, responding to email, communicating through SMS (short messaging system) or engaging in electronic chat sessions. This concurs with Reinking's notion (1995) which describes being electronically literate as being able to communicate in a "post-typographic" world. If ESL learners are to reap the benefits of the multitude of resources on the internet, they must develop strong critical literacy skills; they must also learn how to navigate through, and then evaluate, the information presented there. In fact, Warschauer (1998) advises us that "literacy in the online realm by necessity becomes critical literacy—because if you can't evaluate things critically, you can't even begin reading on the Internet."

Without a doubt, electronic literacy has changed the way people look at the concept of literacy. Since the arrival of the electronic age, the role that students and teachers play in the context of language learning and teaching has changed tremendously. As educators search for new ways to help students become more literate, and as electronic technology becomes more advanced and easily accessible, expanding our ideas about what it means to be literate seems almost inevitable.

The Role of Language Teachers in an Electronic Environment

The increasing use of electronic technology, especially electronic texts seems to imply that educators need to consider how to design activities that will develop electronic literacy in various educational contexts. The growing importance of acquiring and developing knowledge and skills in an electronic environment makes it clear that this area is a necessity. In addition to the changing roles of students in the learning process, issues and concerns in computer literacy have the potential of changing the role of the teacher in the classroom. The transformation of roles that the language teacher has to adopt and adapt may present an unwanted challenge as the teacher needs to be 'technologically inclined' and have a wider range of knowledge on using computers to teach language and for instructional purposes.

According to the Newcastle report (as cited in Moseley, Higgins, Bramald, Miller, Mroz, Tse, Newton, Thompson, Halligan, Bramald, Tymms, Henderson, and Stout, 1999), it was found that:

There is a tension in the literature between those who believe computers should help teachers do their jobs as they do them now and those who see computers as redefining teachers' roles with a move towards resource management and more independent learning by pupils.

It is reported that to ensure transformational change, i.e. working with computers in the actual classroom situation, teachers' need to engage in a 'paradigm shift', - building on what they already know as language teachers and analyzing how they can change and use the computer technology to their own advantage. No doubt changing the old mindset on what teachers constitute as the effective model of education takes time and only when the new mindset has been established will the classroom be transformed.

Reservation towards computer applications in language teaching is triggered by lack of technical support, lack of training in using computers with students and using computers to perform management and other professional tasks. It is reasonably understandable that this paradigm shift can cause a bit of a stir among educators. People worry as to whether using computer technology in language teaching is going to be manageable or not, or whether it would be able to maximize teachers as well as students' creativity and minimize the conventional approach used as we gradually

make that change. For some, it might paint the picture that the teacher's existing craft in language teaching is seen as being threatened as they struggle to implement a more hybrid approach, i.e. integrating computer technology in language teaching. However, it is felt that language teachers, as professionals, should be made aware of the potential uses of computers in language teaching and the possibilities of exploiting electronic resources, understanding the information and communication technologies that are available in promoting electronic literacy. Information now bypasses many of the levels that were previously management levels that needed to be dealt with cautiously. This notion is best explained by Judd (1983):

..a teacher who won't have a computer in his or her classroom is like a ditch digger who won't learn to use a steam shovel. Like a steam shovel, a computer is a tool. It can increase the power a teacher can apply to a learning situation, but it does not replace the teacher. In a competitive world, ditch diggers who refuse to adapt are going to go out of business. (pp. 120-122).

Although multimedia technologies and the Internet provide ample access to rich information resources, a teacher is still needed to motivate, guide and act as facilitator of learning. A teacher's role in pacing students' use of the computer, mixing practice with theoretical and conceptual advances, and interspersing periods of personal contact with periods of full concentration are personal touches that can never be replaced with a computer. Teachers play an important function in linking electronic literacy skills students learn in the classroom or computer labs to the real world. It is essential that students learn how the skills they are learning can be used to complete various tasks for different purposes.

For this reason, teachers will need to become even more insightful about literacy learning and incorporate it into the English language curriculum. Sheingold and Hadley (1990) report three major changes taking place in technologically enriched classrooms: (1) teachers have greater opportunities for individualization, (2) teachers set expectations that their students can present more creative and complex material, and (3) integrating the computer in the instruction changes the role of teachers and students such that classroom practices and experiences become more student-centered and teachers act more as coaches and facilitators.

Electronic literacy should not be seen as something separate from language learning, but as an integral part of delivering to the students knowledge and skills pertaining to second language learning and acquisition. Technology now allows students to be taught by a "virtual teacher" who could be in another area far away. The process of learning in an electronic environment enables a teacher to be digitally teleported from a different location and still be able to see and communicate with the students as if they were all in the same room (BBC News, 13 January, 2000). For

example, an English language teacher could invite a speaker to give a talk without having the speaker to be “physically” present in the school and still be able to deliver the talk and communicate with students. This is one of the many strategies where Malaysian ESL teachers can integrate technology in second language acquisition and develop students’ to be electronically literate.

To reiterate, the continued move to improve language using electronic tools to its full potential can accelerate learning and literacy rate. However, if the teaching force has little or no knowledge and skills to promote electronic literacy, the pursuit of integrating technology into the language classroom will result in students’ as well as teachers’ inability to cope with the tricks and the trade of the information age. That is the essence of the challenge that language teachers need to take seriously as these technologies are able to transform the whole nature of the learning experience.

Language teachers will have to improve their own electronic literacy knowledge before educating students about the subject matter. They must realize that the traditional method of teaching is no more applicable in today’s day and age. For instance when students are required to do assignments where they need to gather information from a variety of sources, the Internet is able to provide them with ready access to a broad base of informational sources. However, while the Internet may be compared to a library containing almost every book in the world, it is one which often lacks organization (Harvey, 1998) and which also contains a good deal of inaccurate and unreliable information.

Computer technology in education will not only be vehicles of instruction but also subjects of instruction. This requires a clear understanding of both tool and task. In spite of all this, there would still have to be a curriculum, which entails discipline and rigor from language educators in teaching and learning electronic literacy. Teachers need to have a clear understanding of both the new electronic tools becoming available in the market for language literacy and the ways in which these tools redefine language literacy tasks. Again, this may be seen as a “scary prospect”, but if used well, it can make language lessons more fun for the students and easier for teachers to prepare and deliver.

As language teachers, we should embrace the emergence of electronic literacy, as that change is inevitable. As the digital revolution transforms the educational landscape, insightful judgments are called for with reference to educational values and the best uses of available technologies to promote electronic literacy. In the context of the ESL classroom in Malaysia, the challenge for the teacher is to create a classroom context in which computer technologies are used as a teaching tool for teaching language with certain educational objectives in mind. Malaysian ESL practitioners can refer to some of the conditions provided by Downes (1995), as cited in Monteith (2000, p. 80) on some of the factors teachers need to consider in promoting electronic literacy which include:

- create a language classroom culture where students can participate in and benefit from all teaching and learning activities, including those using new technologies
- develop students' attitudes, values and skills which enable all to work both independently and cooperatively with their peers, sharing resources as needed
- organize teaching and learning experiences in ways that ensure students have access to necessary resources and can participate in all aspects of the task. For example, when establishing pairs or groups, one decisive factor could be to place students of equal assertiveness together. Class groupings should vary over time, and students have the opportunity to be leaders as well as team members, and experts as well as novices within the task domain.
- Allocate time, particularly for students who do not have access to computers outside of the classroom, to explore the use of the computer or engage in purposeful activities on their own. Students who are more knowledgeable can help and coach their less knowledgeable peers and pass on new-found skills to others
- Design teaching and learning activities and management regimes which maximize students' sense of control over the use of the computers and its applications.

(Downes, 1995; as cited in Monteith, 2000, p.80)

Reinking (1995) also emphasizes the need for educators to begin considering how they can develop activities that can be integrated into the educational contexts with the aim of developing electronic literacy. Activities designed to promote electronic literacy should involve authentic communication and meaningful tasks for students. Teachers need to design activities that can engage students in higher levels of thinking about the nature of printed and electronic texts as well as about the topics used in their reading and writing activities. Activities that combine printed and electronic texts usually allow students as well as teachers to compare fundamental differences in these media.

