What Four Skills? Redefining Language and Literacy Standards for ELT in the Digital Era

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Over the last 15 years, the rapid development of information and communication technologies (ICT) has facilitated a revolution in how we use language. Online environments have facilitated creative and variable spelling using code hybridization and stylistic use of mechanical conventions such as punctuation and capitalization, lexical coinages, new genres and conversational shapes, new social networks, and digital identities. The traditional four-skills paradigm of text-based grammar study framing English-language teaching curricula no longer adequately describes language and literacies in the Information Era. This article examines changing language conventions in English used in online environments, theorizing directions for new and variable language conventions. The article makes the case that understanding relative language standards in digital environments is essential for teaching and testing appropriate and contemporary English language and literacies.

Depuis 15 ans, l'évolution accélérée des technologies de l'information et de la communication (TIC), a contribué à une révolution dans la façon dont nous nous servons du langage. Les environnements en ligne ont contribué au développement d'une orthographe créative et variable caractérisée par une hybridation de codes et un emploi stylistique de conventions mécaniques telles la ponctuation et l'usage des majuscules, la production de nouveaux mots, de nouveaux genres, de nouvelles formes de conversation, de nouveaux réseaux sociaux et d'identités numériques. L'enseignement de l'anglais reposant sur le paradigme traditionnel basé sur quatre compétences langagières, les textes et la grammaire, ne reflète plus la langue et la littératie à l'ère de l'information. Cet article étudie les conventions langagières anglaises en évolution telles qu'elles sont employées dans des environnements en ligne, et élabore des théories sur des orientations que prendront de nouvelles conventions langagières. Cet article propose qu'il est essentiel de comprendre les normes langagières relatives dans les environnements numériques pour pouvoir enseigner et évaluer l'anglais contemporain de façon appropriée.

Introduction: English in the Information Era

> The four basic language abilities are commonly regarded as speaking, listening, reading and writing. However, there are times when a person is not speaking, listening, reading or writing but is still using language. (Baker, 2001, p. 6)

E-mail from my teenaged daughter, 2001:

> hey mommy,
> here ya go. I will think up sum smiley faces that ppl use when they r describing emotions in a couple o' taps of the keyboard (when they r 2 lazy 2 describe their emotions 2 u). w/ this little paragraph i hope u like these smileys!! n e ways here they r.[1]

This e-mail was in response to my naïve request for a sample of the correspondence young people seemed to be using with one another online, and increasingly on paper. I had begun to notice smiley faces handwritten on apologies appended to late assignments handed in by my undergraduate students. A respected colleague, also mother of a teenager, noted that her son's use of online shorthand seemed to be crossing over into his academic work. My neighbor mentioned in passing that her teenagers were chatting with friends online using seemingly bizarre names.

Canadians are engaging in digital literacies on a daily basis, many of which are seamlessly woven into daily practices. It is common for teachers to write more on a screen using a keyboard than they do on paper with pen or pencil in their everyday literacy practices. Students are required to word-process assignments. Basic social inquiries commonly present an initial digital interface: for example, withdrawing and depositing money in banks; renewing car and driving licenses in kiosks; searching for jobs; locating library resources; and paying for purchases with debit or credit cards. Digital interfaces often also mediate how bills are paid, how correspondences are kept up, how purchases are made, and even how friends and lovers meet.

English language-learners of all ages need to learn to negotiate digital interfaces and to participate in digital communication as appropriately as they do in face-to-face communication. However, the teaching of English in digital environments in ESL courses, many of which continue to rely on four-skills curriculum models, lags behind daily communicative realities.

There are obvious reasons for pedagogical delays in revising current communicative language instruction to include appropriate digital literacies, stemming from the economic, political, social, and epistemological fallout of the Information Revolution. Technologies are costly; education is perennially underfunded; literacy is still widely tested on paper; and teachers lack equipment, know-how, confidence and time.

Concurrently, there is a proliferation of academic and professional discussion on how to incorporate digitization in second-language teaching, assessment, and research in conferences on computer-assisted language learning (CALL); in recent books (Chapelle, 2001, 2003; Egbert & Petrie, in press; Warschauer, 1999; Warschauer & Kern, 2000); and in journals on technology and language learning (*ReCALL; Computer Assisted Language Learning; Language Learning and Technology*). However, on balance, this literature has approached language learning through the lens of prescribed spoken and written language norms that are taught through the agency of digital media, rather than examining language as it is used in digital communication.

The issues highlighted in this article have been largely sidestepped in the growing literature on SLA in the Information Era, that is, acknowledging and describing the rapidly mutating language conventions and genres used in digital environments, and considering what these mean for second-language instruction. New ways of communicating digitally invalidate the four-skills language analysis that has grounded historical second-language teaching practice and require new ways of thinking about even such basics in second-language teaching and learning as spelling, grammar, and punctuation.

Language Change and Digitized Communication

Languages change over space and time. Alhough institutions for safeguarding and shaping language standards exist for some languages—for example, L' Académie française in France and Te Tauru Whiri i te Reo Maori (the Maori Language Commission) in Aotearoa (New Zealand)—languages have a habit of naturally orchestrating their own changes.

The Internet has facilitated surprisingly rapid change in language use and usage conventions. Online chat shorthand has emerged from limitations in both space (small screens, particularly on pagers, mobile telephones, and other handheld devices) and time (participating in synchronous chat forms). Furthermore, because global digital communications occur in nanoseconds rather than over days or weeks, new expressions spread far more quickly. They spread farther as well, given the one-to-many potential of Internet communications.

Digital communication has inspired new ways of expression at the levels of the morpheme, word, sentence, and text. There are new and variable ways of spelling, using emoticons, acronyms, abbreviations, homophones, and non-alphabetic symbols; new lexical coinages, such as Web site and e-mail, many of which are not yet in computerized spell-checkers; new ways of using punctuation; new utterance shapes, text genres, hybridized codes, conversational norms, discourse patterns; new social networks and digital identities (Crystal, 2001; Hawisher & Selfe, 2000; Herring, 1996; Lankshear &

Knobel, 1997; Lotherington & Xu, in press; Merchant, 2001; Snyder, 1997, 2002b).

Corresponding to these brave new linguistic frontiers in digital environments, are new literacies.

Literacy, Literacies, and Multiliteracies

> It is no longer possible to think about literacy in isolation from a vast array of social, technological and economic factors. (Kress, 2003, p. 1)

Efforts toward improved literacy continue in Canadian society. However, the term *literacy* covers a nebulous conceptual landscape that ranges from, at its most conservative, a notion of simply being able to decipher an alphabet, to a far more conceptually complex ability to negotiate the encoded world, including sophisticated, interactive ICT. A further inherent duality of meaning is revealed in the *Oxford English Dictionary* entry: "the quality or state of being literate which is further delineated as knowledge of letters, and condition in respect to education, especially ability to read and write," effectively lumping those who have learned an alphabet in with those who have achieved a cultured and literary education: a huge spectrum of possibility, yet one that could still technically exclude people who read and write non-alphabetic symbols such as Chinese Hanzi.

In public discourse, literacy is often constructed as a synonym for "good" English grammar and control of mechanical conventions such as punctuation and "proper" spelling, as exemplified in the newspaper headline of an analysis of the Ontario provincial literacy test: "Who you callin' literate?" (2003). This effectively conflates literacy with proficiency in written English, granting preferred language conventions and standards to written genres and disregarding the prior and parallel literacies of non-English-speakers.

Explored as situated social practice in sociolinguistic and anthropological inquiries (Barton, 1994; Heath, 1983; Street, 1984, 1995; Gee, 1996), literacy is better described in terms of literacies. Studies of *new literacies* have emerged in response to the complex demands of contemporary global, digitized society. This increasingly complex literate world was conceptualized as *multiliteracies* by the New London Group (1996): literacies that include the diversity of cultures and languages that our multicultural societies offer and that engage multiple channels of communication (Cope & Kalantzis, 2000).

