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CONVERSING WITH THE MACHINE. A TRANSACTIONAL AND DIALOGIC APPROACH TO COMPUTER-ASSISTED LANGUAGE LEARNING

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ABSTRACT

Despite the pedagogical possibilities afforded by computers and hypertext most systems currently available under-exploit the potential of the new technologies towards achieving learning materials promoting autonomous learning practices. The main cause of this under-exploitation is the lack of a change in the psycho-pedagogical paradigm susceptible to endowing hypertext/media technology with teaching-learning relevance. The interface system of hypermedia products is the place where this issue is best reflected.

The present paper discusses the heuristic benefits of designing this interface according to a dialogic model that draws upon the interaction that should take place in good classroom practice, and illustrates the discussion by advancing some of the work done in the SMAIL system. This virtual dialogue is built upon two interactive models: on the one hand, a model of interface as an expert interlocutor opening up discourse spaces; on the other hand, a model of learner as the active agent of his/her own learning. The main goal of this expert interface is to construct such an active learner-participant and promote autonomous learning practices.

0. INTRODUCTION

Western society is experiencing a world-wide technical revolution which is giving rise to some changes concerning (a) the emergence of what is known as *Computer Mediated Communication* (henceforth, CMC) as the typical mode of what Birkerts (1994) has called our *proto-electronic* society, (b) the creation of new media spaces known as *webs* or *nets* (e.g. the World Wide Web), and (c) the development of new textual technologies subsumed under the generic name of *hypertext*.

One of the most outstanding changes derived from technology involves the notion of communicative context, since a relatively large part of interaction is growingly taking place in the various *webs* available: virtual contexts or *cyberspaces* comprising a net of networks especially devised to facilitate the exchange of information at a global scale but with no clear physical location or 'embodied' nature. The emergence of these nets has resulted in a redefinition of what being literate implies after nearly five centuries of print literacy, and, at the same time, have opened up new academic and educational paths that will affect the ways knowledge is both constructed and transmitted.

My main concern in this paper is to reflect on the pedagogical possibilities that technology may offer to autonomous language teaching-learning procedures, that is: in which ways the technological advances may help us devise truly interactive language-learning systems that are susceptible to being adapted according to diverse learning needs and styles, and promote the development of the cognitive and learning abilities of learners. In this respect, a key issue is the interface system, since it is here where 'embodied' classroom interaction is translated to virtual form –with all its successes and, why not, its biases.

1. NEW TECHNOLOGIES AND LANGUAGE LEARNING. THEORETICAL PRELIMI-NARIES

One of the fields most interested in the pedagogical possibilities opened up by the new medium and technology is that of education, which has regarded both as the tools which might help achieve a –until now– utopian paperless classroom open for everyone irrespective of actual location in time or

space. The real protagonist in this situation is hypertext which concerns both a range of technologies and a new type of text built upon information nodes (textual, visual or aural) connected by a system of links. In its true essence hypertext, not only offers multiple interaction paths to users, but also, and most importantly, the possibility to construct these ad-hoc according to their own interests.

If we regard this creative potential of hypertext as its defining trait, the truth is that many multimedia products currently available in the market are 'fake' hypertexts irrespective of their electronic format. This is partly due to (a) the technical difficulties still existing in the field, (b) the variety of hypertext technologies competing among themselves, and, above all, (c) the continuation of old pedagogical practices ignorant of the possibilities newly afforded, that is, the lack of a change in the psycho-pedagogical paradigm that endows hypertext technology with teaching-learning relevance.

This is also claimed by Harris who points out the futility of new technical means when there is no serious theoretical reflection susceptible to taking the most of them:

> The system we now have was created for a different time and population. Isn't it time to create a new paradigm? […] Our new schools should be a reflection of our society. They should engage students individually and in teams. They should be based on technology and expect students to maintain and increase their technological –as well as their creative– skills. They should develop flexibility and ability to learn independently. This would suggest a new discipline, where students are held responsible for learning rather than for time spent. Teachers would challenge students rather than control them. The object of learning would not be content and test scores but skill and creativity. (HARRIS, 2000: 2)

The criticism above thus reacts against current applications where the supposedly interactive features of the courses limit themselves to providing students with (a) the possibility to check the validity of their answers along true/false, correct/incorrect parameters, and (b) a grammar-based approach to language with the sentence as the pivotal unit. The underlying rationale is an atomistic view of language according to which textual and discursive communicative competence results from a linear –additive– learning process which is regarded as starting from simple tasks –i.e. resting upon simple grammatical structures– and slowly progressing towards complexity –i.e. complex tasks rely on complex structure and syntax.

