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Literate tools or tools for literacy?

– *A critical approach to language tools in second language learning.*

Abstract

There are important discrepancies between how language is currently represented by language tools, such as grammar and spelling checkers, and how language is understood in a broad view on literacy in second language learning. On the one hand, language tools do seem useful and important for learning linguistic form, but on the other hand they stand in possible conflict with pedagogies that emphasize the social aspects of language.

We approach issues in the intersection of digital literacy and language learning from a wide perspective on literacy, coupled with sociocultural theory and grounded in classroom studies. Based on our empirical work, we suggest that there is a need for complementary views of language to the one that propagates through current language tools. These complementary views could be reached through alternative designs of tools and education, reaching for a balance between linguistic form and communication of meaning.

KEYWORDS

Language learning • grammar checkers • interaction design • sociocultural theory • literacy

1. Introduction

Learning a second language is a question of literacy in the broad sense of gaining access to a language community and its modes of expression, on the levels of form as well as on the levels of discourse. In the digital age, this also includes digital literacies, ranging from understanding genres on the world wide web (WWW) to understanding how language is

represented by language tools such as on-line dictionaries and grammar checkers. Here, our interest is in the latter, having studied the use of language tools in the context of learning Swedish as a second language. We approach digital literacy from a broad perspective on literacy and problematize the possible conflict between correctness in form as being delivered by language tools and fluency in communication as the ultimate goal of learning a language.

Digital literacy is a recent and evolving concept, defined in various ways, and under various labels such as “computer literacy”, “information literacy”, “digital competence” or, as suggested by McMillan (1996), “comperacy”. Broad, and somewhat fuzzy, digital literacy is a useful concept for discussing users’ knowledge about digital tools in areas ranging from basic skills in using computers and operating systems to more esoteric issues such as what can and cannot be done by means of digital media. An important development lies in interpreting the term from this broad perspective, including issues such as questioning the source of online information, e.g. how the WWW allows new kinds of rhetoric, advertising, peer participation, etc. (Buckingham, 2006). One might say that this discussion concerns how various agencies and interests engage in collaboration or conflict in the online world, in the open (e.g. discussion forums) or surreptitiously (e.g. targeted advertising).

An important aspect of agency in the digital world is the agency possessed by technology itself. On the one hand it allows various human agencies to act in certain manners, but on the other it might also be said to display agency in and of itself. This is not to say that technology may act in human-like ways, but that it may act to redefine information by means of processing it. The implications of such processing are important, and must be examined and discussed in detail. On that note, we distinguish between “active” and “passive” digital tools (Knutsson, 2005, p. 14), where active tools are those that do something with information, while passive ones display untreated information. An example of an active tool would be a search engine, because it actively retrieves information from the WWW, and also condenses the found information before displaying it. Conversely, we call online dictionaries “passive”, because they merely display content on request.

Historically, active tools relate to the distinction of autonomous software “agents” from other programs (see Franklin & Graesser, 1996; Nwana, 1996). Here, our interest lays in programs that process information linguistically (e.g. grammar and spelling checkers). The point of making the distinction is that what we call “active language tools” exhibit some kind of knowledge about language, thus presenting certain notions with respect to linguistic correctness, importance of surface form, quality of users’ texts, means of improving texts, etc. This display of linguistic proficiencies has important ramifications for second language learners.

1.1 Language tools in second language learning

Our interest in active tools lies in language tools in general and grammar checkers in particular. Our area of research is within computer assisted language learning (CALL), where active language tools have potential to be quite useful, but may also pose challenges to pedagogic practice, and should probably not be introduced indiscriminately. Language tools represent especially important pieces of software for second language writers and second language composition teachers to use critically. More specifically, tools such as grammar checkers deserve special attention due to their “ubiquity, near visibility, increasing power, theoretical mismatch, and, conflict with and possible undermining of pedagogies that are today considered most effective for improving student writing” (McGee & Ericsson, 2002, p. 455).