Literacy continues to evolve with rapidly developing digital technologies that shape how we communicate with each other. Over the past quarter century, we have shifted many of our literacy activities from the real world accessed on paper to the virtual world accessed on a screen. Our communications have become increasingly image-centered (Kress, 1997, 2003) moving steadily away from the print-centeredness pinpointed in alphabetic definitions of literacy. Contemporary digital texts are increasingly postmodern

domains where users co-construct complex textual worlds (Johnson-Eilola, 1997).

Contemporary literacies interpret the world using current textual processes and products (Warschauer, 1999). Texts are changing radically as text production moves from Industrial Era to Information Era norms. The editorial hierarchy established in book publication as quality control assurance has been destabilized by the Web's disintermediating potential, which effectively shrinks the degree of intellectual mediation in text publication by facilitating self-publishing. The basic element of text production in Gutenberg-era publishing—moveable type—has also been transformed: the functional grammars of information architectures that conceptualize and encode meaning in new ways can render a piece of information into different formats using dynamic shapes and sounds (Cope & Kalantzis, 2003). Texts need to be cognitively, socially, and physically processed accordingly. These are indeed new literacies.

Contemporary literacy is more accommodatingly viewed as a processing facility for expressing and archiving communication not limited to alphabetic scripts, particular languages, prestige norms, or paper-based orthographic conventions; nor in this era of multimodal textualities can it be restricted to particular language "skills." Literacy acquisition is socialization into and automatization of a continually evolving processing facility needed for navigating contemporary society.

Traditional notions of literacy are being held in place by gatekeeping organizations such as the Education Quality and Accountability Office (EQAO) in Ontario whose mandate includes province-wide literacy testing. All high school students are required to pass the standardized provincial literacy test in order to qualify for graduation. These high-stakes literacy tests, established by the conservative government, measure a literacy that is paper-based, English-language-dependent, and culturally and historically Anglocentric (Lotherington, 2004). EQAO test results have marginalized so many students that standards are being adjusted for a large percentage of currently failing students, including, learners of English as a second language who are being educated in a political climate of literacy considered as English grammar and Canadian culture.

Language, Communication, and Literacy Boundaries: What Four Skills?

Decades ago, Heath's (1983) landmark ethnographic study of language and literacy acquisition in two communities in the rural United States illustrated convincingly how literacy is a culturally conditioned engagement of all language modes including, importantly, the oral. This research, which was conducted in an era and a milieu of conservative paper literacies far removed from the complex digital literacies of today's youth, clearly calls into ques-

tion the legitimacy of separating language "skills." Contemporary research into digital communication highlights the convergence of language modes and the emergence of dynamic new conventions in online communication (Crystal, 2001; Kress, 2003; Lotherington & Xu, in press; Merchant, 2001), requiring new ways of conceptualizing language use.

Although compartmentalized four-skills approaches to language and literacy education are commonplace in contemporary English-language teaching (ELT) courses and materials, the four-skill areas historically demarcated as reading, writing, speaking, and listening are artificial distinctions in digital communication where the borders between oral and written language are no longer clearly distinguishable. Communicating via digital media includes synchronous and asynchronous connection possibilities. In both modes, a literate interface is used to effect communication although what is written might be speech-like, giving digital communications characteristics of both written and spoken language.

In synchronous use (e.g., chat rooms, online instant messaging systems), communicators are both or all present in real time. Synchronous chats differ from face-to-face encounters in numerous ways including that conversational threads are typed on a keyboard, then sent instantaneously, resulting in a discourse shape that can be topically chaotic, depending on the number of interlocutors, the speed and synchronization of their turns, and the number of topics on the go. Topical confusion is easy, as exemplified in Figure 1, in which two university students chatting on an instant messaging system try to sort out which response relates to which in short turns.

