What’s linguistics interested in when talking about technology and education

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Abstract: This paper describes how Linguistics – a highly complex ensemble of studies primarily concerned to the analysis and the description of language and communicative systems – takes part into contemporary efforts for bringing hypertextual technologies to Education. More specifically, it aims to remark the importance of, both, theoretical and empiricist researches, which deal, in each case, with certain indispensable part of the whole discussion on technology and education. From deep structural mental modeling to ethnographic description, linguistics may be used as a perfect example of how the academic area of “technology and education” could not survive without a permanent dialogue between empiric and theoretic efforts. Herein the following topics: cognition and diversity as a challenge to educational methodology; mental representation and linguistic modeling into technology; language grammar devices and users interface in educational technology; discourse and pragmatic sociolinguistics behind technologies.

Why to discuss the role of technologies into pedagogic methodologies? – Beginning this text, it must be justified such a theme in a conference where most of us discuss the application of standard technologies into pedagogical tools or frameworks. This text is much more an invitation for us to realize what should happen when those tools or frameworks are applied in addition to public policies basically oriented to minimize social costs of school failure or drop out, among cultural minorities situated far from optimal conditions of regular education. We could talk, for example, about people far from us, in the middle of a distant savanna somewhere, or people just nearby, as inmates, illegal immigrants children, or that single guy we know since childhood, who dropped out school after several attempts of learning who to use written language and is now told to be “unable to”, a kind of mental disturb that affects thousand of humans around the world. How technologies could reach this type of students under so unusual schooling conditions? How to assure those technologies the capacity of reaching those students and, at the same time, not to reinforce their condition of “unable to”, presuming all of them are able to proficiently use technologies in another social situations not related to pedagogic goals? Technologies used for educational purposes result distinct from analogous types of technologies not used into education, once there are distinct intentions in both cases: the usage of non educational technologies is entirely ruled by individual intentions of those who use them, when, how and why they want; educational technologies, however, are used under specific conditions, ruled by a set of specific objectives fixed by the one who intend to teach something to those who will use each specific educational tool. Therefore, it is not to talk just about technologies, but about how technologies turn to be educational tools into someone’s mind: that’s what, in resume, linguistics is interested in when talking about technologies into education.

Two complimentary dimensions of a linguistic approach on educational technologies rise from that triangle composed by educator intentions, educational tool and user taken as student, namely: (a) surface dimension, which considers all aspects concerned to how user will access and interact to technology, and; (b) deep dimension, hidden and mostly subjective, which consider aspects concerned to how educator’s intentions are perceived and transformed in user’s intention. Major discussions on educational technologies are concentrated just around dimension “a” of the whole question, letting aside the very problem that causes failure and drop out in education: the conflict between the intention behind school activities and the intentions students project on those
activities.

Intention conflicts in educational activities may be explained by several points of view, among which a specially interesting one comes from Bruner’s theory of mind. According to him, humans are programmed to use their minds within two complimentary models of thought, called scientific – well structured, temporally ordered and compromised to cause-consequence representations – and narrative – low structured, ordered and represented under subjective random circumstances. The usage of each model is ruled by, both, cognitive structures and cultural expectations, hence distinct cultures may vary meaningfully according to the relevance given to each model of thought. Mostly, school failures derive from the application of narrative strategies of thought for dealing with situations offered by educators, primarily idealized for the usage of scientific model of thought. Not for coincidence, major cases of school failure occur among individuals coming from cultures in which there is much more expectation for the usage of narrative thought, than scientific one.

How linguistics usually contributes to educational technologies? – Modern linguistics belongs to language sciences and deals with natural languages usage and representation – grammar and discourse issues – and, also, with language taken as a mental faculty, therefore prior to nature grammars, related to the study of deep mental structures that rules semantics of information, communicative intentions and several other issues that link mind, semantic frames and intentions of meaning. Linguistics is much bigger than common sense uses to delimit, usually around grammar description or grammarian normative rules. Same as in the case of educational technologies, linguistics presents a surface and a deep intercomplementary dimensions, and both may arise basic theoretic researches and/or applied enterprises.

Most of the times, when talking about education, linguistics – except in the case of language teaching – is invited to contribute in the surface structuring of educational tools, usually concerned to the correction of written language and, more infrequently, to the adequacy of text, considering communicative variables as users age, gender, cultural background etc. When talking about the engineering of technological tools for education, linguistics is often consulted about how to describe and formalize semantic frameworks into rules a robotic grammar processor could recognize and operate – that’s specifically part of so called computational linguistics, and represents a typical example of a deep dimension of linguistics applied to engineering.

Linguistic patterns (from phonology, phonemics, morphology to syntactic rules and visual patterns of written graphemes) are also used in internal routines of some dedicated users interfaces, as in speech processing, writing recognition, or text scanning. These are also applications of surface properties in the development of technologies.

However, if we ask if those contributions attend our primary problem here, remembering ‘How to assure those technologies the capacity of reaching those students and, at the same time, not to reinforce their condition of “unable to”’, the answer is no.

What is is missing in ordinary discussions about linguistics and educational technologies? – All linguistic applications herein presented, no matter deep or surface dimensions, are inexorably subordinated to one single model of mind, controlled by scientific model of thought. Linguistics, as any other academic area coming from the Humanities, is built over a metaphor we learned to know as mind, something we believe to be certain organism inside our brain. Mind, however, is still a mystery, once no one can testify its properties as a whole. That’s why it is still so controvert to define what’s normal or deviant on human’s mental behavior, and why most human sciences learned to use terminologies such as “adequate to” or “inadequate to” mental behavior.

Almost everything in linguistics depends of some prior hypothesis about mind’s structure and about how does it function. What we know as grammar, grammatical patterns or grammatical functions, all that, are entirely based on some previous reasoning about how human’s mind should support such kind of thing. That’s, for example, what sustains one of the most known principles of grammar called “predicative syntax of phrase”, from which come basic functions named subject and predicate. Spite of its simplicity, this principle is not universally applied to any natural languages, because it’s preponderantly bind to a specific type of phrase structuring leaded by scientific model of thought, from which comes phrase’s linearity and redundant morphological cohesion marks, both taken as indicators of phrase structural adequacy in written language. Another languages, anchored on cultures whose expectations land over narrative model of thought, organize phrases upon another grammatical patterns, mostly upon what’s known as “topic-comment phrase structuring”, such as in ¹[This car I’ve gotta buy new tires today]¹, instead of ²[I’ve gotta buy new tires for this car today]², as it’s expected from predicative phrasal rules. The
selection between phrases 1 or 2 is not exactly a matter of linguistic style, but essentially a matter of using narrative or scientific models of thought, as to say, a matter of mind, not of grammar itself.

Mental models, here defined as theoretic arrangements used to characterize mind or it’s structural functions, are not only determinant for linguistics, but, at least, belong to its academic agenda. It’s not possible the existence of any descriptive routine in linguistics, without a previous, consistent, theory about the mind in control of language’s usage. Every single category or function used on linguistics – therefore, on any application that use them, including educational technologies – carries some idealized man, whose mind, or better, who inspired certain metaphor taken as mind, rules what may considered adequate or not in linguistic behavior.

The impact of mental diversity over linguistic patterns affects any educational tools, once interferes in the way distinct individuals, coming from distinct cultures, deal with educational situations. For those coming from narrative cultures, those whose preference lay on narrative model of thought, educational situations entirely programmed for scientific cultures will probably result in failure. Theoretic researches oriented to this theme are, no doubt, relevant instruments for the development of educational technologies capable to attend students under severe risk of drop out for consecutive failures in school.

Bibliography: