

Neuroscience Recent Advances and Reading Processing

Leonor Scliar-Cabral

Federal University of Santa Catarina, Florianópolis, Brazil

Abstract: *Despite the dissemination of internet communication all over the world, and the fact that very young children are familiar with its use, which apparently would mean the democratization of knowledge, this is not the case, since we are faced at the paradoxical situation where a minority of people master specialized knowledge while the majority is deprived of its access and even of their civil rights, since nobody may claim innocence due to her or his ignorance about the law. An incontestable number of functional illiterates are found even in the so called developed countries like USA and UK and also Brazil, with high figures of functional illiteracy. The program Early Intervention Initiative (EII) developed by the West Dunbartonshire Council with good results illustrates how the problem can be eradicated.*

Key words: *functional illiteracy – USA – UK – Brazil - Early Intervention Initiative*

I. INTRODUCTION

Deep transformations in linguistic communications have been observed, last 25 years, whose scenario is accelerated globalization and non-face-to-face contact between interlocutors over the Internet: the fusion of audio, video and telephony in a single system, the massive use of computers and nanotechnology are examples of scientific and technological revolution that entails determined labor relations by those who hold the most knowledge and are at the forefront of scientific innovation and technology: this imposes new processes for teacher training, implying curricula, disciplines contents and education methodology reformulation.

It may seem that access to knowledge has been democratized and that more people dominate it all over the world, thus breaking the gap that separates the powerful from the destitute people, but this does not correspond to reality: not only are there still 774 million illiterate people, of which 64% are women, according to data from the UNESCO statistics (2007), as even in many countries, where primary school is compulsory, the percentage of functional illiterates comes increasing, which makes the majority deprived of their access and even of their citizenship rights. Consequently, being one of the central problems in the teaching-learning context, I will focus on functional illiteracy.

II. FUNCTIONAL ILLITERACY

Among many functional illiterate definition, for which there is no consensus, my preferred one is: “The concept of functional illiterate, as the adjective itself indicates, must, however, rests on the person's competence lack for reading and writing the texts he/she needs in his/her daily life (at home, socially, or working)” (Scliar-Cabral, 2003).

Note that the denomination “illiterate” in this definition, also covers non-predominantly alphabetical systems. The definition matches UNESCO ones (2006) of functional literacy: “A person who is literate can comprehend and write simple and short sentences related to his/her daily life.” From 1958 UNESCO recommended member states to use this definition.

From the very PISA definition that “in reading, to be literate is to understand, use and reflect on written texts in order to reach one's goals for developing knowledge and potentialities and participate in society” (OECD, 2003), the numbers of functional illiterates are alarming, even among developed countries such as the United States and the United Kingdom (it should be noted that, in these countries, the highest incidence is among immigrants, including second-class generation).

A more operational five-level classification is used by LAMP (Literacy Assessment and Monitoring Program), testing and UNESCO monitoring (2007):

Level 1: The person has very poor skills and may not even be able to determine the correct medicine dose to give to the child, from the packaging label.

Level 2: Respondents can only operate tasks and simple written material, clearly laid out. They can read but do poorly on reading understanding. They may have developed coping skills to cope with more mundane writing demands, but they find it difficult facing new challenges as required in their jobs.

Level 3: This level is considered the minimum adequate to cope with daily demands and work in a complex society. It is the level generally required to complete secondary school for entering university.

Levels 4 and 5: Respondents demonstrated skills mastery for processing more complex information.

Applying these concepts and classifications to data obtained mainly from household surveys, there is an alarming situation with regard to reading and writing competence.

III. ALARMING DATA

The UK Department of Education in its 2006 report reported that 47% of children leave school at 16 years old without having acquired the basic level in functional mathematics and 42% fail to reach the basic level in functional English (Guardian Unlimited, Oct. 7th, 2007). Each year, 100,000 students leave school as functional illiterates in the UK. Although the literacy rate in the United States is very high, measured over at least eight years of education, recent statistics indicate the existence of approximately 30 million of functional illiterates, a number that has been increasing (Civil Liberties, 2007).

It should be noted, therefore, that attending school even until completing secondary school, is no guarantee that the individual will be able to understand, use and reflect about written texts.

Only institutions that have invested heavily in training teachers and adopted methods and materials arising from advanced research were able to satisfactory results in the field of reading and writing by the population, ranking first among the 31 countries associated with the OECD (2005) to Finland, with the best average (548.2 points) and, in second place, Japan, with minimal difference (547.6 points): Mexico, the only Latin America associate country, occupied the worst position, with (404.9 points). Confirming the position occupied by Finland, the PISA report found in 2003 that only 0.3% of fifteen-year-old girls were bad readers.

In Brazil, the situation of functional illiteracy remains serious: according to results of the fifth edition of INAF survey, the institution dealing with that subject in Brazil, “only 26% of Brazilians aged between 15 and 64 fully dominate reading and writing in Brazil” (INAF, 2007).

It is worth investigating the causes of such a situation, asking, for instance, how Applied Psycholinguistics can contribute to reverse the situation. One of the possibilities is to know what measures were taken in scenarios that have presented alarming rates of functional illiteracy and that managed to lower them considerably.

IV. THE EARLY INTERVENTION INITIATIVE PROGRAM

We will take as an example the Early Intervention Initiative (Early Intervention Initiative (EII)), developed by the West County Council of Dunbartonshire, Scotland and which received the prestigious award from the Municipal Journal for the highest achievement in childcare in the UK (West Dunbartonshire Council, 2007).

