

# Continuous improvement programs as processes for organizational learning: a case study of a company in the food products industry

André Luiz Fischer,\*  
Natacha Bertoia Da Silva\*\*

Recibido: marzo de 2006 - Aprobado: abril de 2006

## ABSTRACT

*This article intends to show the relationships between quality practices and the process of organizational learning. When we look at the literature about programs of continuous improvement we see that theoreticians consider that the process of organizational learning is a superior stage in the quality culture adopted by companies. To investigate this possibility, we put together a series of indicators taken from classic authors who have written about organizational learning. Adopting a multiple methodology, we applied these indicators to two plants belonging to the Nestlé food product company which have introduced continuous improvement programs over the last two years.*

**Key Words:** *Organizational Learning, Total Quality and Human Resources.*

## RESUMEN

Este artículo intenta mostrar la relación entre prácticas de calidad y el proceso de aprendizaje organizacional. Al revisar la literatura sobre programas de mejoramiento continuo encontramos que los teóricos consideran que el proceso de aprendizaje organizacional es una etapa avanzada en la cultura de calidad adoptada por las compañías.

\* Professor of the School of Economics, Business and Accounting of the University of São Paulo. Address: Avenida Professor Luciano Gualberto, 908 sala E-118 – Cidade Universitária. CEP - 05508-900 – São Paulo – SP – BRASI. e-mail: afischer@usp.br.

\*\* Postgraduated in School of Economics, Business and Accounting of the University of São Paulo, Address: Avenida Professor Luciano Gualberto, 908 sala E-118 – Cidade Universitária. CEP - 05508-900 – São Paulo – SP – BRASIL. e-mail: nsilva@sp.senai.br

Para investigar esta alternativa, hemos combinado indicadores tomados de diversos autores clásicos quienes han escrito sobre aprendizaje organizacional. Implementando una metodología ampliada, aplicando estos indicadores a dos plantas de la compañía Nestle, las cuales han generado programas de mejoramiento continuo en los dos últimos años.

**Palabras clave:** Aprendizaje organizacional, calidad total, recursos humanos

## INTRODUCTION

Over the last few years we have witnessed the escalating occurrence of transformations within organizations that are trying to prosper in a world full of unexpected, profound and constant change. The rapid expansion of human knowledge, the revolutionary pressure of new technologies and the high level of rivalry, all resulting from globalized competition, have provoked a continuous reformulation of the competitive environment, both in mature markets in developed countries and in emerging markets such as Brazil.

Companies are challenged to face ever-stiffer competition and to serve customers who are becoming increasingly demanding. Success, and even survival, depends on innovative solutions for some of the vital issues, such as product and service quality, agility and flexibility when dealing with customers, and competitive costs.

Total quality, with its countless concepts and tools, has helped the company improve its products and its results. By adopting its concepts and practices, industrial organizations in

particular have been improving their processes, turning the quest for excellence into a philosophy and an intrinsic element of their organizational behavior.

Of the various lines of action involved in quality management, continuous improvement programs have been widely used. The success of this strategy, however, is much more linked to the degree of involvement and participation of the whole organization in the change process, than simply to the systematic use of pre-defined methods and procedures.

The participation of people in these change processes has been presented by the subject's theoreticians as the first step in the organizational learning process. They show that the desire of an organization to learn goes beyond the simple adaptation to a previously conceived organizational change. It combines individual and organizational transformation and manifests itself as a movement for creating and producing knowledge.

In this study we try to investigate how the practices involved in a program of continuous improvement become characterized as a process of organi-

zational learning. By means of a case study of a project introduced by Nestle, a major food company, it was possible to identify the factors that interfere in this transformation process. We believe that with this we shall be contributing to the advance of theoretical production in this area and generating elements for reference for those who are involved with projects of this type in organizations.

## **THEORETICAL REFERENCES ON QUALITY AND ORGANIZATIONAL LEARNING**

### **Quality, concepts and evolution in Brazil**

Garvin (1992) points out that the concept of quality has existed for thousands of years, but that only recently has it appeared as a formal management function. Modern approaches to quality have been appearing little by little, through evolution, rather than as a result of remarkable innovations.

