Impact of Technology on Teens' Written Language

Adnan Omar[1], Muhammed Miah[2*]
Department of Management Information Systems
Southern University at New Orleans, USA
[1]aomar@suno.edu, [2]mmiah@suno.edu

ABSTRACT

Information technologies are having a profound effect on all aspects of life, language is no exception. Digital technology has become an increasingly popular means of communication; however, there are worries that this trend is having a detrimental effect on the writing skills of students. In this study, the relationship of new technologies to writing and its implications is reviewed; case studies and existing research on the effects of electronic communication on literacy and language development more specifically on English writing among teens are evaluated. Finally solutions are proposed with regard to future trends of technology-intensive writing.

Keywords: Technology, Communication, Language, English, Writing

1. INTRODUCTION

The importance of writing in the job market cannot be overemphasized, up to two-thirds of salaried jobs at large American Companies require writing of some kind. A recent survey of American corporations and government entities [25] found that good writing skills are vital to gaining a job and advancing in one's place of employment. Writing is a complex process that involves many skills, processes, and strategies. It requires a codifiable medium to convey meaning and uses a vocabulary, based on known conventions and rules of usage, to create new ideas. Good writing is defined by "clarity, accuracy and logical thinking," among other characteristics [25].

Electronic communication technology has revolutionized the composing process and participation in writing activities. Communication technology is composed of many forms of electronic communication. Those associated with the internet, now accessible through both computers and mobile phones; include e-mail, instant messaging services, chat rooms, forums, social networking sites, interactive online gaming networks, and Web-logs (blogs). In addition, mobile phones enable their users to make telephone calls and send text messages. Information technology is having a profound effect on young people and the educational system today. A recent study [28] shows that more than four in ten teens (45%) personally have both a computer and a cell phone. Computers are increasingly

being used in the learning process but the communicative functions of the internet and cell phones are the main reason why teens use these technologies.

Access to the technology is higher than ever before and is still increasing due to the fact that it provides a non-threatening atmosphere for business and social interactions [21] and an arena for students to present their work beyond classroom boundaries. Almost all American adolescents use the internet, and those who go online tend to do so multiple times throughout the day. Recent studies showed that more than 4 in 5 children ages 5–15 have access to a home computer, and levels of Internet use are at 46% for 5-7 year-olds and 75% for 12-15 year-olds. Furthermore, 87% of 12–15 age groups owned cell phones and reported that use of the Internet was "the most important technology in their lives—more important than television" [11].

Some of the concern about the writing skills of Americans focuses on university students and adults in the workplace. Writing effectively is a critical skill that students need to master to be successful throughout their education and later when they enter the workforce. Recently, the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects outlined rigorous writing standards to ensure that students have the knowledge and abilities to produce coherent, written works of various length, style, and purpose [26]. The role of the new technologies in attaining this goal is a subject of passionate debate.

Critics notice that this increasing trend in communication technologies has however led to a new variety of the written language, which seems to be deviant from the traditional norms. A report published by the American Alliance for Childhood [8] affirms that technology is physically, socially, and intellectually detrimental for children [24]. The resultant impaired language would then have important implications for long-term outcomes and general well-being of the individual [5].

On the other hand, proponents of these technologies argue that widely reported concerns regarding the effects of communication technology are very broad and are based on

anecdotal evidence. They state that early research on the social impact of inventions like the telephone and later the television were often heavily affected by general myths and pessimism with regard to implication on individuals [20]. They also argue that in contrast evidence from both the United States and the United Kingdom highlight that in places where access to technology is improved, young people from these households derived the greatest benefit in terms of improved educational achievement [12].

Considering the diverging opinions with regard to technology and language development and the prevalence of this technology in today's society, investigation on the topic is timely and crucial. The implications of modern technologies to writing practices especially among teens is examined in this study and solutions proposed in order to ensure effective writing and literacy development.

2. WRITING HABITS

Student writing improves when given multiple opportunities to write on a regular basis [7]. Regular writing not only improves students' writing and understanding of course contents, but it also increases students' critical-thinking skills, which can be applied to other tasks. A majority of teens get some enjoyment from the writing that they do for school, although they get more enjoyment from the writing that they do for themselves outside of school. Yet in spite of recommendations from educators and researchers that students should write at length and across the curriculum in a variety of content areas, many teens report that they write mostly short pieces that are not research based, and receive longer assignments primarily in English and language arts classes.