Digital conversations are more legitimately seen as utterance overlays than as the utterance co-creations possible in face-to-face speech, as turns are input in chunks. Digital chats are space limited, so turns tend to be quite short. As can be seen in Figure 1, synchronous communications are closer to speech than to writing in formality, style, and flow.

honeygarli (9:42:08 PM): hi
honeygarli (9:42:11 PM): you there?
sk8Celine (9:42:16 PM): aw
sk8Celine (9:42:20 PM): ya, now i am
honeygarli (9:42:22 PM): I finished my essay revisions
honeygarli (9:42:24 PM): why the aw?
sk8Celine (9:42:35 PM): u putting ur hand in the garborater
honeygarli (9:42:39 PM): oh, hehe
sk8Celine (9:42:42 PM): yay!(about essay)
honeygarli (9:42:44 PM): I wasn't sure if you got that
honeygarli (9:42:45 PM): :-)
sk8Celine (9:42:49 PM): got it now

Figure 1: Synchronous communication: Chat on instant messaging service.[2]

Although transcripts of digital chats can be captured (which face-to-face speech cannot be without the aid of a recording device), most digital chats tend to be ephemeral. However, asynchronous communications are more permanent by design, and accordingly adhere more closely to writing-like conventions.

In asynchronous communications (e.g., e-mail, listservs, bulletin boards, conference folders), both or all participants are not necessarily present. Therefore, each person's turn is as long or as short as desired, required, and so forth, and the potential to compose, edit, check spelling, and other mechanics in writing e-mails—unavailable in the rushed typing of synchronous chats—pushes asynchronous communication closer to writing in terms of permanence and formality. However, asynchronous communications run the gamut from quickly tossed-off remarks intended to be part of an ongoing conversation to more conservatively written "letters," using a range of politeness and formality conventions. Interactions such as the interchange in Figure 2 indicate asymmetrical formality conventions in e-mail communication.

These new digital communication forums, which are conducive to a range of language conventions and genres and easily tolerate asymmetrical responses in terms of formality and use of conventional norms, push the boundaries of the English language teacher's practical and academic understanding of the English language and its appropriate and correct use in communicative domains.

As can be seen in the examples above, *oral* and *literate* are invalid descriptors of either language process or product in digital environments.

New Modes, Evolving Standards in Virtual Language Use

For centuries, English has reflected the archaic pronunciations of the 16th century when mechanical publishing established the spelling patterns we think of as conventional. Although there have been many worthy attempts at spelling reform throughout the ages, they have met with only limited success.

Hi Professor.
I just would like to once again express our appreciation for having invited us to your class. It was a great learning experience. Also, please extend our thanks to your class for their warm reception.
Sincerely,
J*****
Glad you could make it J*****. We enjoyed having you and G**** there.
hl

Figure 2. Asynchronous message: e-mail (with permission from e-mail correspondent).

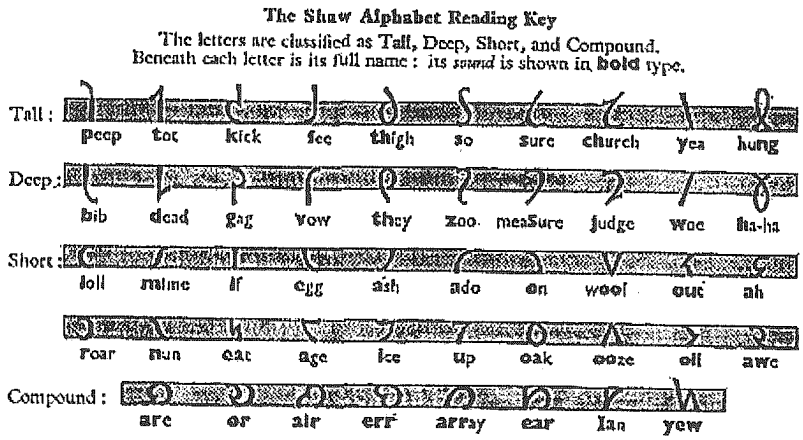

Figure 3. The Shaw alphabet.
http://www.unicode.org/pending/shavian/proposal/Shavian.html