The program started in 1997, with the goal to be achieved in ten years. In 1997, only 5% of children, who attended the first grade of primary school, achieved high scores in reading: with the application of the program, the figure rose to 45%. The reversal of the problem can also be seen in the fact that in 1997, children with low scores, who attended the second grade of primary school, constituted 11% and in 2007 they dropped to 1%. Back in 2001, before the Program had effects on students who entered the secondary school, one out of every three students (28%) was functionally illiterate: after having attended seven years of primary school, their reading level was the equivalent of the one of a 9 and a half year old child. In August 2005, already under the effect of the program, the percentage of such students dropped to 6%.

Without us being able to go into details, due to time constraints, the program prioritizes early childhood education, developing phonological awareness in preschool, basically using the synthetic phonic method and the multisensory approach, with pedagogical material based on research (Jolly Phonics); activities of intervention, with a team of specially trained teachers; evaluation and continuous monitoring; extra time for curriculum reading, counseling families, and for those who take care of children and the implementation of a literacy environment for the community (Education Guardian, 2007).

Since the program began, 30,903 students have been individually tested, 29,906 in a group, totaling 60,809. Children who fail to reach satisfactory levels while learning to read, write and calculate, are accompanied individually by specialists until they overcome the difficulties, with the program Toe By Toe. Emphasis needs to be placed on the county administration's political will, who invested in the project to eradicate functional illiteracy in 10 years, calling on specialists such as advisors: the project considered important the family and community support and work was developed to supplement the so-called hidden curriculum. Effectiveness of such measures to eradicate functional illiteracy in the UK is confirmed by the comment of Her Majesty's Chief Inspector, Christine Gilbert (2007, p. 2) to the 2006/07 Annual Report:

The final report, published in 2006, drew attention to the fundamental importance of children's speech development. It also made a number of key recommendations for schools on teaching phonics. In particular, it recommended that systematic work with phonics be outstandingly taught; in other words, teachers should allocate enough time each day for children to acquire the knowledge, skills and understanding to enable them to decode (read) and encode (writing/spelling) writing. It also recommended that high-quality phonic work is the privileged focus for teaching children to read, so that they can move more smoothly from "learning to read" to "reading for learning".

V. REFLECTIONS ON THE EARLY INTERVENTION INITIATIVE PROGRAM

Given the fact that many projects for the early literacy implementation presented such unsatisfactory results, one of the first tendencies is copying them, without reflection or adaptation to different scenarios.

Some measures are indisputable, for example, the political will of the institutions responsible for education to convene specialists in teaching-learning of reading and writing to assist on a large scale the educators of preschool and elementary education, as well as the authors of the respective pedagogical material. This implies the presence not only of pedagogues and highly specialized psychologists, but also the contribution of linguists, psycholinguists and speech therapists, who will have to deal with the reformulation of curricula and pedagogical material; continuous training of teachers, school practices, periodic assessment and recovery of students who have learning to read and write difficulties.

The understanding by teachers of the scientific bases that underlie, for example, the phonics, will prevent the mechanical and inadequate practice of the exercises, which would have the opposite effect to the desired one.

Indeed, the primary reason behind phonics is that the basic unit from alphabetic systems, that is, the grapheme (formed by one or more letters) represents a phoneme (class of sounds with the function of distinguishing meanings). Now this goes against the listeners' perception of the speech chain before becoming literate, that is, the speech chain is perceived as a continuum, one of the greatest difficulties in learning reading and writing. Therefore, a systematic work must be developed for the learner consciously reconstructing speech perception, being able to break the syllable into its constituents.

We emphasize, however, that both the phonemes and their representation, the graphemes, have the function of distinguishing meanings. Ignoring that both the oral and the writing language form part of semiotic systems is denying that they serve to communicate thoughts.

Another risk arising from the lack of phonetics knowledge by those who teach phonics is thinking that it is possible to hear or articulate a stop consonant in isolation.

There is an articulatory impossibility for the production of such sounds, if they do not rest on a preceding or following vowel (or similar) sound, since it is necessary to break the obstacle (signaled by silence) so that it can be noticed. In the Portuguese language, we have six consonants that fall into this type: /b/, /p/, /t/, /d/, /k/ and /g/.

Another theoretical issue is not knowing that decoding needs to be learned by the values that the graphemes have, often conditioned by the graphemic context, and not by the letter names. This is particularly serious in Portuguese with the graphemes <c>, <g>, <s>, <x>, <z> and all the graphemes that represent vowels, but the principle is valid for all graphemes: evidently, the word "cat" cannot be read as "cieiti".

Finally, I would like to mention that, in addition to issues that go back to the pre-school and primary education and teacher preparation, the explosion of lexical and semantic fields and of specialized universes accelerated by scientific and technological changes, determined the formation of veritable linguistic ghettos, impermeable even for those considered good readers.

This has determined knowledge fragmentation and the impossibility of understanding the countless cognitive universes: the humanistic ideal is found more and more distant. Perhaps, one of the possibilities to solve this dilemma is the formation of a new type of professional able for translating the specialized text for the general public, which in part is being exercised by the science journalist.

VI. FINAL CONSIDERATIONS

In this article I set out to discuss the priority for teacher training, opting for contributions for eradicating illiteracy in all its aspects, particularly functional illiteracy. I presented statistics in relation to developed countries like the US and the UK, and I also mentioned Brazil, with high rates of functional illiteracy. I mentioned the ten-year program, the Early Intervention Program of West Dunbartonshire Council, whose good results inspire other countries to apply similar measures, but being attentive to adapt it to the respective scenarios with a reflective critique. I ended by indicating the areas where action is needed: reformulation of curricula, school practices and pedagogical material; articulation of the trinomial school, family, community; periodic assessment and recovery of students who have reading and writing learning difficulties and continuous training of teachers.

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