The most common types of school writing are taking notes in class, writing essays and writing short pieces of a page or less in length. More than nine in ten teens have done each of these activities for school in the past year. Below are some statistics on students' school writing habits according to race and gender [28]:

- Nearly six in ten black teens (57%) write in a journal for school, and 17% write music or lyrics. In contrast, just four in ten whites (41%) write in a journal and fewer than one in ten (6%) write music or lyrics for school.

- White teens are significantly more likely than English-speaking Hispanic teens (but not blacks) to create presentations for school (72% of whites and 58% of Hispanics do this).

- Teens from families earning $50,000 or more per year are more likely than lower-income teens to write up science labs (75% of higher-income teens do this, compared with 67% of lower-income teens) and to create audio, video or Power Point presentations (72% vs. 61% for lower-income teens).

- Girls are slightly more likely than boys to write essays at school (96% of girls do this, compared to 91% of boys), while boys are slightly more likely to write computer programs (13% of boys and 7% of girls have done so in the past year).

- Almost a quarter (24%) of teens whose parents have a college degree say they usually use a computer for school writing, compared with 10% teens with parents who have some college education, 15% of teens whose parents are high school graduates, and 10% of teens whose parents have less than a high school education.

- Outside of a relatively small group of intense writers, non-school writing is something teens do infrequently.

The internet is not just a near-ubiquitous technology in the lives of American teens; it is also their primary method for conducting research for school writing purposes. 94% of teens use the internet at least occasionally to do research for their school writing assignments. Nearly half (48%) do so once a week or more, while one quarter (26%) do so several times a month. Table 1 (See Appendix) shows the percentage use of internet for writing assignments according to race/ gender and ethnicity.

Table 1: Percentage use of internet for writing assignments

| Using the Internet for School Research	
% who use the internet at least occasionally to research for school assignments...	
All teens	94%
Gender	
Girls	96
Boys	92
Age	
12-14	91^
15-17	96^
Race/Ethnicity	
White	95
Black	94
Hispanic	87
Annual Household Income	
Less than $30,000	85†
$30,000-$49,999	96♦
$50,000-$74,999	94♦
$75,000+	96♦

Source: Pew Internet & American Life Project Teen/Parent Survey on Writing, September-November 2007. Margin of error is ±5%. ^ mean that the numbers are significant to each other in each section. The percentage with † next to it is significant to all the other numbers with a ♦ in the column, but the other numbers with a ♦ in the column are not significant to each other.

3. ELECTRONIC COMMUNICATION

Today's "Net Generation" students live in a digital world. Recent studies reveal that students spend over 10 hours a day using multimedia devices, such as mobile phones, mp3 players, and computers, with one to one-and-a-half hours of this time spent online using the Internet [30].

Technology suffuses the lives of teens. Six in ten teens (59%) now have a desktop or laptop computer, but computers are not the only communicative technology at teens' disposal. Cell phone use has grown rapidly among teens in recent years: 71% of teens currently have a cell phone, up from 45% in 2004 and 63% in 2006. Overall, more than four in ten teens (45%) personally have both a computer and a cell phone with cell phone (81%) and computer (65%) ownership being particularly high among older teens. [28].