In this paper I suggest that making the most of technology involves an opposed paradigm working from some fundamental premises subsumed in concepts such as: interaction, process, intake, significant knowledge network +procedural knowledge. A paradigm that takes into account both the development of the learners' metacognitive abilities and their awareness of the learning process, that is, autonomous learning practices (AUSUBEL, 1968; BRUNER, 1984; HOLEC 1979, 1991; COLL et al, 1992; VILLANUEVA, 1992)

The place in a multimedia product where such a psycho-pragmatic view of learning-teaching practices is best illustrated is the interface mediating between the learner and the system. This interface should, on the one hand, derive from a clear definition of the teacher's and learner's roles according to the underlying pedagogical approach; on the other hand, an interface built from psycho-pragmatic premises implies deciding upon:

(a) A flexible system that can be felt as useful and as a source of self-esteem by the learner.

(b) The adoption of an enjoyable context where learners and machine can converse in understandable terms.

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(c)   A system that provides for the diversity of the learners cognitive profile/style, and their various learning needs and consequent choices.

In this respect, the system should take into serious account how users may interact with the system, what kind of comprehension processes may be involved in the different interactions, and which may be the best way(s) to anticipate and cater for both. It should also incorporate a diversity of tasks built from clear and workable parameters, based upon real language usage, and attempting to work from the initial representation that learners have of real communicative interaction in order to maximise their learning potential and enhance it.

At the same time any effective hypertext design has to be process oriented –i.e. focusing on what users do with hypertexts rather than on outcome measures– and, in this respect, most information comes from the user's reading experiences when dealing with conventional texts. This necessarily implies building some insights from text linguistics or discourse analysis, in order to devise a framework based mostly on usage patterns and readers' views of texts.

Finally, since significant knowledge only arises from its integration and enmeshment with individual thinking and previously acquired knowledge it seems plausible that the more the learners engage with and interiorise the game proposed by the interface, the more effective will be the learning process. In connection to this, a good interface should make use of the analogical tendencies of the human mind, as well as all those cognitive processes that actually intervene in human conceptualisation and interaction. Metaphor is a good case in point, the system of interface being a metaphor itself together with the personification of an otherwise theoretical and technically applied position.

Nevertheless, if diversity is both a given premise and a desired result in FLT design, it may also represent a serious threat when actually building up a realistic and workable learning system –multimedia or otherwise. A good way to overcome this design hurdle and, at the same time, comply with a psycho-pragmatic pedagogical paradigm promoting the metacognitive strategies of learners, is to design the system according to a small set of *models* or *prototypes* illustrating, on the one hand, the figure of the teacher-tutor and, on the other hand, types of (a) learners, (b) tasks, and (c) discourse interactions and texts. The proposal of SMAIL concerning these issues is the object of the next section.

3. THE SMAIL SYSTEM

The SMAIL project (Multimedia System of Interactive Autonomous Language Learning) attempts to bridge the aforementioned gulf between new technologies and the theoretical discussion on language teaching-learning.

The interface system is devised upon three basic questions formulated from the point of view of the language learner:

- What do I understand by learning a new language?
- How would I like to do it?
- What would I like to find in a language course?

It also starts from the preliminary assumption that, cognitively speaking, learners are a multifarious lot rather than responding to a single, homogeneous learning/cognitive style. Accordingly, the

different tasks proposed by the system are devised regarding a number of prototypical learning styles (e.g. analytical, reflexive, field-independent/dependent, holistic, visual etc.)[1].

The interface system is, thus, a virtual teacher that offers learners different possibilities that may help them build their communicative competence taking into account their own profiles, needs and interests. It is devised according to scaffolding notions and, consequently, is not a passive construct but, rather, a flexible and dynamic system ultimately linked to the flesh-and-bone teacher designing the materials and tasks. All this takes shape in metaphor form: a journey metaphor.

The metaphor in SMAIL exploits the idea that discovering a language is engaging in a journey where the learner enters –discovers– a new culture through its language. The advantages of this metaphor are diverse. First, it takes into account the learners' previous real experience and ensuing background knowledge of journeys, and foresees that their capacity to establish analogies between journeys and language learning will make it easier –and more enjoyable– for them to engage in the latter. Second, the complexities of the metaphor allow the system to cope with diversity by permitting learners to enter in a reticular system of links that adapts itself to their needs and styles, thus offering them different paths, long journeys and short trips, orientation devices, and a number of tools (e.g. a rucksack to be filled with what they think they will need, a travel diary, compass or a guide among other things). Third, if we take into account that the best way to become an experienced traveller and, hence, make the most of a given travel experience is by travelling itself, it seems plausible to expect that it is by learning that people actually learn how to learn, that is, learn how to organise their learning process, set up objectives and goals, and choose the best tools to achieve those.

Let us see how this takes place in the SMAIL system.

3.1. INTERACTING WITH THE SMAIL INTERFACE

Learning with SMAIL gets enriched through the interaction that is established between the learner and the virtual tutor provided in the system's interface as a working option. The system offers learners the possibility of building a friendly relationship with the system and listening to its advices and suggestions. Imagine somebody planning to make a journey. It is often the case that he/she comments about the new experience he/she is about to enter with somebody, be it a friend or a more experienced traveller who might provide useful advice. Both roles are encapsulated in the SMAIL interface which is devised as a friendly and, at the same time, experienced companion helping learners through their language journey.

