Functional Literacy Numbers in Brazil – Potential Losses for Industries

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Summary
This study presents the functional literacy percentage among Brazilian population. The objective is to indicate how the functional illiteracy or rudimentary literacy can be harmful at industries, causing material losses by rework, lack of achievements during trainings and misunderstanding tasks. A deductive method was used in a bibliographical research due to data survey. Only 26% of the population is considered functional literate, which means they are able to read long texts, follow subtitles, compare two texts, carry out inferences and syntheses as well as solve math problems, present familiarity with maps and graphics. Most of Brazilians seem to have some difficulties on those works, and especially at industries, the low level of functional literacy can represent enormous production deficit.

Keywords: Functional Literacy, Industries, Brazil.

1. Introduction

Functional illiteracy refers to the inability of any adult to use reading, writing, and mathematics capabilities in daily situations. It isn’t only the condition of those who can’t own the ability of reading or writing, but the ones who can’t perform the citizen’s rights in all their plenitude (FONSECA, 2004). The adult wouldn’t fulfill functions required to establish a basic and normal adult life, as complete an application, read prescriptions, check on bus or planes schedules, add the tax to items price or calculating simple interest on a loan, understand written information, etc.

When the problems come to industry workplace, the damage can be even worse. Misreading usually leads the employee to misunderstanding the tasks. The lack of knowledge or proper reading would let employees without required clues to develop their jobs well. And when doing the job improperly, material and time losses cause enormous problems in the production.

The causes of functional illiteracy won’t be discussed in this article. It is about a bibliographical research on statistics of magazines articles, books and the internet that present the percentage number of the Brazilian population with reading and calculating difficulty as well as the damage caused by them inside the industry workplace.

The object of this study is to discuss the presence of functional illiteracy at workplaces showing that it is harmful for industries.

2. Methodology

The deductive method was used on this study. According to technical procedures (GIL, 1999), a bibliographical research was done due to the data survey over sites, magazines articles, and searched books. The data showed on it was prepared by IBOPE, Instituto Brasileiro de Opiniões de Pesquisa e Estatística (Brazilian Institute of Researches and Statistics), which
used a national sample of 2002 people, aging from 15 to 64 years. It was done by a test and a questionnaire at the interviewed people’s home. It was done from June 30th to July 10th (IBOPE, 2005). The test included reading, writing and Mathematics tasks related to practical and context goals. The questionnaire held information about the family educational background and its reading and writing habits.

According to National Institute of Functional Literacy in Brazil - INAF (2005) – Instituto Nacional de Alfabetismo Funcional - the estimated interval of confidence is 95% and the maximum margin of error is 2.2 percentage points, either up or down, over the total sample results.

3. Illiteracy x Functional Illiteracy

According to Unesco Institute for Statistics, Brazil had 88.4% of literate adult in 2005 (UNESCO, 2005). At the same year, according to INAF only 26% of Brazilians were considerate literate ones (INAF, 2005).

The percentage difference may explain that Illiteracy and Functional Illiteracy are not measured at the same way. The former shows a person who can’t read or write and the latter shows the one who knows how to read and write, however he has some difficulties on interpreting a text, or fully understanding a message, or even can’t calculate prices discounts on his daily routine.

The functional illiteracy is a dangerous problem inside companies. It’s hard to be admitted by their employees and even by their employers. The functional illiteracy isn’t about people who haven’t gone to school. They do know how to read, write and add, but they can’t fully understand the written word, the meaning of sentences, the interpretation of graphics, signs, labels, etc. Once we take it down to deep readings, as good books, articles and papers, the results are even worth. Manuals and computers are avoided or simply ignored, even those that help the reader to perform a task or how to operate machinery.

Those people prefer to listen to explanations from their coworkers or they just try how to do it, experiencing failures and redoing the tasks repeatedly until they get them right. When the attitude is toward asking for help, which would rarely take place at normal circumstances, the employees would probably feel embarrassed, and then simply avoid it.

At industry, whenever an employee doesn’t read properly or misinterpret an instruction, some losses of raw material will occur. Besides, other types of losses might happen.

According to Prado (2005) the financial loss due to breaks of equipments, replacement of damaged pieces, process time, stocking and transporting errors, adaptation difficulties on new processes, short improvement during instruction courses, among others are attributed to functional illiteracy.