The widespread availability of active language tools calls for a thorough, critical examination of how they influence the activity of writing. There is an unclear picture of how second language writers and teachers utilize active language tools for learning, and there is still much to investigate about how these technologies provide new ways of mediating, representing and communicating users’ texts, on ideational (i.e. semantic and pragmatic) as well as representational (i.e. syntax) levels.

Digital literacy when using a language tool is interwoven with students’ more paramount goal of achieving second language literacy (given that we are concerned with students who do have access to computers and language tools). Knowing how to judge output from language tools presupposes knowledge about linguistic terms in general, and knowledge in using the target language in particular. On the other hand, knowing “everything” about the target language in question would obliterate the need for a tool like a grammar checker, something not even most first language writers would attest to.

In this line of thought, we ask: i) What should second language writers know about the tool? ii) What do they need to know about language in order to judge output from the tool? iii) How should information about language tools be presented to the users? iv) How should these tools present information about language? These broad questions have guided us in our interrogations concerning digital literacy, second language learning and interaction design.

2. Digital literacy and second language learning

2.1 Approaching digital literacy

Scholars such as Street (1995), Gee (1990, 2003), Brandt (1998) and Säljö (2002) remind us that we cannot hope to understand any literacy until we appreciate the complex social and cultural dynamics within which literacy practices and values are situated. As Lankshear & Knobel (2006) note, digital literacy entails much more than learning how to use a program and a keyboard, how to do an online search or how to conduct a so called “web

evaluation”. In fact, they argue, digital literacies exist in plural, because the issue is not merely how to teach a limited set of operational skills, but also how to draw from a multitude of digitally literate practices that school children and students are already participating in. In closely related work, Buckingham (2006) suggests a framework for a broad reading of the term digital literacy, viewing it from a critical approach towards information technology, rather than mere technical competence.

Buckingham (2006) outlines four useful terms in discussing how to approach digital media in a critical rather than a functional and skills-based manner: First, media, including digital media, *represent* the world rather than merely reflect it. There are always values and ideologies embodied in representations, and the reader should assess these. Second, in order to participate in discourse, one must understand how *language* works. Participating in discourse via digital media entails learning new codes and conventions of new and changing genres (as well as older and more static ones). Third, it is becoming increasingly difficult to judge who the *producer* of information may be. For example, commercial interests do not always reveal themselves, and should be guarded against. Fourth, a critical approach to one’s own position as *audience* means understanding how media are targeted and how different audiences respond (or are intended to respond). We will revisit these terms in synthesizing aspects of second language literacy, language tools and digital literacy (section 4), reinforced by observations of second language students using language tools (section 3).

2.2. Second language literacy and language tools

Investigating literacies in operation when using language tools involves an examination of who the learners and users of technology are (*users*), what they are learning (*language*), and by which technological means they learn (*tools*). Our views on these matters are grounded in sociocultural theory, which emphasizes the social natures of mind, language and tools.

Users of language tools in a pedagogic context are simultaneously two different groups of people: second language students and second language composition teachers. Paraphrasing Lave & Wenger (1991), these two groups correspond to “legitimate peripheral participants” and “legitimate core participants”, in a given digital and linguistic community of practice. The students’ position in their new digital and linguistic community puts them in challenging situations, as their belonging and identity as community members relies on their way to find ways to move from the periphery to the core of it. In this journey, users of language tools will socially, physically and psychologically develop and behave as a consequence of the mediational means – artifacts and social relationships – made accessible for them or by them (Lantolf & Thorne, 2006). The tools and relations they will choose to interact with and construct or will have the opportunity to get to know, will shape their thinking and acting in a *language* that is not initially their own, but becomes so during their learning process.