George Bernard Shaw's annoyance with the inefficiency of traditional English spelling and his interest in phonetics led him to institute a posthumous contest for a new streamlined non-Roman alphabet designed to simplify the phoneme-grapheme relationship in English. The winning entry by Kingsley Read (see Figure 3), though linguistically well designed, has not changed publishing due to obvious pragmatic and attitudinal constraints, and remains predominantly a curiosity (Coulmas, 1996).

The Americanization of the English language fought for passionately by Noah Webster is the only historical attempt at spelling reform to achieve any success by a significant English-speaking population. However, despite the many revisions codified in his best-selling 18th-century speller, only superficial residual spelling variations have been culturally accepted, and Americans continue to write everyday words such as *laugh* (revised by

dont mess with me 2day or ill ghetto u up says:
i gtg real soon cuz my ma is buggin me to clean up :(
~ * ^ *HeAtH~ * ^ * says:
kk
dont mess with me 2day or ill ghetto u up says:
2day has been a real bad day
~ * ^ *HeAtH~ * ^ * says:
jus xplain 2 her wat we r doin ...n wat it is 4 ...kk?
dont mess with me 2day or ill ghetto u up says:
i did xcept shes bein bitchy when i didnt do anythin 2 upset her

Figure 4. Chat extract between two 14-year-old friends on MSN.

innovation	*example*	*meaning*
spelling innovations		
acronyms	brb	be right back
	ttyl	talk to you later
emoticons	:P	tongue hanging out
	:@	mad
abbreviations	plz	please
	ppl	people
hybridized codes	~ * ^ *HeAtH~ * ^ *	name
	Roxstar69	name
innovations in capitalization	im	I'm
and punctuation	paddlerON	name
	FAINT	(shouting)
use of homophones		
alphabetic	u	you
	neways	anyways
numeric	2	to, too, two
alphanumeric	b4	before
	l8r	later
use of symbolic synonymy	gtg	g2ggot to go
	lol lmao hehe haha ~~~~	indicating laughter
	☺ :) :-) :D :>	smiley
variant stylistic spelling	soooooooo	so (emphatic)
	waaaay	way (emphatic)

Figure 5. Changing orthographic conventions in English in digital environments (Lotherington & Xu, in press).

Webster as *laf*), and *bread* (revised by Webster as *bred*), *thought*, and *station* using conventional spelling (Coulmas, 1996).

It is therefore astounding that in the space of about a decade, ICT has inspired radical changes in language conventions through grassroots usage, including prominently, spelling. Factors encouraging innovation in language conventions include time and space limitations of interactive media, early software case insensitivity, and the creative potential of the ASCII keyboard (Lotherington & Xu, in press). These emerging conventions are evident across languages, and have spilled visibly into popular culture, as I notice on product labels such as: *got 2b me* (shampoo); and *STIFF@#!%* (hair gel), and on public notices, such as *Goodman 4 trustee* (municipal election campaign).

In a study of changing language conventions in Chinese and English used in digital environments conducted at York University in 2002-2003,

honeygarli (12:18:31 AM): I didn't say I for sure would!
honeygarli (12:18:34 AM): and aren't you going away?
sk8Celine (12:18:39 AM): i dont know i 4sure am

Figure 6. Asymmetry in conventional usage choices.

Numeric Homophone	*Pinyin realization*	*Pinyin quasi-homophone*	*Meaning*
520	wu^3 er^4 $ling^2$	wo^3 ai^4 ni^3	I love you
88	ba^1 ba^1	bai^2 bai^2	bye bye

Figure 7. Chinese quasi-homophones.

Lotherington and Xu (in press) found widespread changes in language use and usage across both languages indicating that digital language innovation is a phenomenon cutting across language barriers.