All this initially happens in the opening screen of the system, where the machine will help learners choose among the different journeys, routes, and possibilities afforded by the system. Here the learner encounters in the first place a series of suggestions concerning learning paths according to his/her learning style, a type of text among all the possible discourse activities within the chosen language, the objectives of the tasks, and complementary information. He/She also meets for the first time a guide character that not only helps him/her through the system, but most importantly, teaches him/her how to learn. This guide is both the interface's complement and the virtual counterpart of a teacher conceived of as a negotiator, counsellor, and learning facilitator.

The virtual dialogue is built upon two interactive models concerning the interface and the learner respectively, namely, that of the interface as an expert interlocutor opening up discourse spaces, and that of a learner as the active agent of his/her own learning. At the present stage of the SMAIL project, the main goal of this expert interface is to construct an active learner-participant who (a) makes decisions instead of solely accepting instruction, (b) justifies his/her choices instead of acting thoughtlessly, (c)

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acts autonomously instead of depending on the teacher's decisions and choices, and (d) interacts within a discursive frame determined by the interlocutor instead of changing it (e.g. changing topic).

This interface-learner dialogue is built upon three levels.

The first level is essentially concerned with (a) determining the learner's profile, and (b) choosing among the different tasks and texts. It is at this first level that the set of models and prototypes upon which the whole system is built proves most useful. Yet, the importance of this first interaction goes beyond determining a learning profile and the corresponding type of task –as identified from the results of questionnaires devised along three parameters: (1) linguistic profile (i.e. background knowledge), (2) learning style, and (3) learning objectives. The real interest of this initial conversation is that it attempts to (a) mobilise the learners' background knowledge in order to enhance their future communicative development, and (b) make learners become aware of their learning skills and built-in strategies in order to ultimately reflect upon their learning process and participate in it in a conscious and, therefore, active way.

The second level involves the dialogue concerned with the –prototypical– textual and generic characteristics of a given text and the production/comprehension activities chosen by the learner from all the tasks offered by the system. At this level, the virtual tutor plays the role of a guide prompting the learner to activate strategies involving, for instance, contextualisation processes or the building of inferences and/or analogies. It also behaves as a counsellor with regard to planning, control and evaluation operations. Here the interface adopts the role of an expert counsellor-teacher who (a) encourages learners to self-evaluation rather than evaluating them itself, (b) offers the instruments for that evaluation instead of silencing the underlying criteria, and (c) suggests methods to collect information for the solving of the different tasks proposed in the journey(s). The ultimate goal is to help learners to (a) self evaluate their work according to their objectives, and learn how to use the different evaluative resources -i.e. build up the learners' metacognitive resources–.

The third level involves the dialogue established between the options open to the learner and the information available in the database. As he/she engages with the different tasks, the learner will have access to various types of information (e.g. grammar and lexis of the texts, links between a given text and others in the system's library). The virtual tutor will also advise the learner as to the different help systems within SMAIL. For instance, concerning how to discover and build up one's lexicon, SMAIL offers diverse possibilities such as using the dictionary, a concordance-based dictionary, image, sound or super detective –the latter guiding learners towards discovering the meaning of words in different contexts or proposing paraphrasing activities.

In this way, the system actually interacts with the learner, playing thus the role of a real teacher in a real classroom interaction, but this takes into account both participants in it, and respects the learners' decisions and choices even if gets activated to suggest their improvement or change of direction as any conscious and devoted teacher would do with his/her students at given points of their acquisition process in order to optimise it. Nevertheless we may not forget the role of the human counsellor-tutor also considered by the system. Both roles, that of the virtual tutor and that of the human tutor are thought to be complementary, since SMAIL can be used in virtual and actual modes (i.e. as a virtual campus or in a 'physical' resource laboratory within a real teaching space).

CONCLUSIONS

The new technologies enable putting into practice a procedural approach to teaching-learning autonomy from a psycho-pragmatic view of collaborative work. This perspective allows for the negotiation of

a significant construction of language knowledge according to diverse learning paths rooted upon the learners' own choices. This is the core assumption in SMAIL, which starts from the initial premise that learning a language involves a constructive process in which the learners' internalised knowledge and stored representations play a key role.

Since these knowledge and representations are usually unconsciously stored in our cognitive system, a good way to optimise them and turn them into effective heuristic devices is to bring them to the surface in a dialogic way, that is, along an interaction with the learning system which embodies in virtual form what should be the case in a real classroom interaction working from similar premises and also concerned with promoting learning autonomy.

NOTES

1. For a thorough account of different cognitive/learning styles, see Villanueva and Navarro (1997).

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