ICT implications in a learning setting

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It's a long journey from Descartes' Cogito to the computer games, websites and multimedia packages of today. If Descartes were alive and cogitating now, however, I suspect he'd be very interested in the impact of computers and playing e.games.

David Cohen 2002, p. 183

On the writing about digital technology

Due to the constant changes experienced by the Information and Communication Technologies (ICTs), it is almost an adventure to write about them without running the risk of being out of date. Therefore, I hope that what I thought at the moment I wrote this text has not already become obsolete in view of the changes continuously occurring in what Bolter (2001, p. xi) calls "the writing space offered by electronic technology"[1]. Interestingly, the same feeling is expressed by Crystal in his book "Language and the Internet". Crystal shares with us his concerns about the unpredictable effects of the permanent developments in the Internet revolution which may make the topics he deals with in his book seem dated although he only took nine months to write it (see Crystal 2001, p. ix). And he begins the last chapter of his book as follows: "It seems to be a standard convention for books dealing with digital technology to begin or end by warning their readers that everything they contain is going to be soon out of date" (Crystal 2001, p. 224). As his prime interest is in language, he also adds that there is no reason not to apply this convention to a linguistic perspective of the subject (see Crystal 2001, p. 224).

Electronic writing and its implications

The new/digital technologies are intimately linked to a culture, a network culture, which considers the computer "as a device for presenting and manipulating [not only texts but also]

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[1] In this context, the terms "writing" as well as "reading" have become metaphoric expressions, cultural metaphors (see Bolter 2001, pp. 12 and 13).

sounds and images." (Bolter 2001, p. xi). In other words, the computer cannot be considered as a communication medium only concerned with writing technology.

When the subject is about communication technologies and about old and new media, "remediation" is doubtless a term/process we cannot help taking into account. In fact, it is a phenomenon intimately related to the continuous reformulations undertaken by the media over the years. Following Bolter, it may be described as a sort of refashioning by the media (see Bolter 2001, p. 25)[2].

Moreover, the semiotic views of language and communication which seem to be illustrated by electronic writing (see Bolter 2001, p. 176) oblige us to be critical, to look differently at the new communication technologies and to judge the advantages and disadvantages of the offer of signs we are faced with when we switch on our computers. The critical view we must adopt when the topic is the electronic word is also something Landow (1992) calls our attention to when he writes about the electronic hypertext. The author asserts that the electronic hypertext, the last extension of writing as a technology, raises many questions and problems about culture, power and the individual. Nevertheless, Landow adds that the problems it raises are similar to those normally raised by any form of writing, "la más prodigiosa y a la vez la más destructiva de todas las tecnologías." (Landow 1992, p. 252).

How far may the Internet be considered a global medium?

A question we may ask connected with the subject of this Conference is to what extent we can think of "the Internet and Web as enabling new forms of community or democratic empowerment" (Bolter 2001, p. 205) and even of "cultural unity" and improvement of "information exchanges", when electronic technology is not available to everybody.

Some of you may perhaps consider that we are wasting our time. You may think – and you have the right to do that – that, finally, there are not a significant number of people around the world who have access to the electronic wor(l)d (see Snyder 1998, pp. xxvi, and pp. 81-82). Therefore, you may perhaps think that it is not worthwhile discussing a problem which only concerns a very small percentage of our population (according to Moran and Hawisher only 2% of the world's population is connected to the Internet (see Snyder 1998, p. xxvi))[3]. We may perhaps say, following Crystal (2001, p. 59), that the Internet is not after all the global medium one is inclined to think it is.

In any case we must acknowledge that the "electronic revolution" has begun and that its effects at all levels of education are not to be neglected (see Snyder 1998, p. xxxiii).

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[2] According to Bolter, "Remediation is a process of cultural competition between or among technologies [...] in the sense that a newer medium takes the place of an older one, borrowing and reorganizing the characteristics of writing in the older medium and reforming its cultural space." And the author continues: "Remediation involves both homage and rivalry, for the new medium imitates some features of the older medium, but also makes an implicit or explicit claim to improve on the older one." (Bolter 2001, p. 23).

[3] In the 1990s, Moran and Hawisher, as referred to by Snyder, noted that e-mail was restricted to a "gated community": only 2 per cent of the world's population was connected to the Internet (see Snyder 1998, p. xxvi).

It is however relevant to outline that in the developed countries Internet users are increasing in number and that, although virtual communities may, to a certain extent, be considered restricted, they are not restricted in the traditional sense. Popular culture and traditional high culture are both available at the same time waiting in equality of circumstances for possible or potential users (cf. Bolter 2001, pp. 205 and 207). Consequently, in the network context, the notion of culture must be redefined; yet, we have to recognise that the "network culture", in spite of rejecting hierarchical distinctions (see Bolter 2001, p. 208), tends to privilege the popular forms by means of the media (Internet and Web) which shape its mode of communicating[4].

Electronics and education

When we consider ICTs in teaching and learning, and I speak as a member of faculty-staff, I have the feeling that we are mainly inclined to think of their applications in computer-mediated distance learning, in e-learning, and in virtual or digital universities as opposed to "stone universities". (See, for example, Edelson, 2000; Szabó and Gacs 2001; Petra and Gaurean 2001.)[5]

As a University Professor I am obviously sensitive to the fact that e-learning may play a very relevant role in terms of a global idea of education and also find that virtual universities (the Uniworld: see Szabó and Gacs 2001) constitute an excellent solution for those countries whose populations do not have easy access to university. Nevertheless, I cannot help expressing my wish to connect the Internet with, for example, foreign language learning (see Crystal 2001, p. 232), with the possibility of approaching a topic from different perspectives (see Landow 1992, p. 160), with the role of hypertext in humanities (see Landow 1992, p. 178), with the relevance of a hypertextual component in class (see Landow 1992, p. 201), with the opportunity it offers to students to work individually and in collaboration (see Crystal 2001, p. 235), and finally with lifelong learning. This means that, as a teacher, I am especially aware of (and concerned with) the fact that we have to integrate the new technologies in our school curricula. Effectively, I should not like the students to force me to change my teaching practices (cf. Snyder 2001, p. xxxiii). I would rather wish to be "prepared" to face the new "Net Generation" [6] and to

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[4] In Bolter's words, "[...] netwok culture [...] finds in the Internet and the Web media that it can shape to express its preference for popular forms." (Bolter 2001, p. 208).

[5] Recently, a Portuguese newspaper article entitled "Comité das regiões conclui. Financiamento do 'e-learning' deve ser diversificado", reported the concerns of the *Comité das Regiões* sobre a comunicação da Comissão Europeia in the «Plano de Acção E-learning – Pensar o Futuro da Educação», a program which is intended to provide access to knowledge/education/training to an ever larger population. Among other important points, we may read in the above-mentioned article that the local authorities should be involved in order to create a digital culture suitable for each region, and that training of e-learning multilingual groups should be considered a factor of success leading to the consolidation of mutual understanding among European citizens. It is also interesting to read that this plan of «e-learning» setting is not intended to be implemented to the detriment of traditional education (*Expresso*, February the 9th 2002, p. 19).

[6] I do not know if the expression "Net Generation" deserves any objection. In his book "Language and the Internet", Crystal (2001, p. 6) asks if notions such as "Net Generation", "global village", "digital citizens" and "the virtual community" are not mere media fictions. I have to admit that Crystal may be right but, following other authors' example, I used the expression "Net Generation". On the other hand, we could also add that "global village" retakes the term "global" which was originally used only in a military strategy context (see Mattelart 2001, p. 75).

deal with them according to their new ways of "reading" and "writing", which are but a new practice connected with the new culture and the new and multiple literacies they experience everyday.

I have referred to the "Net Generation" and it is perhaps worthwhile making clear, following Woods (2001), that "[t]he [so-called] 'Net Generation' are those born after 1990, who grow up with the Internet and who will enter universities from about 2015 onwards." In other words, the "Net Generation" is made up of those who are familiar with information technology and with electronic culture: music, movies, magazines, computers, video games and the Internet (see Woods 2001).

The question we may raise is whether this generation, which is entirely open and very close to other challenges, which are different from the traditional technological ones, is being affected, as far as its development is concerned, by the cognitive, neurological, neuropsychological, neurolinguistic and psycholinguistic demands of the new computer-based and media technologies. It has also to be remembered that behind all this, as Kress stresses, lies "a conjunction of social, political, economic and cultural as much as representational/communicational and technological developments." (Kress 1998, p. 54).

Yet, the idea of applying electronics to education is not entirely new. In the nineteen seventies, in the United States, education was already one of the social domains where the application of electronics, of telecommunications, was taken into consideration. The aim of the setting up of a new system of teleeducation at that moment was to create the conditions appropriate to the existence of a flexible citizen, the citizen suitable for the needs of the 21st century (see Mattelart 2001, p. 113). This way of thinking helps us to understand Snyder's position when he asserts: "We must incorporate the technologies [or at least be aware of their importance] into our teaching if for no other reason than our students will force us to change." (Snyder (1998, p. xxxiii). It is interesting to observe how Crystal considers the situation. In this respect, he writes quoting (and commenting) Eastment (1999): " 'Teachers need to learn new languages' – by which he does not mean new foreign languages, but the 'language of the Internet' – an essential first step of familiarization with procedures and nomenclature."(Crystal 2001, p. 236). And he does not fear being labeled an apologist of the Web when he writes: "Finally, the Web offers an unprecedented array of opportunities for both students and teachers." (Crystal 2001, p. 235).

As far as electronic hypertext is concerned, Landow also considers it an enormous potential to improve teaching and learning and shares with us his experience about the unpredictable pedagogical implications of the use of an hypertextual component in his classes (see Landow 1992, p. 201). But he recognises that teachers and academics are not always receptive to (and sometimes are even afraid of) the new and unknown didactic technologies (cf. Landow 1992, pp. 201 and 203). Hence, we have to admit that scepticism may be an unvoidable attitude present among certain teachers who may even feel anxiety and rejection at the moment of facing this new teaching/learning setting (cf. Landow 1992, p. 157). Yet, Landow calls our attention to the effect of hypertext in promoting critical thinking, reflective judgment, and in learning how to establish links between different contents (see Landow 1992, p. 160). For that reason, teachers have to reconsider educational principals and methods (see Landow 1992, p. 153) because the new educational systems based on hypertext and its links, as its essence, are learning systems rather than teaching systems (see Landow 1992, p. 155)[7]. And the author comments that

electronic hypertext affects the conventional functions of the teacher and of the learner as always occurs with the use of new technologies in education (cf. Landow 1992, p. 153)[8]. Crystal, for his part, emphasizes the creativity and diversity promoted by the Internet in terms of language. Therefore, he asserts that the Internet cannot be seen as the death of languages (see Crystal 2001, p.241). On the contrary, the author manifests his appreciation towards the new and informal forms of language which are used, and which reveal how the human linguistic faculty is alive and in good form (see Crystal 2001, p. 242).

The network culture

If there is no longer an "ideal of high culture (...) as a unifying force" (Bolter 2001, p. 205) and if we take into account the networking of culture, should culture diversity be then present in our minds? If we cannot speak of a single culture, can we, on the other hand, speak, in Bolter's words, of "special interest groups" (Bolter 2001, p. 206) or of a "network of interest groups" (Bolter 2001, p. 205)? Within this framework, a suitable expression is probably "transnational network culture", a sort of culture, which by means of the new technologies of communication, may create a "dialogue" among countries regardless of their languages and cultures.

From the cultural point of view, we may say that we are now experiencing, in a sort of globalisation process, the emergence of the "annulation" of differences between youth culture and parental culture (see Smith and Curtin 1998, p. 223, referring to Richard 1996). The authors suggest that "by about 2010 the techno-cultural understanding and practices of the children described [...] will incorporate the whole sociocultural space called adulthood so that there is no computer technology 'alien' phenomenon as such." (Smith and Curtin 1998, p. 223). Indeed, the use of the Internet allows children [as well as adults] to create "new cultures [...] [i.e.] new ways to see the world" (Smith and Curtin 1998, p. 224), new experiences responsible for bringing a "new meaning to 'cultural diversity'." (Smith and Curtin 1998, pp. 224-225).

"Cultural plurality" may be another key-phrase in the sense that culture, as far as education is concerned, should be viewed in a large, multicontextual way (see Beavis 1998, p. 242). Hence, I stress that young people's experiences and needs as well as their rapidly changing world should be considered in the school curricula (cf. Beavis 1998, pp. 239 and 242). As far as the school curriculum is concerned, it is worthwhile outlining Crystal's view. He refers to the future inclusion of e-mail in the school curriculum because he sees it as a medium that it is not to be feared in virtue of its linguistic characteristics but instead as "an opportunity, not a threat, for language education." (Crystal 2001, p. 128).

The definition of culture – as has been said before – is doubtless an object of continuous updating, due to the fact that culture is to be seen as "multiple and constantly subject to change" (Beavis 1998, p. 238). High culture cannot therefore be taken as the main culture and we have to

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[7] More about the difference between traditional pedagogical technologies and the ones using hypertext, may be seen in Landow 1992, p. 160.

[8] Landow (1992, p. 153) also refers to the way electronic hypertext affects the functions of the reader and the writer. It is therefore interesting to see how the author approaches the role of the reader/writer to the role of the learner expecting both to be active in the new writing space.

accept that, especially in terms of the new technologies, it co-exists with other kinds of culture, including the popular one.

Yet, if we keep the emphasis on "high culture" – a view which regards "society and its future as significantly at odds with the rapid technological, economic and political change transforming late twentieth-century existence", and considers it a "minority culture significantly at odds with the experiences and textual pleasures of the bulk of society" (Beavis 1998, p. 240) –, then we are not tolerant enough to conciliate past and present – cf. the notion of *remediation* according to Bolter (2001, p. 23) – and the "work with computer and other electronic texts alongside those which have traditionally been our concern" (Beavis 1998, p. 245).