Radically changed orthographic conventions and identity markers in synchronous digital chats are evident in Figure 4. Changes to standard orthographic conventions located in our study were multifaceted, as shown in Figure 5. Spelling conventions were variable over a range of standard print-fixed to original online chat shorthand, and a range of logical possibilities was accepted synonymously, even in the same chat, as can be seen in Figure 6, where *honeygarli* uses conventional capitalization, spelling, and punctuation, and *sk8Celine* does not for the same phrase.

In our study, the use of innovative online chat forms tended to vary with the age of the user, the younger users being more innovative, although not always consistently so, and with the digital environment. Asynchronous interfaces such as e-mail tended toward written language norms, whereas synchronous interfaces, limited by time constraints, tended toward innovative forms emulating speech. Space limitations such as small screen—for example, wireless telephone, pager, PDA—and space limitations in chat entries also facilitated innovations as we found in Chinese, in which a range of numeric quasi-homophones had developed, ostensibly from pager communications in which numbers only could be used, as illustrated in Figure 7.

Crystal (2001) theorizes that Netspeak is a new mode of communication apart from speech and writing. Whereas the evidence shows strongly that language conventions are clearly divergent from either speech or writing online, there is also a puzzling range of acceptable communication in Netspeak depending on factors such as the type of interface (synchronous, asynchronous connection), the hardware in use (computer, pager, mobile phone), the interlocutors (age, familiarity with each other, personal preferences), and their reasons for communicating (chatting, request, information transfer). Indeed, online language standards are highly creative and tolerant of innovative form as well as careless typing, and as such are a moving target, making digital language prescription impossible, although dictionaries for such online innovations as emoticons are available (see www.netlingo. com).

Conditions that affect preferred orthographic standards in digital environments are affected not only by the social determinants of written language (such as formality and politeness) but also by:

A *Teenagers on MSN*

It's hard love, but it's love all the same. Not the stuff of fantasy but more than just a game. says:
i have to go.
YAY!!!!!!!!!!I'm Learning Kanjis !!!!!!!!!!!!!!!!!!!! says:
ok ill ttyl
It's hard love, but it's love all the same. Not the stuff of fantasy but more than just a game. says:
i'll try to be on tomorrow night
YAY!!!!!!!!!!I'm Learning Kanjis !!!!!!!!!!!!!!!!!!!! says:
k

B *University students on AIM*

honeygarli (11:26:49 PM): I thought I would for sure be done by 12 am, but that's for sure not happening now! :-(
sk8Celine (11:26:57 PM): ur essay 4 tomrow?
honeygarli (11:27:01 PM): ya, I know. sorry for bothering you :-[yes
sk8Celine (11:27:12 PM): s'ok - well, g'dux. ttyl
honeygarli (11:27:18 PM): thanks. bye. good luck to you too!

Figure 8. Divergent norms in online chat dyads.

- space: the reduced screen/line capabilities in cell phones, palm-held computers and pagers necessitate shorthand;
- time: the increased time available for editing and thinking in asynchronous environments facilitates written text standards; and
- speed: the conversational pace required in synchronous conversations is conducive of shorthand.

As such, asynchronous environments are more facilitative of standard text-based writing conventions; synchronous environments are more facilitative of emerging speech-emulation conventions.

Even in this range, it must be remembered that chat interlocutors or e-mail correspondents communicating in a medium favoring particular conventional expectations and tolerances often use asymmetrical or divergent norms. Although confusing, this too is normal digital language behavior; see Figures 2, 6, and 8, where conventional choices are individually consistent but oriented to divergent norms, resulting in a conversation where the conventional usage of one participant is consistently more formal (writing-oriented) than that of the other.

In this confusing proliferation of new and variable communication standards, the legitimacy of defending traditional language skill boundaries and print-fixed language norms is called into question.