The term *language* is a complex construct, being used in a wide array of contexts. Here, we do not intend to define it, but contend with understanding it as languages in plural. In the digital linguistic community there are many languages members speak. Furthermore, the term language brings together those using and teaching language as well as those developing and designing language tools, albeit their views on what it is are not always alike, or even compatible. Theories and views that encapsulate language (as syntax) from communication and use, in the structuralist and mentalist traditions, may be collectively seen as the language-as-an-object perspective, viewing form as the primary object of study. This is a view that is not compatible with approaches in sociocultural theory applied on second language learning, where language is studied as an organizing force of mind that structures thought, and creates and sustains social order (see Lantolf & Thorne, 2006).

Furthermore, the language-as-an-object perspective is not technically implemented in most of the language *tools* in use today, although their surface appearances may give that impression. Strictly adhering to any theory of syntax would result in very limited tools, which would be more or less unable to analyze the users' languages. Current computational methods are in many ways much simpler, and more fragmentary, partial and shallow, probably because it is more useful and interesting to develop an application that works than one that suits a particular theory. Language tools are made in programming languages that have the explicit purpose of expressing programmatic grammar to process natural languages. These grammars are *not* identical with, in many respects not even similar to, traditional school grammars. While the grammars are hidden away from users of language tools, they nevertheless affect the active programs that they use. Thus, there is an important mismatch between what users understand of language tools, and what they really are.

In addition, language tools are ubiquitous and are certainly “disappearing” in the sense of technologies that “weave themselves into the fabric of everyday life” (Weiser, 1991). In many respects, they have taken over the role played by traditional grammar handbooks. The proliferation of these tools in everyday life suggests that they do provide much sought-after linguistic advice in a conveniently available manner. In the case of second language learning, then, they are perhaps intuitively useful for a range of purposes, including linguistic feedback on student essays. However, these new actors are far from unproblematic, since their appearance also changes the pedagogic context of language learning in non-obvious ways.

3. Writing with language tools

The tool we have studied was designed as part of our research, in an iterative process towards novel language tools for second language learning (see Knutsson, Cerratto-Pargman, Severinson-Eklundh, & Westlund, 2007 for a detailed description.). The “tool” con-

sists of several linguistic tools, and should be thought of more as a linguistic “environment”. Most prominently, it contains grammar and spelling checkers with added functionality such as verbose explanations of errors and linguistic information about words and constructs. There are other, subtler, features such as the option to highlight words according to the part of speech. Here, focus is on the checkers, since these are what students most sought after and used in our studies. Our intention is that critical inquiries may lead to further iterations in design, with the goal of conceiving of better tools and tool use.

We have chosen to highlight the following observations concerning problematic uses of language tools: *misdirections* from output, *misinterpreting* the task of revision and *indiscriminate use* of the tools. There is certainly some overlap between these categories; they are merely intended to highlight issues with the tools in use, rather than provide an exhaustive description of data. Note that we highlight problematic issues for illustrational purposes. There were of course unproblematic uses of language tools as well, for example, when the tools suggested relevant changes, or when the tools instigated discussing and thinking about texts and language among students.

Being able to discuss linguistic constructs in the target language also means that learners were far from “illiterate” with respect to digital tools and the Swedish language. However, this shows how important the issues are, because even quite competent users may sometimes be steered into problematic uses. Our examples consist of dialogue and/or text excerpts from classroom (in some cases voluntary after-class tutoring) settings where second language learners of Swedish participated in pair-wise or singular tasks concerning text revision, where active language tools were introduced.¹ We have translated data from Swedish to English, retaining errors as accurately as possible (erroneous constructs are of course notoriously difficult to translate). Underlined words in text excerpts are those that were marked as erroneous by the checkers.

Misdirections: occurred when output from the error checkers directed students towards false conclusions:

- **Written**: nowadays it is a basic science that one need almost in all the *sciencors* one can think about (marked as incorrect)
- **Changed into**: nowadays it is a basic science, that one needs almost in all the sciences, that one can think about (marked as correct)

The two students working with this text discussed the error markings at some length, in particular being troubled by the first one, which was in fact falsely reported by the checker. They ended up adding a comma that satisfied the checker, but was not grammatically necessary. They also corrected the other reported error into an existing form, as well as the unreported error in the tense of “need”. Furthermore, they added the extra “that” and the comma before it, probably because they had learnt that it was “needed”

from the first example. Thus, being misdirected by the first form probably led them to repeat an unnecessary construct, rendering the sentence awkward (and with an issue with the determined plural of “sciences”), but without error markings.