A relationship between years in school and technology use quickly emerged, with upperclassmen being significantly more likely to spend more than one hour per day using "older" communication technologies such as the phone and email. Conversely, freshmen were twice as likely as upperclassmen to spend more than an hour each day on social networking sites to communicate and more than twice as likely to be spending that much time text messaging on an average day [37]. Figures 1, 2 & Table 2 (See Appendix) show communication usage results based on age of students.
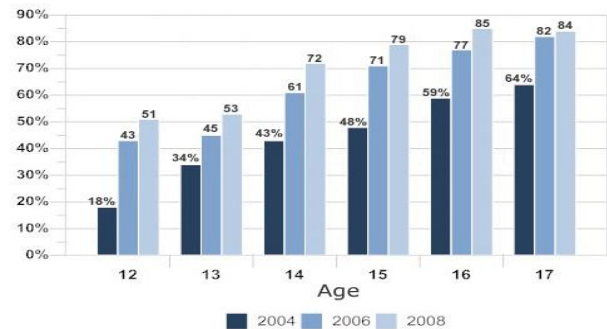
Source: http://www.pewinternet.org/Commentary/2008/May/New-communication-technologies-impact-on-young-adults.aspx
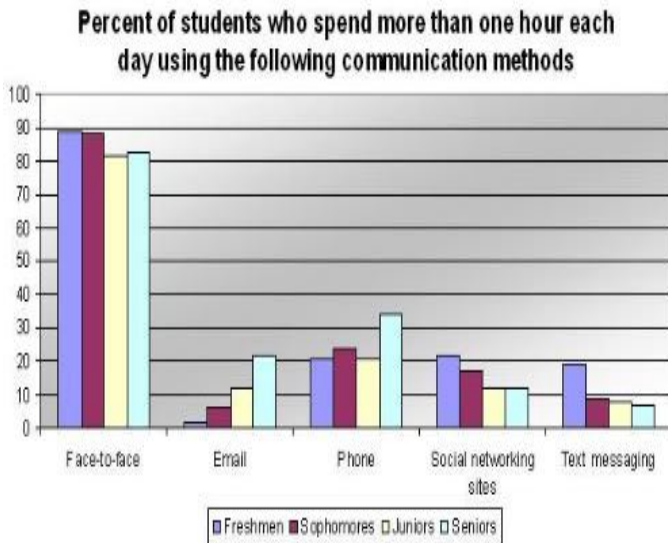
Figure 1: Percent of students spending more than one hour each day using different communication methods

Figure 2: Percentage of teen cell phone owners by age, 2004-2008

Table 2: Teens and technology usage over the past five years

Demographics of Teen Cell Phone Users

The percentage of teens in each demographic group who have a cell phone

	% of teens
All teens	**71%**
Sex	
Male	70%
Female	72
Age	
12-14	59%
15-17	83*
Race/ethnicity	
White (not Hispanic)	73%
Black (not Hispanic)	64
Hispanic (English-speaking)	71
Internet user	
Yes	72%*
No	51
Household income	
Less than $30K	62%
$30K-$50K	63
$50K-$75K	72
More than $75K	79*

* indicates a statistically significant difference from other data points within the same demographic variable.

Source: Pew Internet & American Life Project, Gaming and Civic Engagement Survey of Teens/Parents, Nov. 2007-Feb. 2008. N=1,102 and margin of error is +/-3%, based on all teens ages 12-17.

This dramatic shift to digital interactions has led to a changing educational landscape that requires educators to integrate new and emerging technologies into instruction. It is imperative that students engage successfully in this technology-driven, digitally enhanced era where jobs, personal and financial transactions, and interactions with the global economy utilize and depend on mastery of these skills.

According to Trilling and Fadel [35], students now need instruction not only in academic subjects like reading, writing, and arithmetic but also in other abilities such as digital learning, information gathering and management, and media awareness and usage, in order to develop relevant life and career skills. However communicative functions of the Internet and cell phones are the main reason why teens use these technologies. Since many of these technologies are text-based, they constitute another potential space for writing under a broadly constructed definition of the term [23].

One of the most dramatic changes that this digital revolution has prompted is a transformation in how students write and communicate. Not only are students expected to write more traditional communications such as research reports and persuasive essays, but students are also commonly exposed to new digital forms of writing. Electronic mail (e-mail), blogs, social networking posts, message boards, and other types of online communication have distinct forms, functions, and structures [29].

Electronic discourse, such as that used in e-mails, text messages, or Internet chat rooms, often resembles writing that reads as if it were being spoken. Some researchers have termed this form of language "written speech" or "spoken writing" [9]. It has been suggested that this form of "netspeak" may represent an entirely new language register [16].

The increased use of communication in such an alternative language form may have implications for language skills and many educators and observers have expressed concern that the abbreviated language styles of text messaging, email and wall posts are filtering inappropriately into formal school writing.