As teachers and as psycholinguists we should study the best way to let the young people penetrate the high culture texts. I should suggest approaching them through young people's experience with popular culture[9]. Moreover, we must bear in mind that popular and mass media texts possess their own status and are "part of the lively, immediate and sophisticated reality of students' textual worlds (...)." (Beavis 1998, p. 245). In fact, we cannot decontextualise the young generation in terms of culture. Hence, electronic forms of communication help to reconsider the "cultural ideals inherited from printed genres and forms." (Bolter 2001, p. 208). In the past, print technology led to a radical definition of culture (cf. Bolter 2001, p. 208); nowadays, it is important to be aware of the fact that "[o]n the World Wide Web, as elsewhere, the distinction between high culture and popular culture has all but vanished." (Bolter 2001, p. 207)[10]. Yet, as Bolter adds, "the breakdown of the distinction between elite and popular literature (and art in general)" (Bolter 2001, p. 208) is one of the aspects of the redefinition of the above-mentioned cultural ideals. This also means that every form of cultural representation is available to everybody and access to them is not difficult (cf. Bolter 2001, p. 207). To look at culture from this point of view is doubtless plural and offers everybody the possibility of embracing all kinds of cultural possibilities. In this respect, according to Bolter, "the [new] writing space offered by electronic technology" (Bolter 2001, p. xi) has to be seen as a "reforming or remediating potential [which] has probably not been exhausted." (Bolter 2001, p. 212). As far as text is concerned, Bolter, however, calls our attention to the fact that "[t]he future of text as a remediator of culture is uncertain, even if text (as hypertext) continues to serve a variety of functions in cyberspace." (Bolter 2001, p. 212). In fact, we observe that those who write about the electronic world use words such as "uncertain" and "unpredictable" very often.

The implications of multi-form Internet representations

We are then living in a space, a cyberspace, with a specific new culture and where visualisation as a form of communication is becoming predominant (cf. Bolter 2001, chapter 4,

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[9] Beavis asserts: "There are a number of arguments for including popular culture texts in the curriculum. One of the most persuasive is that of cultural inclusivity, coupled with the old pedagogical priority of 'starting from where the students are at' ". (Beavis 1998, p. 241).

[10] And Bolter continues: "An unwillingness to distinguish between high art and popular entertainment has long been a feature of American culture, and we have chosen to confirm and accelerate this trend in the Web and other new media forms." (Bolter 2001, p. 208).

entitled "The breakout of the visual"). According to Kress (1998, p. 55), "[v]isualisation is seen as an unproblematic kind of 'translation' from one semiotic mode into another – as a simplistic kind of translation from one language to another." Yet, as happens in all kinds of translations, some aspects inherent to the language point of departure may be lost and some others reinforced when we pass from one sort of language to another. If we are concerned with the quantity of conveyed information, the visual mode, due to its characteristics, may be more efficient when larger amounts of information have to be processed. But the same may not happen when the displayed material is verbal (cf. Kress 1998, pp. 55-56).

The possibility exists, therefore, of combining different modes of representation and communication. However, it is worthwhile analysing this kind of combination carefully in terms of the users' learning and performing styles and in terms of a global communication based upon a type of communication (a predominantly visual one?) which, in spite of also being subject to cultural effects, may be seen as linguistically and culturally more neutral than, for instance, English as a global language (see Kress 1998, p. 57)[11].

I began this text by outlining the fact that the new technologies experience constant changes. Therefore, it is very difficult to foresee what is going to happen even in the very near future and to predict the direction hypertext/hypermedia developments will take. The electronic age seems to be subject to different pressures of several kinds and the multidisciplinary framework which it implies obliges us to be prudent in our predictions.

Bolter's quotation mentioned above contains the word "uncertain" when it refers to "the future of text as a remediator of culture" (Bolter 2001, p. 212). Yet, Bolter does not deny the role that the text (the hypertext) has nowadays in cyberspace. He only calls our attention to "the tension between verbal and visual representation [which he adds] seems more important than ever" (Bolter 2001, p. xii). In spite of the fact that he recognises that some of his prophetic claims did not come true when his book was published for the first time, he shares with us his predictions in this new edition, suggesting that he does not think that the computer will lead to a new kind of orality[12]. He rather predicts that communication will be visual (cf. Bolter 2001, p. xiii). At the end of the second edition of his book, entitled "Writing space", he even dares to substitute "visual communication" for "audiovisual communication" (Bolter 2001, p. 213) in the sense that Internet users will "seek to recapture the immediacy of phone and face-to-face conversation through real time, video and audio conferencing over the Internet" (Bolter 2001, p. 213): a thought Bolter leaves in the form of a question. And the author finishes his book in a radical way: "It is fair to wonder whether the late age of print may also become the late age of prose itself." (Bolter 2001, p. 213).

Let us now center our attention on the "Breakout of the visual" (Bolter 2001, pp. 47-76), on the advantages or disadvantages of the conjunction of forms of representation which may go from the purely verbal (texts or even "electronic language") to the other extreme, where the visual prevails, passing through a mixture of both forms in different combinations.

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[11] More about the Internet "as a homogeneous linguistic medium" may be found in Crystal 2001, pp. 6 and ff..

[12] About the new orality experience in hypertextual fiction, and about the culture offered by computers which presents certain characteristics of an oral tradition culture, see Landow 1992, pp. 150-151 and p. 84 respectively. See also Hilgert (2001, p. 53) as far as re-oralisation in Internet conversation is concerned.