Misdirections of this sort appeared because the checkers had missed an error or marked something as erroneous where it was not. Inaccurate output is a well-known limitation in all grammar and spelling checkers, not just the ones we studied. “Complete”, teacher-like linguistic coverage entails tools that possess human-equivalent intelligence, which is probably not possible (see e.g. the seminal works by Dreyfus, 1992; Searle, 1980; Winograd & Flores, 1986). For first language users this issue with language tools is not so problematic, because writers frequently (but not always) already have enough literacy in their own language to judge the checkers’ output appropriately. Some misunderstandings will always be present, being in the nature of learning. However, the very strong trust students put in the error checkers rendered them problematic.

Misinterpretations occurred when students acted on output from the tool in a manner that suggested not understanding its intent, or the intent of the task of text revision. In other words, they were sometimes led to lose sight of what they were attempting to express, and how they were expressing. For example, they sometimes inadvertently changed the meaning of their text as they struggled to get rid of an error marking:

Written: It was scandal to see a countess mingle with a farmhand. (Marked as incorrect)

Changed into: It was permitted to be angry if one saw a countess mingle with a farmhand. (Marked as correct)

Written: ...called the ambulance so that they take her to the hospital (marked as incorrect)

Changed into: ...called the ambulance because she was taken to the hospital (marked as correct).

In the first example the student did not understand why “scandal” triggered an error marking. She looked it up in an online dictionary, where it was explained as “permission to be angry”. The first form contains a (correctly reported) minor error in inflection, while the second is an unintentionally odd wording. She chose to accept the dictionary definition word by word, replacing her wording with a misinterpreted one that was marked as correct by the grammar checker. Thus the checker first instigated the misinterpretation by not being able to provide clues to what the error really was, and then reinforced it by marking the result as correct.

The second case starts with a misreport; an error exists, but not as underscored. Again, students changed the meaning of the sentence in a way they probably did not intend, but ridding the text of the “error”.

Finally, *indiscriminate evaluation* illustrates the authority given to language tools. They were elevated to a status of being the yardstick by which to measure linguistic com-

petence. This is problematic because no grammar checker can live up to that role, and even if they could it is questionable if they should. In a sense, students were rid of responsibility for their texts. For most, finishing as quickly as possible, and with no error markings became a goal, rather than producing a coherent, well-written text:

Jean: okay so mm / but it's good because i had three typos (xx) maybe two errors yes (xx) three more errors hu / even if I had read through it once more (xx) mhm

Others became uncertain about their own abilities when in conflict with the grammar checker:

Written: [The book] was not only love. (Not marked as incorrect)

This student complained verbally that the word “about” was probably missing, but that the error was not reported by the grammar checker. After being occupied with this for some time, she gave up and let it stand as it was, not willing to go against the checker’s advice (or lack thereof).

These issues are problematic because grammar checkers are intended to provide help on the way towards a better text, but the final word on the text should be its writer’s. In order to use language tools for learning, it is important that they are introduced to the learning environment in a critical manner, allowing and encouraging students to not always accept output from them at surface value. This is important for two reasons, 1) that the tools have technical limitations, and may not always be correct, and 2) that a fixed notion on “correctness” is the ultimate goal of neither writing nor learning. In writing, it is ultimately more important to express meaning, and in learning language it is ultimately more important to acquire fluency in writing and speaking, to make oneself understood in a new language. The question, then, is how to encourage students to attend to form, while not letting form take over.