Half (50%) of teens say they sometimes use informal writing styles in the writing they perform in school, 38% have used shortcuts from instant messaging or email, and 25% have used emoticons in their school writing. Overall, nearly two-thirds of teens (64%) incorporate some informal styles from their text-based communications into their writing at school. While teen bloggers and social network users are prolific writers, they also have a tendency to use text shortcuts, emoticons and informal writing styles in their school writing. Similarly, teen cell phone owners are significantly more likely to use text shortcuts in school (42% do this) compared to non-cell phone owners (30%) [28].

Since much of the writing teens do at school (such as writing in a journal, taking notes in class, or crafting creative fiction) is relatively informal in nature, it is not necessarily surprising

to find teens adopting the conventions from texting, email or other online speech into their writing for school. Table 3 (See Appendix) shows the percentage of informal writing in schools.

Informal Writing in School and Daily Communications Choices			
Usage of informal writing in school by the number of ways in which teens communicate daily with friends			
	Do not communicate daily with friends	1-3 daily communication activities	4-7 daily communication activities
Use informal writing styles instead of proper capitalization and punctuation	46%	42%	70%*
Use text shortcuts from IM or email	27	35	57*
Use emoticons	22	20	39*

Source: Pew Internet & American Life Project Teen/Parent Survey on Writing, September-November 2007. Margin of error is ±5%. * indicates statistical significance between the percentages in the row.

Table 3: Percentage of informal writing in schools

Usage of different communications methods outside of school is not the only factor correlated with usage of technology-based writing conventions in school—attitudinal factors play a role as well. In particular, teens who view their electronic communications with friends as "writing" are significantly more likely than teens who do not view these communications as writing to use informal writing styles (59% vs. 47%), text shortcuts (56% vs. 34%) and emoticons (39% vs. 19%) in a school environment [23].

Among demographic groups, girls are more likely than boys to use text shortcuts from instant messaging or email (45% vs. 33%) and emoticons (35% vs. 17%). Black teens (48%) are more likely than whites (35%) to use text shortcuts in school, although there are no racial or ethnic differences with respect to usage of informal writing styles or emoticons. In the college environment, however, such practices are unlikely to find sympathy from their professors if such informal writing styles appear in their midterms and exams [37].

4. RELATIONSHIP BETWEEN COMMUNICATION TECHNOLOGY, LEARNING AND TECHNOLOGY

Although language has always been changing, according to [3], due to developments in communication technology, its change has recently accelerated and led to interesting variations in written language use and even concerns as to the

negative or positive impact of this technology on language. Some language researchers argue that language is deteriorating due to increased use in electronic communication. The lack of face-to-face interaction that sometimes characterizes the increased use of this technologies means that many contextual and nonverbal language cues may be lost, and it is questionable whether language maxims such appropriateness, relevance and formality level are still adhered to in electronic communication [31].

Some research however brings out some positive aspects of these technologies on language skills. For many teens, the ability of easily to change, edit and revise their texts on the fly is one of the clearest advantages of writing on a computer.

Nearly six in ten teens (57%) say they edit and revise more when they write using a computer compared with when they write by hand. Whites, older teens and those whose parents have higher levels of education are among the most likely to say that computers help them edit and revise more. In addition to doing more types of writing and writing more frequently, teen bloggers are also among the strongest teen proponents of the importance of writing. 65% of teen bloggers feel that writing is "essential" to later success in life, compared with 53% for non-bloggers and 56% for teens as a whole [28].

The evidence from some studies of electronic discourse is that conversational language rules are still adhered to [9]. In a study [16], teenage chat room users were found to adapt the features of the chat room environment by developing new communication strategies and creating a new communicative register. There is evidence that computer-mediated communication has encouraged new micro communication behaviors and strategies [38].

There is also evidence that chat groups and online forums develop dialects [9]. Users accommodate their own language to take into account the language environment; this again suggests that language and social communication skills are promoted by using communication technology and are not adversely affected.

Computers are increasingly being used to promote early language learning. Programs are available that develop pragmatic language skills in children with impaired language and autism [4]. Computer-mediated communication is also widely encouraged for second-language learning.

Research from the national "HomeNet" study carried out in America found that parents perceive the use of communication technology to be preferable and more beneficial than time spent watching television [32]. In particular, positive effects on visual intelligence and cognition have been reported and these form the precursors to computer literacy development.

Availability of computer technology at home has been linked to positive academic achievements in reading and math [12],

with households from lower socioeconomic status groups deriving the greatest benefit.

Parents harbor mixed feelings about how computer use aids or detracts from specific elements of their child's overall writing abilities. Parents do not view computers as a monolithic "good" or "bad" influence on their child's writing. Rather, most parents say they appreciate the value of technology in helping their child's writing, while at the same time recognizing certain downsides and tradeoffs. Table 4 (See Appendix) presents parental view on the impact technology on writing.

Table 4: Parental view on the impact of technology on writing

Parental Views: How Computers Impact Teen Writing			
Do you think using a computer for writing makes students more or less likely to...	More Likely	Less Likely	Makes no Difference
Strongly resonant			
Write better because they can revise and edit easily	69%	11%	17%
Present ideas clearly	54	7	34
Be creative	50	10	36
Moderately resonant			
Take short cuts and not put effort into writing	45%	14%	35%
Communicate well	43	18	36
Use poor spelling and grammar	40	28	30
Write too fast and be careless	40	13	41
Weakly resonant			
Have a short attention span	22%	18%	53%

Source: Pew Internet & American Life Project Teen/Parent Survey on Writing, September-November 2007. Margin of error is ±5%.

It would seem that communication technology does not appear to have negative effects on specific language skills but parallel research indicates the contrary and affirmed the concerns and worries of critics.

Danet found a tendency toward playfulness in email greetings and concluded that email communication is more informal in comparison to traditional norms governing the form of official letters [10]. Turpe also found an emergent diversity in written communication in terms of word choice and syntax [36]. Sutherland, an eminent and recently retired professor of English from University College, London, has spoken out in the media about the damage that this communication style is having on literacy skills and attainment [34].

Since the language of e-mail and SMS messages is associated with acronyms and changes in spelling norms [1], it is an inherently informal communication system. The electronic age has provided a new context for the writing process. University students are frequently engaged in electronic writing.

During a recent survey of the 100 university students emails were randomly selected and analyzed [31], the main characteristics of the analyzed e-mails are as summarized in Table 5 (See Appendix) based on their frequency. As indicated in Table 5, some e-mails lacked subject lines while others crammed the entire message body into the subject line. Standard spelling, punctuation, and capitalization, which are some of the characteristics of the normal written language, were not acceptable in the studied e-mails. Some e-mail users used SMS language in their messages. Lack of contact information in the signature, sloppy written message body, and other deviations found in the analyzed e-mails refer to the fact that the language used in the university students' e-mails was more informal and casual than the traditional letter-writing language.

Table 5: Content analyzes of university student e-mails (N=100)

Categories	Frequency
Poor grammar	41
Misspelled words	38
Improper capitalization	32
Irrelevant punctuation	29
Sloppy and hastily written message body	24
Use of abbreviations and acronyms	22
No paragraphs	22
Lack of contact information in the signature	17
Improper or missing subject line	13
Rambling	9
Too short or too long content	6
Use of SMS language	3
Use of all capital letters or all lowercase	2
Improper tone and manner	2

Source: US-China Education Review, ISSN 1548-6613, USA
Nov. 2009, Volume 6, No.11 (Serial No.60)

A widely publicized concern has been that this language register of net speak or shortened "text speak" (i.e., abbreviations as used in mobile phone communication, such as b4 = before) is being used in inappropriate contexts. Based on these findings and related research, many more concerns have been raised as to the negative impacts of these technologies in writing skills. A few of these concerns are reviewed briefly below:

Standard Spelling and Punctuation

The informal language register of net speak has also been proposed to encourage poor written English. For example, the text of many Web pages is considerably shorter than printed text, using short sentences and paragraphs for ease of reading due to the constraints of screen size [9].

It goes without saying that e-mail and SMS are used for speed communication in which the occasional error may slip by. The writer who sends an e-mail with no capitalization and punctuation for the sake of brevity and convenience without thinking about the position of the receivers, risk being considered as lazy and not taken serious [31].

Grammatical Syntactic rules

The content analysis of the composition of the SMS language used in this study shows the development of language short forms in SMS communication, which retain both written and spoken language characteristics.

Speech and writing can be described both in terms of the production and reception contexts [19]. It is understandable that SMS users make use of linguistic short-cuts applying the properties of both written and spoken language to the less formal language used in text messages, but the conventions of politeness and formality often remain necessary. It is worth emphasizing that the use or overuse of abbreviations, acronyms, linguistic short-cuts, capitalization and punctuation should be based on the relationship of the sender and receiver of the message.

Punctuation is often used in net speak to convey meanings that cannot be provided by nonverbal cues, as would be used in face-to-face discourse (e.g., the use of "emoticons" such as :o) to indicate smiling). There is concern that this may transfer into written English and encourage grammatical and syntactic rules to be overlooked [9].

More Graphical rather than Text

A related concern of many educators is that online communication is dominated by graphics rather than texts and those students that use multimedia will get distracted from writing and instead waste a great amount of time on perfecting fonts, colors, or images [18].

Teachers that set up assignments demanding a product that includes both sophisticated writing and a highly professional look are more likely to achieve both. In contrast, to

14

overemphasize the design of a Website can result in students paying little attention to texts, whereas to under emphasize design issues can limit students' opportunities to develop important new multimedia literacy.

Absence of Proof Reading

A similar concern is that computer spell-checking devices are de-skilling for children, and that the speed of some electronic communication encourages spelling and typing mistakes to be overlooked [9]. The importance of proofreading with these technologies but there is however no excuse for grammatical mistakes, which in most cases destroys credibility.

Reduction in Critical Thinking Abilities

Another concern is the loss in critical thinking abilities due to the copy and paste options that these technologies often present. This has paved way for practices like plagiarism. Online plagiarism takes a variety of forms from the blatant and intentional (e.g., purchasing an essay online) to the accidental and ill-informed (e.g., quoting small amounts of online material without proper citation, see discussion in [6].

However, the Internet also provides instructors the opportunities to check for plagiarism, either informally through search engines or through special commercial anti-plagiarism sites [17].

Plagiarism for second language learners is a complex and challenging issue; at the same time that they are encouraged to improve their language through modeling and copying the words of others, they are prohibited from doing so in certain instances. The new challenges of plagiarism in the online era can provide instructors a valuable opportunity to address this issue head on in the classroom, and thus help students advance their understanding of the nature of academic research and writing [27].

Computer-mediated communication allows the reader to manipulate content; it becomes even less "literate" than the print from which it stems. The reader can interact with the text on an immediate, physical level; roles of writers and readers thus become unclear. The experience becomes fragmentary and malleable, or oral, rather than unified and stable, or literate [33].

Loose of Linearity and Sequencing

Linearity and sequentiality are integral elements in traditional writing. Ideas are expressed in a logical, linear fashion, and linear narrative forms govern most traditional writing [14]. Traditional writing delivers a coherent narrative in large chunks of text; large chunks of text defeat the purpose of hypertext. Hypertext allows writers to organize information loosely, rather than in a well-developed thesis.

Attention problems

A common concern is also the fact that the use of communication technology may be linked to attention problems in children and adolescents, which in turn may have a negative impact on learning [12].

Social Isolation

A major concern regarding communication technology is that it potentially encourages social isolation and that this may have a negative impact on language skills, particularly on social communication skills in that children spend less time interacting face-to-face with their family and peers [24].

In fact, the nature of writing can be expected to continue changing in coming decades, as new forms of audio-visual communication complement or challenge the importance of the written word in a variety of realms. Because of these changes, many university English departments are altering their curricula and even their names in order to better reflect the nature of communication in today's world [13].

Most teens feel that additional instruction and focus on writing in school would help improve their writing even further. Overall, 82% of teens feel that additional in-class writing time would improve their writing abilities, similar to the 78% who feel the same way about computer-based writing tools [28].

Furthermore recent studies have found that many students are given inadequate writing instruction, little time to practice writing in the classroom environment, and few opportunities to write longer research-type papers. Likewise, high school students are seldom offered writing instruction that spans their curriculum, is authentic and tied to their lives, and is delivered by quality teachers with specific training in content-based writing instruction [2].

There is a strong body of research on best practices in the teaching and learning of writing that can guide individual and institutional reform efforts. Broadly, this research suggests that writing is best taught as an integrated subject, and that strong writing practice combined with consistent feedback is the key to developing student skills and achievement [15].