Conclusion: Redefining Language and Literacy Standards for ELT in the Digital Era

> Language is no longer just grammar, lexicon and semantics: language now comprises a wider range of semiotic systems that cut across reading, writing, viewing and speaking. (Snyder, 2002a, p. 3)

What are the repercussions of changing language conventions for English language teaching in the digital era?

Recently, I attended a major international conference on language learning and teaching where paper after paper discussing computer-assisted language learning (CALL) presented language in Web-based and digitized language courses according to established written norms. However, as is demonstrated in this article, conservative prescriptive standards of "correct" written language developed over time across the highly socioeconomically biased terrain of prestige literary accomplishment have been radically reshaped by the Information Revolution. It is important for the ELT profession to question the validity of existing prescriptive language standards based on written text, given the proliferation of digital technology that mediates communication in the 21st century. It is simply unethical to ignore the parallel universe of virtual communication in a social climate where more and more basic everyday inquiries require the negotiation of digital interfaces.

The novelty and relative variability in spelling and other orthographic conventions in digital environments are relevant in the ELT classroom for a number of reasons. Digital interfaces are increasingly essential social literacies; screen-size limitations facilitate abbreviated forms and turns, yet require a knowledge of appropriate formality. Digital language conventions are also seeping into wider communicative use, including paper-based environments such as product labels and informal notes. Again, variable usage must be recognized as appropriate in context rather than judged as incorrect according to fixed textual standards.

Most important, language learners are frequently encouraged to practice conversational skills in online environments where they will meet a range of language conventions. Digital communication forums provide readily available conversational opportunities for language learners. However, analogous to pidginized speech forms, which are invented as need arises, the emerging vernacular digital communication conventions being developed in online forums will be problematic to incorporate into formal language instruction due to their relative instability. Indeed, digital media offer opportunities to be communicatively creative. How do teachers of second languages incorporate the notion of relative, creative language standards in a professional field where stable, prescriptive norms predominate and traditional

four-skills analyses are typically used to explain the expected boundaries of communication?

The Internet provides second-language learners with convenient exposure to the target language. In virtual space, where second-language learners are not identified by telltale foreign accents, physical features, or cultural dress—the typical distinguishing visual and auditory signs of the person learning to speak a second language—they are released from some of the anxiety that characterizes conversation in the target language. But the contemporary second-language learner who is advised to practice conversation in the anonymous environment of digital chat is sent to the frontiers of new communication modes where revolutionary language conventions are in growing use.

The question must be tackled as to how the language learner negotiates the acceptability of the varying language norms, the "correctness" of which online is in the process of being established, are as appropriate as those established on paper. These new and developing language use and usage conventions confront the language learner with confusing options. How does the language teacher prepare the language learner who is yet unsure of written grammatical norms for online language variation?

These are questions that require thought and experimentation. It is clear that virtual language use requires new communicative competences. The typical fours-skills paradigm supporting print literacies as they were conceived of as recently as a decade ago does not fit the complex digital literacies of the 21st century, where new language domains cultivating new standards and genres require new communicative competences and new literacies.

One proposal is to accept and understand that relative language standards such as spelling, grammar, and punctuation will be a new condition of appropriate language use in virtual as well as real communication. Establishing these standards and how they are taught will require ongoing close linguistic and sociolinguistic monitoring, pedagogical experimentation, close attention to learners' needs, and rewriting the four-skills paradigm. New ways of thinking about language and literacy must be recognized by language teaching professionals, materials designers, policymakers, and gatekeeping assessment agencies whose pre-digital notions of literacy and language proficiency are increasingly too rigid for contemporary communication practices.

Notes

[1]Thank you to Maya Woloszyn, age 13 at the time of writing this note.

[2]Online data from the research project Digitalization and Language Change conducted by myself and Xu Yejun at York University in 2002-2003. I am indebted to the Faculty of Education for funding our project through a Minor Research Grant; and to the Graduate Program in Theoretical and Applied Linguistics in the Faculty of Arts for their support through the generous allocation of an extended graduate assistantship.

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