4. Discussion

4.1 Interpretation of second language learners’ use of language tools

A broad view on digital literacy concerning language tools is about encouraging a critical approach to language tools. It is about having a healthy level of distrust of the tools’ grammatical knowledge and explanations, and about being critical towards the very notion of surface correctness as a measure of language proficiency or text quality. If we assume that language tools have a mediating role in users’ writing, we must also try to uncover the structures and knowledge “embodied” in these tools. This is a part of what Haas (1996, 1999) calls “The historical-genetic method” based on Vygotsky’s ideas, which

includes the historical study of how the tools were developed, how the tools are transformed by use, and the transformative power of tools on consciousness.

We have seen that the language-as-an-object perspective is inevitably existent in the users' apprehension of language tools. It appears in the current surface output from the tools, in the way the tools are used, and it is then probably influential in how students form their views on language. We revisit the terms *representation*, *language*, *production* and *audience* (Buckingham, 2006) in order to interpret and discuss how language-as-an-object occurs in digital literacy concerning second language learners' use of language tools.

Language tools may *represent* a view of language that treats it like an object, as observed in our studies as well as in studies by Vernon (2000) and McGee & Ericsson (2002). This view includes beliefs, implicit values and ideologies concerning correctness. Therefore, second language students need to be able to evaluate the material they encounter, addressing general questions in digital literacy concerning authority, reliability and bias (Buckingham, 2006).

The kind of language evaluation that language tools provide may presume that objective truth about language can eventually be reached through a meticulous process assessment and comparison of different sources of information. However, no such exhaustive objective truth about language exists. As Fabos (2004, p. 95) suggests, students therefore need to understand that language is not neutral, that there is no ultimate correct text, and that political, economic and social context matters. While the full scope of these issues is probably too large for most learners (after all, they want to learn a language, not communication theory), teachers and tool designers do have a word on what view on language to mediate.

Questioning whose view on language is represented includes questioning what this view on *language* means for second language learning. Importantly, the critical view on representation in digital literacy expressed above is consistent with a sociocultural view on second language literacy. Learning a language is far from solely learning about surface forms. It is about learning how to mean; language is profoundly social, mediating between the individual actor and the cultural and historical milieu within which that actor works (Haas, 1999, p. 212; Halliday & Mattiessen, 2004).

Viewing language as an object may understate communicative and social aspects of language. Second language students do need to receive education about how the given target language(s) in question works with respect to more or less correct (socially accepted) surface forms, but also about how language emerges socially and how codes and conventions of particular genres affect writing (Halliday & Mattiessen, 2004; Knapp & Watkins, 2005). Reading and writing are purposeful activities in which the reader/writer constructs socially situated responses to particular contexts and communities (Hyland, 2003), and learning a second language goes beyond mastering a target gram-

mar, intimately linking language to significance (Lantolf & Pavlenko, 2001). People do not just write, they write to accomplish different purposes in different contexts (Hyland, 2007), and functioning independently is learnt by interacting in socioculturally meaningful activities (Zuengler & Miller, 2006, p. 36).

Literacy involves understanding who is communicating to whom, and why. Active language tools might be said to communicate, in the sense that they *produce* responses to learners' texts. Of course, the rules embedded in language tools reflect some programmers' views on grammar and language, but once tools are released to users, the programmers' views are not directly perceptible. Active tools are differentiated from passive ones by having been given agency to judge language without necessarily referring to a human. In particular instances and reports, then, the tool's reports may or may not be consistent with first language speakers' notions of accuracy, including its developers' notions.

Thus, there are two major agencies to consider regarding production of responses to users' texts: the tools in themselves, and their developers. The language output from tools may be more or less accurate, more or less authoritative, and more or less directed towards formal syntax. Furthermore, its developers may have interests in the formalities of language, and these interests may be more or less known. For example, McGee & Ericsson (2002) question the authority given to the grammar checker in Microsoft Word (called MSGC). How is a large corporation ascribed knowledge about and power over representations of language, and how is that knowledge and power exercised? Some users contend that MSGC is a largely unproblematic mechanical delivery system for the grammar found in handbooks, while others are offended by the very notion of simply tossing handbook grammar at students. The reality is, however, that MSGC is *not* an accurate representation of handbook grammars, and in fact it is far from transparent exactly what representation of grammar it does have. Therefore, it puts its developers in possible conflict with other stakeholders (handbook and dictionary authors, government agencies, pedagogues, learners, etc), in how language should be represented. Of course, the tools we have studied are no exceptions. They offer different, and competing, views to MSGC, but may be questioned on similar grounds, considering the authority given to the tools by language students.

Finally, the second language learners' position, viewed as *audience* of a language tool may be questioned, from the outside by researchers and pedagogues as well as by learners themselves. This means developing awareness of how access to language tools was gained. Did a teacher introduce the tools with certain pedagogical goals in mind, or were they merely included in the word processor of choice? Furthermore, it is important in what manner students are addressed and guided by tools, in particular if they are to be corrected. Students may feel inadequate questioning a computer's feedback about their writing while they are also learning how to express themselves in the very language that the feedback concerns.

In the light of the misappropriations presented in section 3, and the related work and theoretical standpoints above, one might pose rhetorical questions to all stakeholders in the use of language tools in second language learning. In what pedagogical context are language tools used in your second language classroom? What is the place of technology in this specific type of learning? How are language tools used and understood by their users? How are language tools shaping natural language(s)? How do language tools influence ways to talk about language? There is no one correct and exhaustive answer to these questions, answers will differ depending on variables such as the level of the students, the pedagogical rationale of their teacher, and the design ideas expressed by developers. Nevertheless, in the sociocultural view on language and communication, the language-as-an-object view is problematic; at least insofar it overshadows communicative aspects.

4.2 Second language learning at the intersection of digital literacy and interaction design

We suggest three approaches by which the issues we have presented may be tackled. The questions ending 4.1 above concern *education*, but also *interaction design*, and the general descriptions of *language* to be found in output from language tools as well as in many textbooks about language. In all three domains, there are several ways out of the prevailing language-as-object perspective. Language tools do not differ from other tools in that they are products of science, and social, cultural and technological development. As is the case with many other tools, developers often have a specific group of people and human activity in mind when designing computer programs. This concerns the user interface, and more deeply the interaction between the user and the language tool, and the kind of language the developers of the tools assume that writers use, or need to learn.

First, the *interaction designer* can change the use experience, for example by considering use qualities such as pliability (Löwgren, 2006). Löwgren uses the example of an interface to a thesaurus, a passive tool from our point of view, which is made more pliable by a visualization tool. The result from a search in the thesaurus is presented visually as a network of related words. The result is a stimulating design improvement of a passive language tool that makes the passive tool behave more like an active tool. Active language tools must have even better chances to supply the user with interactive visualizations, and pliability, with their ability to react to the user's writings in different contexts. Currently, we have not seen very much of this in the design of active language tools. We call for a marriage between interaction design and language technology when developing software for writing.

Regarding *education*, teachers may consider adapting the tasks for learners when using language tools, and thereby adapt the use of language tools in order to follow their pedagogical choices. Successful application of task design, and the use of language tools has been shown to encourage students to experiment, reflect on their language, and not

misappropriate language tools in the manners shown above (Karlström & Lundin, forthcoming). In this case, the pedagogy of choice was based on genres (Knapp & Watkins, 2005), but there are of course many other pedagogical choices, depending on setting, level of students, teacher preferences, etc. Heift (2001) reports on a study where students participating in more traditional tasks concerning linguistic form using language tools opted to take the difficult route of working through exercises rather than immediately receiving the correct answer. Task design is an aspect of interaction design; there is no clear boundary between interaction with a tool and the context in which it is used. Constraints used in the task design may be transformed and integrated into language tools, and reused by other learners in other contexts, provided that teachers are aware of how the tools may affect the specific situation.