In summary, although early uses of the computer in the classroom emphasized the use of technology as an alternate delivery for traditional classroom practices, more recent applications have drawn attention to the computer as a tool to expand the intellect. Thus, it is strongly recommended that language teachers seize the opportunities presented before them as the capabilities of computer technology offer

exciting possibilities for teachers to expand and enhance the second language curriculum, specifically in promoting electronic literacy.

Teaching Electronic Literacy

Arshad Abdul Samad (2001) states that there is an obvious contribution that computer technology can make in language teaching and learning. In order to integrate this modern technology into language teaching, teachers need to have knowledge of what effective computer use entails and how it can be developed.

The acquisition of computer skills or *computer literacy* has been incidental to the goal of teaching the second language. Computer Assisted Language Learning or CALL is one of the many mediums where a content-based approach is used to teach the second language. Ward and Karet (1996) outline 6 principles for successful implementation of teaching electronic literacy skills using a content-based approach:

- Each new computing skill should be introduced in the context of a content task
- Each step of a new computing task must be clearly documented, with supporting explanations readily available in a variety of formats (e.g. written instructions, audio and/or video demonstrations)
- Skills should be introduced sequentially so that each new skill builds on previous learning
- To a certain extent, new tasks should require recycling of previously learned skills to reinforce learning
- Design a course requirement that cannot be accomplished without acquiring internet literacy
- Encourage students who are more knowledgeable in using the internet to share their knowledge in order to bring the entire class to the same level as quickly as possible.

Shetzer and Warschauer (2000) state that electronic literacy skills can be categorized into three broad areas which function as a tool to be implemented in the second language classroom situation: communication, construction, and research. The earlier approach to communication is mostly based on listening and speaking activities in which students and teachers engage in the classroom situation. Harasim (1990) and Harnad (1991) suggest that in the electronic literacy approach, the ability to communicate with groups of people from various places simultaneously and at a

minimum cost allows them to record, reflect on, and refine previous words as well as those of the interlocutors of computer mediated *communication*. A powerful communication tool is capable of bringing about a revolution in human interaction and cognition that can transform how we interact in education, business, and personal life.

This is especially true in the context of Malaysian ESL students where teachers need to capitalize on the internet facilities such as email, chat rooms, online forums, and blogs that allow students to communicate interactively with people from across the globe in the same subject area. Students can be taught how to contact groups of people using a variety of online technologies in order to read for comprehension, ask questions, share opinions, give advice, share knowledge, conduct surveys, and post summaries and original research. Apart from that students can also be taught how to participate in collaborative projects with people in different locations to accomplish a shared goal and how to select the available asynchronous technologies such as e-mail, e-mail lists, web bulletin boards, newsgroups, etc.

The earlier approach towards *construction* considered writing skills as the traditional pedagogy where essays for example, appear in a linear form. The hypertext that is found on the World Wide Web represents a radically different way of presenting information where its decentralized linkages to other materials at the same web site or to other web sites creates a hybrid of activities concerning written ideas and information. These days the electronic literacy approach towards writing can include the creative use of other media, such as graphics, audio, and video. Kress (1998) indicates that the Internet represents an extension of the conventional document presentation, with quality web documents are now being judged by their appearances and the presentation of their texts.

In the context of ESL teaching, teachers should encourage students to create presentations for reports or assignments using the powerpoint program creatively and publish their work or create web pages and web sites, individually and collaboratively, through effective combination of texts and other media in hypertext format. In general, students find that doing presentations or project work using the internet of multimedia resources more appealing and enjoyable as compared to the traditional method (OHP transparencies or manila cards).

While the earlier approach towards writing tends to focus on individual writing, the electronic literacy approach involves a collaborative process. Some web sites are produced by a team of people that are linked to the works of other sites and authors. This presents a much more dynamic form of interaction in web site design, as the original creator(s) must consider that the reader will link to the other site in the middle of browsing through the current site in a back and forth manner.

The amount of information that can be accessed has increased tremendously throughout the years, and an increasing amount of it now is available online. In the

earlier approach towards conducting *research*, a student will go to the library, gather relevant source materials; bring it home, read through it, and write an essay to turn it in to the teacher. In the electronic literacy approach, students looking for information on the Internet would have to use very different reading and research strategies. Knowing how to navigate Internet sources, search for information, and critically evaluate and interpret what is found is an important set of electronic literacy skills needed by students these days (Shetzer and Warschauer, 2000).