5. CONCLUSION

It is evident that information technologies are redefining modern writing. This trend which is expected to continue in coming decades has introduced new forms of language like "net speak" which do not follow the grammatical and syntactic rules of written English and are filtering inappropriately into formal school work. This research attempted to bring to the spotlight the detrimental effects of these new technologies on writing skills and proposed some solutions. This in a bid to equip parents, caregivers, educators and the community at large with the warning signs and tools to safeguard their

children's interests in ensuring they are accessing and using developmentally appropriate written language.

Tools to enhance writing skill like Write Source Online are increasingly being introduced in educational systems. Write Source allows students to work at their own pace and level with practice and remediation activities via Net-text and GrammarSnap, while the ePortfolio gives students a place to showcase their work and be recognized.

Finally education professionals need up-to-date and fully informed evidence of the changing trends in technology in order to support parents and caregivers in ensuring that the children make the best use of communication technology to promote their language and literacy development.

REFERENCES

1. M.H. Abdullah. **Electronic discourse: Evolving conventions in online academic environments**, ERIC Document Reproduction Service No. ED 422 593, 1998.

2. A. Applebee and J. Langer. **The state of writing instruction in America's schools: What existing data tell us**, Albany, NY: Center on English Learning and Achievement, 2006.

3. S. Biesenbach-Lucas and D. Wiesenforth. **E-mail and word processing in the ESL classroom: How the medium affects the message**, Language Learning and Technology, 5(1), 2001, pp. 135-165.

4. A. Bosseler and D. Massaro. **Development and evaluation of a computer-animated tutor for vocabulary and language learning in children with autism**, Journal of Autism and Developmental Disorders, 33(6), 2003, pp. 653–672.

5. N. Botting and G. Conti-Ramsden. **The role of language, social cognition, and social skill in the functional social outcomes of young adolescents with and without a history of SLI**, British Journal of Developmental Psychology, 26, 2008, pp. 281–300.

6. N.C. Burbules and T.A.J. Casllister. **Watch IT: The risks and promises of information technologies for education**, Boulder, CO: Westview Press, 2000.

7. L.M. Calkins. **The art of teaching writing** (2nd ed.), Portsmouth, NH: Heinemann, 1994.

8. C. Cordes and E. Miller. **Fool's gold: A critical look at computers in childhood**, Alliance for Childhood, 2000. Retrieved 14th of November 2011 from http://drupal6.allianceforchildhood.org/fools_gold.

9. D. Crystal. **Language and the Internet**, Cambridge, U.K.: Cambridge University Press, 2006.

10. B. Danet. **Cyber play: Communicating online**, Oxford: Berg Publishing, 2011.

11. Department for Children, Schools, and Families (DCSF), Schools and Pupils in England, Theme: Education and Training, January 2007.

12. L.M. Espinosa, J.M. Laffey, T. Whittaker and Y. Sheng. **Technology in the home and the achievement of young children: Findings from the Early Childhood Longitudinal Study**, Early Education & Development, 17(3), 2006, pp. 421–441.

13. L.J. Flynn. **College English departments embracing cyber-studies**, New York Times, 1997, November 9. Retrieved November 14, 2011, from the World Wide Web: http://www.nytimes.com/library/cyber/week /110997georgia.html

14. S.B. Gibson. **Is all coherence gone? The role of narrative in web design**, Interpersonal Computing and Technology, 4(2), 1996, pp. 7-26. Retrieved November 14, 2011 from http://www.helsinki.fi /science/optek/1996/n2/gibson.txt

15. S. Graham and D. Perin. **Writing next: Effective strategies to improve writing of adolescents in middle and high schools**, A report to Carnegie Corporation of New York, Washington, DC: Alliance for Excellent Education, 2007.

16. P. Greenfield and K. Subrahmanyam. **Online discourse in a teen chat room: New codes and modes of coherence in a visual medium**, Journal of Applied Developmental Psychology, 24, 2003, pp. 713–738.