Finally, how the target *language* is described and explained to learners in general is an issue of utmost importance. However, since language avoids any one definition and exhaustive explanation, the proportions of this issue render it out of scope for any design of task or tool. There are historical and cultural ramifications of language-as-an-object involving how language has been explained since grammar, or even the alphabet, was invented (see e.g. Hopper, 1998; Linell, 2005; Pettersson, 1996). Still, the field of language technology does not necessarily have to subscribe to the language-as-an-object perspective, and may instead focus on the development of algorithms that take the usage based linguistic stance as a starting point (Tomasello, 2003, p. 6). From this perspective, language is viewed as a complex and diverse set of linguistic representations including grammar, prefabricated language constructs, idiosyncratic constructions, concrete phrases and word meanings, among other things. An illustration of this perspective is Wittgenstein's words from *Philosophical Investigations* (1958): "Our language can be seen as an ancient city: a maze of little streets and squares, of old and new houses, and of houses with additions from various periods; and this surrounded by a multitude of new boroughs with straight regular streets and uniform houses.". On the horizon of language technology there are some initiatives that are becoming mature enough to be explored in this manner, for example, the so-called word-space model (Sahlgren, 2006), and the application of those in the area of second language learning (Baba, 2004).

Altogether, we propose that there is an urgent need to start developing and designing language tools that enable users to explore meaning related aspects of the complex nature of (the target) language(s). A starting point for such an effort would be, through user-centered and iterative design processes, to develop and design language tools, and tasks that guide their use. The goal would be to design tools that are able to support and visualize a much more complex view of language than the traditional formal approach.

5. Concluding remarks

In order to discuss digital literacy in the context of using language tools when learning a second language, we have drawn from a wide range of sources: sociocultural theory, literacy, digital literacy, interaction design and empirical studies. The issue is complex, primarily because the mismatches between the views of language-as-an-object versus language as a social tool appear in a wide range of discussions. To further complicate the issue, the inner workings of active language tools have little to do with the view on language that they present. This is not a problem in itself, but it becomes a problem when they are ascribed knowledge (and status) that they do not possess. We have seen concretely how these issues affect the real-world use of language tools, and have suggested that interaction design, including task design, might provide means for learners to more critically reflect on the active language tools that they use. One of our own suggestions in this direction is to encourage linguistic reflection by means of visualizing language (Knutsson et al., 2007), coupled with appropriate pedagogic tasks (Karlström & Lundin, forthcoming).

Language tools are here to stay. Changes in development and design will continue to shape users' interaction with others and others' language(s). In this respect, efforts from the educational side are equally important. In particular second language and composition teachers have an important task to accomplish. They must think carefully about the implications of the use of technology in their classrooms (McGee & Ericsson, 2002, p. 454). Not only do educators need to appropriate language tools in their practice, but also they need to reflect on their use for their specific pedagogical purposes. Furthermore, they are expected to teach students 1) to think about the language(s) they write or would like to write and 2) to be aware of the pragmatic effects of their words. As Berlin (1996) suggested, the task of teachers is to enable students to penetrate semiotic codes, and enable them to see how the languages they will speak are ways of thinking and acting, and reflect regimes of power. Language tools are far from neutral on that matter, and their current implementations may not be as "literate" as they seem.

Notes

1 We illustrate issues with language tools by brief excerpts from a collection of data from the Swedish project "The use of language tools for writing Swedish as a second language" (see Cerratto-Pargman, Knutsson, Karlström, & Severinson-Eklundh, 2006). Methods principally consisted of analyzing interactions

between student pairs and student and teacher that had been recorded on video and audio media, analyzing progressive changes in their texts, as well as questionnaires and interviews, and technical evaluation of language tools. For detailed descriptions of methodologies and results, we refer the reader to

Knutsson (2005), Karlström, Cerratto-Pargman, Lindström & Knutsson (2007), Knutsson, Cerratto-Pargman, Severinson-Eklundh & Westlund (2007), Pihl, Rastas, & Rockberg-Tjernberg (2003), Lindström (2006) and Karlström & Lundin (forthcoming).

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