We know that learners, and consequently Internet users as well, may present individual differences in information processing and also different cognitive and learning styles. (In respect to different styles, see Day 1977, 1980; Felder 1993.) Therefore, as far as education is concerned, the way of transmitting the contents – not only by means of *verbatim*, the traditional verbal medium of communication, – is something that cannot be disregarded. Educators must be aware of the existence of different forms of representation and of their implications in the different information processing styles: different forms of representation or the use of more than one form of representation may lead to better results in terms of the rapidity and the efficiency of comprehension of the contents and in terms of expressing our thoughts.

On the other hand, there is another aspect inherent to digital technology which cannot be forgotten: the dynamics of electronic text. If we consider now the functioning of the brain and the classical reference to the plasticity of the brain at the early phases of development[13], it is acceptable to call attention to the fact that the dynamic aspect of the electronic text, together with the spatial-visual prevalence of the computer-based setting, may be responsible for differences in the stimulation of the brain. This naturally means that the first contact with these new experiences by children is not to be ignored.

It is usually said that the child's brain develops according to the experiences he/she is exposed to; if, nowadays, the child is exposed to new experiences demanding the functioning of brain structures which did not use to be so sytematically required, it will be no wonder that other neural pathways may be reinforced due to the usually referred plasticity of the brain before the so-called "critical period".

As we have learned, the two hemispheres are not functionally symmetrical and some brains may be more symmetric than others depending on a number of factors (see, for example, Calvin and Ojemann 1980, pp. 71 and ff; Springer and Deutsch 1981, pp. 121 and ff.) but it would not be surprising to be told, in the near future, that new experiences had somehow changed the way both hemispheres used to be stimulated.

Due to the fact that (some) children are exposed to another "culture", the for want of a better term popular culture called, which relies on TV, on computers, on video games, on intensive expositions to visual communication, we can suggest with Healy 1990 (referred to by Lanham 1993, p. 235) that this sort of culture stimulates the right hemisphere in a special way. And we can even add, quoting Lanham, that "[d]ynamic electronic texts pleads to the right sphere, too." (Lanham 1993, p. 235). In this context, it seems reasonable to ask what is going to happen in terms both of the whole brain and of the hemispheric and intrahemispheric functioning.

If new experiences imply new developments while (the accepted classical idea of) the plasticity of the brain enables them, educators must be aware of their role because, according to Healy, "«The brains of today's children are being structured in language patterns antagonistic to the values and goals of formal education.[...]»" (Lanham 1993, p. 234, citing Healy 1990, p. 86). It is then up to us to balance the implications of the new and the traditional experiences and judge the advantages of both.

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[13] Cf. Healy's argument "«The brain is ravenous for language stimulation in early childhood but becomes increasingly resistant to change when the zero hour of puberty arrives» (86)." (Lanham 1993, p. 235, citing Healy 1990).

Moreover, the scores obtained through traditional intelligence tests should be subject to a critical and careful analysis and revision taking into account the new experiences our young generations are exposed to (see Crato 1997). From what has been said so far, we may think of the effects of the acculturation to which children are exposed in terms of physiological and cognitive development, as well as in terms of neuropsychological, neurolinguistic and psycholinguistic implications. We should, however, not forget that behind the electronic technology, which is doubtless responsible for this situation, the inevitable involvement of social, economic and political factors is, as outlined before, to be pressupposed.

The Internet as a linguistic revolution

Should we then consider Bolter's way of thinking when he writes, "The future of text as a remediator of culture is uncertain, even if text (as hypertext) continues to serve a variety of functions in cyberspace. Textual forms such as e-mail, chat facilities and even MOOs remain popular precisely because of their role in defining electronic community."? (Bolter 2001, p. 212). In fact, it is advisable to be aware of the language revolution implied by the new e-facilities for writing because, as Crystal writes, "If the Internet is a revolution [...] it is likely to be a linguistic revolution." (Crystal 2001, p. viii). It also seems relevant to transcribe Wilbur's words quoted by Crystal when the author stresses the role of the text as far as the Internet culture is concerned: "'Whatever else Internet culture may be, it is still largely a text-based affair.' [...]." (Wilbur 1996, p. 6, cited by Crystal 2001, p. 8).

When taking into consideration some of the texts available through the new e-facilities for writing, Kress (1998, p. 53-54) underlines the changes in language leading to a sort of informality connected to the social proximity that, on the one hand, the new technologies may instigate, and, on the other hand, the social context may favour. E-mail, as a "new medium" (cf. Moran and Hawisher 1998, p. 80), may be seen as producing new social relations (see Kress 1998, p. 54)[14]. This form of taking into account the situation in question may also make us think of the interrelationship between political, social, economic, cultural and technological developments in our society, because "[c]hanges in social and political configurations have brought new arrangements and distributions of power [...] [and] social and communicational changes tending to greater informality cannot be said to have just a technological origin: social, political and technological elements coincide." (Kress 1998, p. 54).

Another point in connection with the new social practices is concerned with self-structure/construction. Smith and Curtin affirm: "The children in our sample are better prepared for dealing with computing concepts, the virtual reality world of cyberspace, the Internet and hypertext than their parents are because they have acquired a repertoire of social practices that link computer-based artefacts to the structure of self." (Smith and Curtin 1998, pp. 221-222).

What I have just quoted is somehow echoed in Kress's words when he writes: "Technology is socially applied knowledge, and it is social conditions which make the crucial difference in how it is applied." (Kress 1998, p. 53-54). In other words, following Kress once more, the changes

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[14] According to Kress (1998, p. 54), email produces new social relations because it creates an environment where the emissor and the receptor are put in co-presence resembling the speech situation in some way.

which may occur in communication are not only explained by technological know-how (see Kress 1989, p. 53).

On the electronic language properties and potential

If "[t]echnology is socially applied knowledge" (Kress 1998, pp. 53-54), in the sense that "social conditions [...] make the crucial difference in how it is applied." (Kress 1998, p. 54), the informality of language which characterises, for instance, e-facilities for writing may be seen as the result of a progressive instilled social proximity. As far as e-facilities for writing and electronic writing in general are concerned, self-structure is not to be disregarded either (see Bolter 2001, pp. 189 and ff.) and should be seen as the result of representational and communicational developments. It may then be the case that representational and communicational developments caused by the electronic writing *milieu* translate new mental skills which are eager for movement, dynamics, searching, attitudes mostly connected with practising, and learning-by-doing.

I know that we frequently hear that our learners have problems with (linear) writing and reading. I also know that print is important and even necessary if we take into account a certain concern with the characteristics of what is now called "electronic language", a sort of language which may be considered by some authors as a hybrid language between written and oral (see Ierace 2001, p. 134). The new medium should not therefore declare the old one invalid. Past and present (old and new media) should co-exist, be the object of reconfiguration/remediation and even help each other.

Now, if we adopt the term "Netspeak" (Crystal 2001, p. 17) instead of the expression electronic language, then, following Crystal, we have to "remember that 'speak' [in this context] [...] involves writing as well as talking, and that any 'speak' suffix also has a receptive element, including 'listening and reading'." (Crystal 2001, pp. 17-18). And Crystal adds that the interesting aspect of Netspeak has to do with the fact that it is a communication form which "relies on characteristics belonging to both sides of the speech/writing divide." (Crystal 2001, p. 28). However, although Netspeak presents properties of speech and writing, it is similar to neither of them (see Crystal 2001, p. 47), it is more than a hybrid of speech and writing, it may rather be considered a "third medium" or perhaps "a novel medium combining spoken, written, and electronic properties" (Crystal 2001, p. 48). According to Crystal (2001, p. 47), Netspeak is closer to writing than to speech as far as its properties are concerned. Yet, it is not so easy to characterise it because of the existence of different Internet situations, from the Web to chatgroups. Hilgert (2001, p. 53), for instance, talks about re-oralisation when he studies Internet conversation and refers to the importance of timing in the turn-taking of synchronous chats (see Hilgert 2001, pp. 26 and ff.). Timing is important because, as Crystal writes, "Even apparently spontaneous Internet messages can involve elements of preplanning, pausing to think while writing, and mental checking before sending, which are simply not options in most everyday conversation." (Crystal 2001, p. 40). This quotation leads us to think of the properties of Internet messages in terms of speech and writing and in terms of what it requires from the users from a (meta)linguistic point of view. Crystal (2001, p. 169) stresses the linguistic interest of chatgroup language, which he finds fascinating, because, in his opinion, it provides "written language in its most primitive state" and "evidence of the remarkable linguistic versatility that exists within ordinary people" (Crystal 2001, p. 170).

Let us however see in this "electronic language" a kind of informal language which may be the result, as has been said before, of a social proximity between people which did not previously exist in the same degree. Bearing in mind this social proximity, we could, to a certain extent, take advantage of the computer-mediated communication technologies (CMCs), i.e., of the different types of e-writing, to improve foreign language skills in our students. Through the CMCs, the students could certainly profit from "the chance 'to use the language with native speakers who are interested in what they are saying', and 'to ask «real» questions and to get more or less immediate feedback'."[15] (Knobel et al. 1998, p. 39, citing Kern 1995). In this context, e-mail correspondence, for instance, would allow proximity and improve not only "communicative-language use" but also "cross-cultural learning" (Knobel et al. 1998, p. 39). Using Johnson-Eilola's words, we could regard the space of this mode of practising the foreign language learning as a "new space for communication and learning" (Johnson-Eilola 1998, p. 197) not to be ignored nowadays.

Despite what may be said in favour of or against electronic facilities, I share the opinion of those who consider "that research must focus on *how* computer technologies such as games are used and less on the fact of their existence." (Smith and Curtin, 1998, p. 217, sharing Cunningham's (1994) point of view). I think that the data we could obtain with this kind of research could help us to teach the new generation to learn how to write and to read by doing it through the new media as well, (obviously only when they are available,) because I agree with Beavis when she says that "We urgently need to find ways to talk about and work with computer and other electronic texts alongside those which have traditionnally been our concern." (Beavis 1998, p. 245) In other words, popular texts may function as a bridge to access the high culture texts, for Beavis adds: "Popular and mass media texts must be [seen] [...] as part of the lively, immediate and sophisticated reality of students' textual worlds (...)." (Beavis 1998, p. 245).

It is, therefore, not advisable to introduce this generation to the "high culture texts", if they have not yet been introduced to them at home or elsewhere, without thinking that they already possess a textual world, even if that world is different – but not to be immediately labelled as inferior – from the classical one. Moreover, it would also be advisable to be aware of the fact that this "Net Generation" deals with their textual worlds (which may be largely based upon electronic technology) by means of sophisticated literacies (see Beavis, 1998, p. 244), and we should never underestimate their literacies in favour of ours.

Teachers should then be prepared to make the learners aware of the transitions enabled by electronic technology to pass from the old to the new media (either in print or visual form: see the remediation process outlined before) and of the role and characteristics of hypertexts and their implications not only regarding the linearity of the writing process but also the new status acquired by the electronic reader as well as writer[16]. It would also be interesting to use the new technologies to prepare interactive reading and writing programs which could help to solve the constant complaints we hear when the discussion is about the levels of print literacy of our learners.

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[15] Here I call the attention to the existence of synchronous and asynchronous computer-mediated communications. (See Edelson 2000, p. 1, as far as the distance learning and e-learning are concerned.)
[16] See Landow 1992, p. 150 and chapter 3, in respect to notions such as reader-author and authorship.

The computer-based learning setting

The implications of what has been pointed out are naturally very important when education is the subject of discussion. In this area, we cannot avoid mentioning the following points: "the relationships between individual learners and teachers; between teachers, learners and knowledge; and the internal cognitive and emotional states of the teacher and the learner." (Smith and Curtin 1998, pp. 227-228). It should also not be forgotten that children who are used to dealing with computers come to school with another attitude towards the world. They are used to searching for their needs, in a sort of anticipation of a "learning-by-doing model" (Smith and Curtin 1998, p. 226), predicting a "do-it-yourself home education" (Smith and Curtin 1998, p. 225). It is then no wonder that the familiarisation of these children with computer technology makes them prefer "participation, individual specialisation and access to information [...] to the imposition of learning" (Smith and Curtin 1998, p. 227)[17]. Following Landow (1992, p. 154), electronic hypertext/word requires an active learner/reader because as hypermedia users they have to be mentally active at the moment of dealing with information. Consequently, the traditional functions of teacher and student as well as those of reader and writer are questioned by this new technology (cf. Landow 1992, p. 153).

This way of considering the "learning setting" resembles, to a certain extent, what Felder (1993) says when he presents the inductive and deductive approach in science education. As the author asserts: "Research shows that [...] induction promotes deeper learning and longer retention of information and gives students greater confidence in their problem-solving abilities." (Felder 1993, p. 288). And he continues: "In the words of a student evaluating his introductory physics course, «The students are given premasticated information simply to mimic and apply to problems. Let them, rather, be exposed to conceptual problems, try to find solutions to them on their own, and then help them to understand the mistakes they make along the way» [...]. The approach suggested by this student [Felder adds] is inductive teaching." In fact, this way of teaching which the student defends contrasts with "the teaching approach that attempts to provide a store of knowledge and skills before practice." (Smith and Curtin 1998, p. 219).

Although Felder is concerned with learning and teaching styles in college science education, I feel that what he wants to communicate is in consonance with the demands of the computer-based learning setting of the new generations. The famous "just-do-it" attitude of the younger generations towards computers and their familiarity with computer games make Smith and Curtin (1998, p. 219) affirm, also based upon their study, that these practices obey those modes of learning which are directly controlled by the learner. It is worthwhile considering, for instance, the expression "kids just do it" in contrast with a type of behaviour which requires the reading beforehand of the rules in the manuals (see Smith and Curtin, 1998, p. 219, referring to Turkle 1995, cited in McCorduck 1996, p. 162). This attitude is naturally distinct from the teaching

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[17] The implications of this new computer-based learning setting are well illustrated as far as e-facilities for writing are concerned by Bolter when he writes: "These forms of digital dialogue make claims of immediacy or authenticity against the traditional essay. Unlike the traditional essay, they allow students to participate in an apparently immediate exchange of ideas and feelings that our culture associates with conversation." (Bolter 2001, p. 115).

approach which prepares the learner before practising by means of supplying the knowledge and skills which are supposed to be necessary (cf. Smith and Curtin, 1998, p. 219). We should perhaps look at this mode of learning controlled by the learner himself/herself as a way of keeping the learner motivated and try to generalise it to other matters of the school curricula.

If interactive technology enables the development of all the senses, and consequently of different learning styles (by means of the forms of representation which it makes available), and in a certain way "guides" the learning process to avoid external impositions, then we may consider that kind of approach close to the inductive one referred to by Felder (1993) and the more appropriate and advisable to instill motivation.

The role of the teacher in the computer-based learning setting

In this respect, Smith and Curtin make the following comment: "[...] research literature on the Internet suggests education benefits but advises teachers to guide students in their computer use so that motivation is maintained, and so that through 'searching' as opposed to 'surfing' students have a sense of direction and purpose." (Smith and Curtin 1998, p. 216). I find that this quotation reminds us, as teachers or educators, of the necessity of creating critical and independent minds, and of preparing the students to be able "to learn how to learn" and "to practise how to think" (expressions of Athans 2001). The same concern is expressed by Landow who says that hypertextual environment helps to promote critical thinking and reflective judgment (see Landow 1992, pp. 160 and 170).

Teachers naturally play an important role in this new learning setting and, when they are aware of the new challenges presented by it, they may be impelled to prepare individual programs in response to the needs of the population they have to work with (cf. Smith and Curtin 1998, p. 227). In this new scenario, teachers must be prepared to assume the role of mediators, of facilitators (cf. Lee 2001), of more experienced senior "fellow-students" rather than the traditional role of lecturers because the didactic hypertext, following Landow, redefines the role of the teacher; in fact, part of his power and authority is transferred to the student (see Landow 1992, p. 157).

I hope that what I have said so far it is not understood as a radical position in defense of an exclusive "computer-learning hypermedia setting" (Smith and Curtin 1998, p. 216) – in a sort of apology –, and of an abolition of high culture texts and traditional learning settings. Indeed, I feel that the new generation, the "Net Generation", or whatever you call it, possesses a "new literacy", referred to by Green (1996) as "computency" or "computent" (cited by Smith and Curtin 1998, p. 229) and may feel more receptive to new kinds of educational methods. This may mean, according to Smith and Curtin, that "the ability to read print and the possession of background knowledge that makes reading meaningful are necessary but not sufficient for today's young." (Smith and Curtin 1998, p. 229). Besides, we cannot forget, as the above-mentioned authors remind us, citing Turkle 1995, p. 61, that "computency" requires "the connection of the technology to 'a constellation of cultural associations' (...)." (Smith and Curtin 1998, p. 229).

Final remarks

To conclude, I would like to stress how the new technologies may help us to interpret terms such as "multilingual" and "multicultural" in a different way. On the one hand, they should be expected to increase the global information space and, in this sense, to reduce the possible negative implications inherent to multilingualism and to multiculturalism in terms of a global communication area, selecting the best version of a global communication medium. On the other hand, the new communication technologies, due to their semiotic comprehension and to their multicultural concerns, cover a diversity of "cultures" and "languages" offering an openness to literacies, the new literacies, consequently requiring a new type of training from those who wish to master them. We could even ask if it is not possible to see "cultural transnational offers" and at the same time a semiotic diversity of possibilities – a sort of "multilingualism" – crossing multilingual spaces when ICTs are concerned.

The challenge at this moment lies in looking at the future of a multicultural and multilingual Europe also taking into account the advances of the ICTs as socially applied knowledge. No one is speaking of the disappearance of the diversity of languages and cultures, but we also have to be aware of the facilities the new technologies may provide and of the advantages they may represent to those – as is our case – who belong to the European Union and to the future European Higher Education Area and who are forced to compete in different domains within the same space.

Bearing in mind the title of this Conference, what I have to add as final words is that teachers have no reason to be spared in this new learning setting and that they have to think very seriously of their way of dealing with it beginning by profiting as much as they can from the learning facilities offered by the new technologies. It is perhaps worthwhile underlining once more the role of teachers as promoters of critical thinking, creativity and independent minds. Obviously, learners should always be critical towards the subjects they are exposed to regardless of the medium used to convey them. But, due to their diversity, the new technological offers force users to be more critical than ever. Let us, however, remember Landow when he notes that the electronic hypertext is a privileged medium to instigate critical thinking (cf. Landow 1992, p. 160).

Consequently, I do not wish this text to be read as a mere apology for the electronic wor(l)d[18]. I rather wish to emphasize that it is not my intention to take any kind of determinism as an option to approach the implications of ICTs in the learning setting. My aim is, on the other hand, to draw a scenario of what may happen in the near future although it is always difficult to deal with a domain where uncertainty and unpredictability are often the rule. In other words, whatever we may say today about the electronic wor(l)d may become rapidly obsolete and may oblige us to review any position we might have adopted.

Taking in consideration once more Bolter's notion of *remediation*, it is possible to add that past and present (old and new media) are not at all incompatible. Their relationship cannot be ignored when we face the present as an area of convergence for these media and as the result of a constructive process. Besides, we should face the different forms of e-language (of Netspeak

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[18] Cf. Landow 1992, p. 251, as far as apology is concerned.

situations according to Crystal), as "an area of huge potential enrichment for individual languages." (Crystal 2001, p. 241) and not as a threat. "The arrival of Netspeak is showing us *homo loquens* at its best." (Crystal 2001, p. 242); this seems to me the best way Crystal could have chosen to finish his book and the best quotation I could chose to show that, finally, human versatility, creativity and search for novelty have not been inhibited but rather instigated by the electronic technologies in a linguistic perspective.

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