Not only at industry, but functional illiteracy affects innumerable area, such as business, agricultural and services. The losses can be as simple as returning wrong changes to a customer to misreading the freezer storage instructions. It’s clear that, in both cases, the employees have poor skills with figures and reading. As a consequence, an enormous amount of money runs down the drain.

On a study on the losses at industries in Brazil, some US$ 6 billion a year is abstained from earn due to the decrease of productivity caused by functional illiteracy (MOREIRA, 2003). According to the National Institute for Literacy (1999), the deficit on basic skills of employees causes a lost of some US$ 60 billion in the US annually.
4. Functional Illiteracy in Brazil

The INAF along with IBOPE have developed a research within the Brazilian population aging 15 to 64 years old. They created tests to check the percentage of functional illiteracy among the interviewed.

There are two tests: Reading/Writing and Mathematics.

In the Reading / Writing version the results are classified into four different levels:

− Functional Illiterate - people who don’t manage to carry out simple tasks that deals with understanding of words and sentences.
− Literacy 1 – rudimentary level – classifies those who can locate an explicit information in very short texts, which the configuration benefits the recognition of the required content; identifying a title of a magazine and comprehending small adds.
− Literacy 2 – basic level - corresponds to people who have the capacity of reading middle extension texts, locating more than one information and comparing or establishing relationship between data from different parts of the text.
− Literate 3 – full level – corresponds to the capacity of reading long texts, following subtitles, comparing two texts, carrying out inferences and syntheses.

The Institute drives the tests every other year, and it started in 2001. Then, the results can be compared with other editions (Table 01). Due to the approximation of the decimals, the relative percentages to 2005 totalize 101%.

<table>
<thead>
<tr>
<th>EVOLUTION OF THE LEVELS OF LITERACY – Reading / Writing</th>
<th>2001</th>
<th>2003</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Illiterate</td>
<td>9%</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>Literacy 1 – Rudimentary Level</td>
<td>31%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Literacy 2 – Basic Level</td>
<td>34%</td>
<td>37%</td>
<td>38%</td>
</tr>
<tr>
<td>Literate 3 – Full Level</td>
<td>26%</td>
<td>25%</td>
<td>26%</td>
</tr>
</tbody>
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Table 01: Principal results of the INAF from 2001 to 2005 – Skills of Reading and Writing

In 2001, 2003 and 2005 the same test was applied to similar samples of the population. So, it is possible to check the evolution of the results in the period. According to the questionnaire of INAF, carried out in 2005, only 26% of the Brazilian population has reached the full skill level of reading and writing, but it improves the rate of those from the basic level – 34% in 2001 to 38% in 2005. The percentage of the Full Literacy Level had not significant evolution, remaining near one fourth of the studied population. The same slight evolution can be observed in the rudimentary level; a change of only one point percentage. However, the percentages of those in the illiteracy condition indicate a light tendency of reduction: it was 9% in 2001 and 7% in 2005.

In the Mathematics version, the results are also divided into 4 levels:

− Illiterate Level – it doesn’t manage to carry out basic operations with numbers as reading prices of products or writing down a telephone number.
− Literate 1 – rudimentary level – corresponds to the capacity of reading numbers in specific contexts, like prices, time schedules, telephone numbers, watch, scale, etc.
− Literate 2 – basic level – people who has the capacity of dominating completely the
reading of numbers, resolving usual operations as sum, subtraction, division and multiplication, appealing easily to the calculator, but without having the capacity of identifying the existence of relation of proportionately.

- Literate 3 – full level – those who own the capacity of controlling a strategy in the resolution of more complex problems, with the possibility of the execution of related operation series, presenting familiarity with maps and printers, without presenting difficulties regarding Mathematics.

The tests are driven every other year by the Institute. There have already been two tests – 2002 and 2004 (Table 02). Due to the approximation of the decimals, the relative percentages to 2004 totalize 101%.