As a guide for Malaysian ESL teachers who want to integrate the use of computer technology and multimedia in their teaching and learning, opportunities should be provided where ESL teachers can act as facilitators and encourage students to acquire electronic literacy skills which involve knowing how to use the search engines effectively, and then being able to skim and scan to see if what was found is relevant and making judgments about its source, validity, reliability, and accuracy in order to decide whether to continue perusing the website or try another one and go through the same process all over again. Table 1 summarizes the key differences between an electronic literacy approach and earlier approaches to language and literacy instruction.

Table 1: Earlier approaches versus electronic literacy approach

	Earlier Approaches	Electronic Literacy Approach
Communication	Based on listening and speaking	Includes computer-mediated communication
Construction	Based on linear texts Excludes non-print media Tends to focus on individual writing	Also includes hypertexts Combines texts and other media Strong emphasis on collaboration
Research	Restricted to print sources Focuses on linear texts Excludes non-print media Tends to separate reading skills from critical evaluation Focuses on library search skills	Includes online sources Also includes hypertexts Combines texts and other media Views critical evaluation as central to reading Focuses on searching and navigating online sources

The key differences highlighted earlier are extended by describing skills and activities that are useful as tools for planning tasks and projects for the language classroom that use computers and the internet for personal and professional empowerment.

Therefore, the electronic literacy approach provides greater flexibility for teachers to select and choose from the technologies available in the context. The skills and activities listed above include teachers and students as autonomous investigators, having control over their own learning processes. However, the potential implications with the activities listed create a scenario that challenges the boundaries of traditional teaching.

Hence, teachers need to acknowledge that electronic literacy is crucial in today's second language education. It is not static as compared to the traditional way of teaching where the teacher's role is one who transmits knowledge to the students. In the Internet age, information is much more accessible and ever changing and teachers can capitalize on the opportunities computer technologies such as the Internet has to offer in providing new forms of literacy. To prepare our students for the challenges of the future technologies will be central to our mission and it is seen as congruent in developing electronic literacy. No matter how technologically challenged teachers may feel, each of us must enter and embrace this new world and make every attempt to keep up with the changes taking place.

Example of Literacy Activity: Pre-school/Primary Level

Norris (2000) has provided a good example that Malaysian pre-school/primary teachers can use as a guide in creating and implementing lessons and activities that use technology to support early literacy. Some of the activities created have the flexibility in which they can be adapted and modified to suit the needs and interests of the Malaysian students. It enables students to perform easy editing and immediate publishing of work. Students are all able to see the text, read the print and do not have pens to distract them. Interactive writing using word processing also allows for modeling of basic word processing skills in an authentic setting.

Title: Having Fun with Nursery Rhymes

Overview: Using the Enchanted Learning Website, students will read nursery rhymes and identify characteristics of a nursery rhyme. Students will highlight rhyming words in the nursery rhyme and as an extension; students can work with their partners in creating two sentences/two slideshows about a character in one of the nursery rhymes they read earlier.

Ability: Intermediate learners

Time consumption: Two to three 45-minute sessions

General Objectives: Students will demonstrate positive attitudes toward reading, writing, listening and speaking.

Specific Objectives: At the end of the lesson, students will:

- i. Listen to nursery rhymes read aloud.
- ii. Participate in shared reading of nursery rhymes.
- iii. Participate in paired reading of nursery rhymes.
- iv. Identify rhyming words and other characteristics of a nursery rhyme.
- v. Develop and practice concepts about print.
- vi. Navigate the Internet and use a bookmark.

Materials:

- i. Enchanted Learning Rebus Rhymes Website
(<http://www.EnchantedLearning.com/Rhymes.html>)
- ii. Computer connected to LCD projector
- iii. A suitable word processing program
- iv. Printed copies of the nursery rhymes read with the website address
- v. Language lab equipped with computers and able to access the Internet

Set Induction: Instruct students to sit in pairs. Bookmark the Enchanted Learning website on the computers students will be using.