17. K. Hafner. **Lessons in Internet plagiarism**, New York Times, 2001, June 28. Retrieved November 14 2011 from the World Wide Web: .http://www.nytimes.com/2001/06/28/technolog y/28CHEA.html

18. M. Halio. **Student writing: Can the machine maim the message**? Academic Computing, 4, 1990, pp. 16-19.

19. R. Hughes. **English in speech and writing: Investigating language and literature**, London: Routledge, 1996.

20. G.M. Johnson. **Internet use and cognitive development: A theoretical framework**, E-Learning, 3(4), 2006, pp. 565–573.

21. M. Kupelian. **The use of e-mail in the L2 classroom: An overview**, Second Language Learning & Teaching, 1(1), 2001. Retrieved November.14, 2011, from http://www.usq.edu.au/opacs/cllt/sllt/1-1/Kupelian01.htm

22. W.R. Leibowitz. **Technology transforms writing and the teaching of writing**, Chronicle of Higher Education, 46(14), 1999, A67-A68.

23. A. Lenhart, M. Mary and P. Hitlin. **Teens and Technology: Youth are Leading the Transition to a Fully Wired and Mobile Nation**, Pew Internet & American Life Project, Washington, DC, July, 2005.

24. K. McCarrick and L. Xiaoming. **Buried treasure: The impact of computer use on young children's social, cognitive, language development and motivation**, Journal of the Association for the Advancement of Computing in Education, 15(1), 2007, pp. 73–95.

25. National Commission on Writing, Writing: The View From Campus, National Commission on Writing for America's Families, Schools and Colleges. Note: the definition given to respondents contained eight elements of good writing: accuracy, clarity, conciseness, scientific precision, visual appeal, logic, documentation and support, and spelling, grammar and composition, 2006.

26. National Governors Association Center for Best Practices, Common Core State Standards, National Governors Association Center for Best Practices, Council of Chief State School Officers, Washington D.C, 2010.

27. A. Pennycook. **Borrowing others' words: Text, ownership, memory, and plagiarism**, TESOL Quarterly, 30 (2), 1996, pp. 201-230

28. Pew Internet & American Life Project Teen/Parent Survey on Writing, September-November 2007. Margin of error is ±5%.

29. W. Richardson. **Blogs, Wikis, Podcasts and other powerful Web tools for classrooms**, Thousand Oaks, CA: Corwin Press, 2006.

30. V.J. Rideout, U.G. Foehr and D.F. Roberts. **Generation M2: Media in the Lives of 8- to 18-Year-Olds: A Kaiser Family Foundation Study**, Menlo Park, CA: The Henry J. Kaiser Family Foundation17, 2010.

31. M.S.G.B. Hamzah, M.R. Ghorbani and S.K.B. Abdullah. **The impact of electronic communication technology on written language**, US-China Education Review, Volume 6, No.11, 2009.

32. K. Subrahmanyam, P. Greenfield, R. Kraut and E. Gross. **The impact of computer use on children's and adolescents' development**, Journal of Applied Developmental Psychology, 22, 2001, pp. 7–30.

33. R.A. Sudol. **Sources, Research Writing, and Hypertext**, Annual Meeting of the Conference on College Composition and Communication, San Diego, CA, March 31-April 3, 1993.

34. J. Sutherland. **Cn u txt?** The Guardian, 2002, November 11. Retrieved from http://www.guardian.co.uk/technology/2002/nov/11/mobilephones2.

35. B. Trilling and C. Fadel. **21st century skills. Learning for life in our times**, San Francisco, CA: John Wiley & Sons, 2009.

36. A. Trupe. **Academic literacy in a wired world: Redefining genres for college writing courses**, 2002. Retrieved Sept. 27, 2008, from http://www.bridgewater.edu/~atrupe/AcadLit/Wired World.htm

37. J. Vitak. **How Does Technology Impact Young Adults' Writing Habits?**, gnovis, 2008. Retrieved 15th of November 2011 from http://gnovisjournal.org/journal/

38. J.B. Walther. **Selective self-presentation in computer mediated communication: Hyper personal dimensions of technology, language and cognition**, Computers in Human Behavior, 23, 2007, pp. 2538–2557.

39. H.J. Watt. **How Does the Use of Modern Communication Technology Influence language and Literacy Development? A Review**, UK Contemporary Issues in Communication Science and Disorders, Volume 37, Fall 2010, pp. 141–148.