<table>
<thead>
<tr>
<th>EVOLUTION OF THE LEVELS OF LITERACY – Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
</tr>
<tr>
<td>Functional Illiterate</td>
</tr>
<tr>
<td>Literacy 1 – Rudimentary Level</td>
</tr>
<tr>
<td>Literacy 2 – Basic Level</td>
</tr>
<tr>
<td>Literacy 3 – Full Level</td>
</tr>
</tbody>
</table>

Table 02: Principal results of INAF- 2002 and 2004 - Skills of Mathematics

According to INAF Mathematics, carried out in 2004, only 3% of the population is in the level of the mathematical absolute illiteracy. In the rudimentary level of Mathematics literacy pointed to 29% of the citizens in Brazil, which indicates an improvement regarding the INAF of 2002 (32%). There is 46% of the population in the basic level. The full level of Mathematics literacy includes 23% of the Brazilian population, regarding that in 2002, this number was only 21%, and in other words, a tendency of literacy increase is observed.

5. Discussion

Some companies invest on corporative education and stimulate their workers to improve their personal skills, motivating them towards production. The more prepared their employees are, the better for strategic decisions, for fast changes, if necessary, and for money saving.

However a question is still on – Are employees able to get the most of the training they receive?

About one fourth of the Brazilian population has received grades for the full literacy level in reading and writing, which means that most of the population has some type of difficult in those areas. The percentage is worth when the abilities come to Mathematics; less than one fourth (23%) has the full Mathematics skills.

Over 37% of the population, on reading and writing test, are inserted on the two lowest levels, and over 32% of the participants, on the Mathematics test, performed in the same worse levels.

Improvements have statistically been demonstrated in the last tests. The reading and writing results show that there have been evolutions on the literacy 2 - basic level. The increased percentage of 4 points observed on this level creates an optimistic perspective for future years. In addition, the fall of 2 percentage points over the illiteracy level reinforces the optimism.

The Mathematics results follow the same modest increase, as observed in the data from 2004 that indicates there have been 2 percentage points improvement on the highest levels.
Nevertheless, it seems logical that the problem requires attention, especially when dealing with employees of major industrial groups, responsible for the production of the companies.

The labor force in Brazil is about 48.8% of the population (IBGE, 2004), which means that many of the workers require needs of improvement on their functional literacy quality.

Also, some industries, trying to solve wasting problems, have adopted the lean manufacturing, which consists in a better way to organize and manage relationships between companies and clients, development of products and production operations. According to Fernandez (2005), the lean manufacturing is the reduction of waste. Besides, it is the integration between people and technology in a system exploiting the strengths and minimizing the limitations of each component (WOMACK; JONES, 1998). As seen, the success of this industrial organization depends, greatly, on the skills of the employees. Rework, expedition and time waste during the work in process do not aggregate value to the product, as stated by Moreira (2005), and they represent losses for the industries.

Still, the research suggested that we are a nation of readers who cannot actually read. It lacks skills of analyzing graphics, synthesizing information or developing complex tasks.

6. Conclusion

There seems to be an enormous difference between literacy and functional literacy. In one aspect, Brazil has received a high score by UNESCO, compared to other countries in Latin America, when it reached 88.4% of literacy among its population in 2005 (UNESCO, 2005). On the other side, the number of functional literacy is much lower, with 26% of achievement within the Brazilian inhabitants in the same year (INAF, 2005).

Improving literacy skills is an important challenge for companies in Brazil, especially functional literacy.

This paper has described the major findings of the INAF with respect to the functional literacy among the Brazilian population between 2001 and 2005.

This analysis of the functional literacy abilities of the nation reveals discouraging figures. There have been indications of a great need of functional literacy training expansions in Brazil workforce.

As a positive aspect of the research, a slight improvement has been presented on the levels of functional literacy in 2005. But it is still a minor literacy success.

Observing the high levels of illiteracy or inadequate literacy cited by the tests carried through INAF, the efforts of the companies seem to be useless. Some enterprises are adopting Corporative Universities inside the workplace. It is an attempt to improve the employees’ functional skills through their personal growth, and as consequence, the motivation related to the need of auto achievement, as cited by Maximiano (2000), about Abraham Maslow’s hierarchy of needs theory.

The education in Brazil has shown weakness and until most of the companies adopt the Corporative Education within the worksite, or other educational requirements be attended, a huge amount of money will certainly be lost on production, and interfering negatively on the industries’ accounts.
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