Delivery of Lesson: Day 1&2

1. Have Netscape or Internet Explorer up on the computers when students arrive. Instruct students to sit with their partners. Model for the students how to navigate to the website using the bookmark. Remind students that in the event they click on the incorrect button or link they can go back to the nursery rhyme page by using the bookmark.
2. Read aloud one of the nursery rhymes to the students as shown on the projector. Ask students what they notice about the poem they have just read. Possible responses: "It rhymes", "It is not in complete sentences", "Some words are repeated".
3. Ask students what a nursery rhyme is. Ask students why they think there are pictures in the poems? Tell students that they will be reading a few nursery rhymes together and that they need to listen for rhyming words.
4. Students will do a shared reading of Baa, Baa Black Sheep. Point out to the words on the projector as everyone reads together. Ask students what words rhymed in the nursery rhyme. Read the nursery rhyme again and have students point to their noses when they hear one of the rhyming words.
5. Read one more nursery rhyme aloud – Jack and Jill, where it is a little longer and students are familiar with it. Guide them on how to point out how to scroll up and down the page, how to use the back button, and how to click on the link of the nursery rhyme to see the full text.
6. Do another shared reading of this rhyme and point out the words that rhyme after they have read it.
7. Next, students can work on their own to find other nursery rhymes where they can identify the rhyming words.
8. At the end of the session, students will share other nursery rhyme title they read earlier. Copies of these nursery rhymes can be printed out where students will be asked to read their nursery rhymes to their parents and identify the rhyming words.

Delivery of Lesson: Day 3

1. The teacher can complete the lesson by reviewing what students had done previously. As usual, the computers need to be connected to the internet in advance. The teacher will need to copy and paste one of the nursery rhymes from the Enchanted Learning website into a word processing program.
2. The class will do a shared reading of a nursery rhyme after the teacher reads it aloud. The teacher will ask students to identify two words that rhyme. The teacher will show the students how to highlight a word by clicking on it twice and change the color. Students can take turns changing the colors of the words. Teacher can instruct students to work in pairs and choose their own nursery rhymes and copy as well as paste their poems and save their work as templates.
3. As an extension, students are instructed to create their own slide show, which can include a two sentence or two slide rhyme about one of the characters in the nursery rhymes they have chosen.
4. Apart from that, students can be instructed to write their own nursery rhymes based on a specific theme.

Example of an Electronic Literacy Project: Secondary Level or Higher

Instructional Sequence:

1. Students are asked to search the World Wide Web for articles based on a specific theme, for example: science and technology, health and nutrition, environmental education etc. Read and study the specific articles chosen.
2. Based on the specific themes chosen, students choose a topic and create an article of their own. Write drafts of the composition online, the teacher critiques the drafts online and creates electronic links to his own comments and to pages of appropriate linguistic and technical explanation. This is to enable students to find additional background help at the click of a mouse.
3. At the end of this project, students prepare and publish their own articles on the Internet, together with reply forms to gain feedback and opinions from readers.
4. Students advertise their web articles on appropriate Internet sites (e.g. Scientific newsgroups, environmentalist discussion board) so that interested individuals or organizations around the world will know about the articles and will be able to read and comment on them.

5. When students receive their comments (by e-mail), they can take the remarks into consideration in editing their articles for republication on the web or for submission to journals or magazines.

Conclusion

As teachers think about how to use computer technologies in language classrooms, they need to look into the instructional practices that take advantage of literacy opportunities. To ensure success in the electronic literacy approach, teachers and students need to work collaboratively to look at the types of language they use in different media, their attitudes toward communicating in a variety of media, and the problems and successes that arise as they try to put into practice their own goals related to technology-enhanced learning and teaching. It is strongly believed that electronic literacy skills are essential to survive in today's world where electronic texts are increasingly becoming the major source of educational facts, social information, argumentative issues, and entertainment in today's society. Therefore, schools and teachers need to take leadership in promoting and developing electronic literacy. The rewards for students will be as important as the future teachers wish to provide them.

References

- Arshad Abdul Samad (2001). *Computer Application in TESL*. Serdang: IDEAL, Universiti Putra Malaysia.
- BBC News, 13 January 2000. Online drive pushes ahead in schools.
<http://news.bbc.co.uk/> Accessed on 23 April 2003.
- Brownell, G. 1987. *Computers and Teaching*. New York: West Publishing Company.
- Coburn, P., Kelman, P., Roberts, N., Snyder, T.F.F., Watt, D. H. and Weiner, C. 1982. *Practical Guide to Computers in Education*. Reading, MA: Addison-Wesley Publishing Company.
- Downes, T. 1995. *Learning in an Electronic World*. Primary English Teaching Association, Newton, NSW, 1995.
- Geisert, P. & Futrell, Y. 1990. *Teachers, computers, and curriculum*. Needham Heights, MA: Allyn & Bacon.
- Harasim, L. 1990. Online education: An environment for collaboration and intellectual amplification. In L. Harasim (Ed.). *Online Education: Perspectives on a New Environment*. New York: Praeger.
- Harnad, S. 1991. Post-Gutenberg galaxy: The fourth revolution in the means of production and knowledge. *Public-Access Computer Systems Review*, 2(1): 39-53.
- Harvey, J. 1998. TESL meta-sites on the Internet: A review. *TESL-EJ*, 3(2). [Online]. Available:<http://www-writing.berkeley.edu/TESL-EJ/ej10/m1.html> Accessed on 7 October 2004.
- Hock, S. 1989. *Computers and Computing*. Boston: Houghton Mifflin.
- Judd, W. 1983. A Teacher's Place in the Computer Curriculum. *Phi Delta Kappan*, 65(2): 120-122.
- Kaplan, N. 1995. E-Literacies. *Computer-Mediated Communication Magazine*, 2(3): 11.
- Kinzer, C. & Leu, D. J. 1997. The Challenge of Change: Exploring Literacy and Learning in Electronic Environments. *Language Arts*, vol. 74.
- Kress, G. 1998. Visual and verbal modes of representation in electronically mediated communication: The potentials of new forms of text. In I. Snyder (Ed.). *Page to Screen: Talking Literacy into the Electronic Era*. Routledge: London Press.

- Merrill, P.F., Hammons, K., Vincent, B.R., Reynolds, P.L., Christensen, L. and Tolman, M.N. (1996). *Computers in Education*. Needham Heights, MA: Allyn and Bacon.
- Molnar, A. R. 1978. *The next great crisis in American education: Computer Literacy*. Paper presented at the annual convention of the Society for Applied Learning Technology. (ERIC Document Reproduction Service No. ED 191733).
- Monteith, M. 2000. *IT for Learning Enhancement*. Exeter, UK: Intellect Books.
- Moseley, D., Higgins, S., Bramald, R., Hardman, F., Miller, J., Mroz, M., Tse, H., Newton, D., Thompson, I., Halligan, J., Bramald, S., Newton, L., Tymms, P., Henderson, B., and Stout, J. 1999. *Ways forward with ICT: Effective pedagogy using information and communications technology for literacy and numeracy in primary schools*. University of Newcastle, 1999.
- Norris, L. 2000. Enchanted Rhymes in the Media Center.
http://www.mcps.k12.md.us/curriculum/littlekids/archive/lesson_nur_rhymes.htm
Accessed on 29 April 2003.
- Reinking, D. 1992. Differences between electronic and printed texts: An agenda for research. *Journal of Educational Multimedia and Hypermedia*, 1(1): 11-24.
- Reinking, D. 1995. Reading and writing with computers: Literacy research in a post-typographic world. In K.A. Hinchman, D.J. Leu, & C. Kinzer (Eds.). *Perspectives on Literacy Research and Practice*. Chicago: National Reading Conference.
- Sheingold, K. & Hadley, M. 1990. *Accomplished Teachers: Integrating Computers into Classroom Practice*. New York: Bank Street College of Education, Center for Technology in Education.
- Shetzer, H. & Warschauer, M. 2000. *An electronic literacy approach to network-based language teaching*. In M. Warschauer & R. Kern (Eds.). *Network-based language teaching: Concepts and practice*. New York: Cambridge University Press.
- Simonson, M. R. & Thompson, A. 1997. *Educational Computing Foundations*. Columbus, Ohio: Merrill.
- Topping, K. J. 1997. Electronic Literacy in School and Home: A Look into the Future.
<http://www.readingonline.org/international/future/> Accessed on 20 April 2003.
- Ward, D. and Karet, J. 1996. The content-based approach to Internet literacy. In Mak, et al. (eds.). *Collaboration via the Virtual Orient Express*. University of Hong Kong: Social Sciences Research Centre, pp. 362-37