The management of quality, or management for quality, is in fact the technological evolution of the various and numerous techniques involved in corporate administration. This evolutionary process has been going on for many years and is based on different approaches, the main

ones of which were put forward by three notable contributors: W. Edwards Deming, Joseph Juran and Philip Crosby, all of whom promoted the concepts of quality management in various organizations throughout the world. This resulted in three different schools of thought, identified in literature as: American, Japanese and European.

Among the countries that introduced quality programs, the United States and Japan are the two that stood out and became global benchmarks.

Of the changes that Brazil went through at the beginning of the eighties, the ones that stand out are those involving the new concepts in work organization that were introduced by industrial companies, such as working in groups, quality control circles (QCC), kanban, just in time and others. Quality circles were perhaps the ones that spread farthest, creating a movement that was analyzed in a considerably controversial manner by the analysts. Some evaluated QCCs in a positive way, associating them with greater worker participation and the adoption of group strategies. This was in clear contrast to the principles of classic administration. Others understood these practices to be an intensification of work exploitation that was now trying to encompass the cognitive potential of the worker; in other words, for these analysts, it was merely a further consolidation of the Taylorist trends of management.

In Brazil, the issue of quality became stronger and more prevalent in organizations after the early nineties. In line with the principles of the new industrial policy introduced by the Collor government, Brazilian companies in this period lived through moments of great competitive pressure, which led them to restructure their production processes and even adopt TQM policies and practices.

The opening up of commerce constituted a central element in the industrial policy introduced as from the beginning of the nineties. This policy differs from previous ones because it shifts the nub of the issue from concern with expanding production capacity to the issue of efficiency and competitiveness.

One of its greatest impacts on industrial culture was to replace the demand for government favors and incentives with investments in quality and productivity. Significant initiatives of this period include the Consumer Protection Code (law 8,078 of 11<sup>th</sup> September 1990) and the Brazilian Quality and Productivity Program (PBQP), which provided for a series of activities relating to awareness, incentives, training and development

According to Fleury (1993), "PBQP was a mobilizing program, under the sole strategic guidance of agents of society that, organized by different sectors in the economy, diagnosed and implemented improvement actions".

The opening up of the economy and the desire to maintain recently conquered market niches led many companies to modernize in a significant way, by looking for more advanced process and product technologies or by even adopting new management methods.

As part of the quality practices, Continuous Improvement Programs sprang up, the majority of which, in order to be effective, have three important and complementary focal points: cultural, behavioral and technical. And so it can be seen that this type of program is closer to the reality of the organizational learning process than others, such as the ones that certify environmental quality or process control.

## **2.2. Continuous improvement programs and the issue of organizational learning**

It is well known that the renewal and improvement of the quality of products and services delivered to customers is increasingly based on the creation of an innovative corporate environment, the basic values of which recognize and give priority to satisfying customers as the only source of profit, growth and measure of collective success, on the clear understanding of the concepts and factors that add up

to quality and productivity, and on the education of all people in the organization in the methods and techniques for solving problems and improving quality and productivity.

According to Bessant (1994) continuous improvement is becoming an increasingly important complement to radical forms of innovation. Therefore, besides being a key element in quality management programs, it is also growing in areas such as flexibility, cost reduction, inter-company relationships and improvements in support processes.

Continuous improvement, which spread throughout the quality movement, as a result of the Kaizen concept, has been important for providing significant results and for being the lever, or the basis for conduct, for improving the performance of highly successful companies, especially in the manufacturing area. (Shiba et al, 1997).

However, the mere adoption of techniques for improving management processes and systems has not guaranteed the transformation that is necessary if companies are to adapt quickly and continuously to change. "Creativity needs to be developed to deal with the new challenges. This capability is associated with the "knowledge" created and self-produced by the organization itself" (Oliveira, 1996).

It is understood that Kaizen was one of the starting points in continuous

improvement; however a more modern vision has been proposed by Shiba (1997). The author categorizes the process of continuous improvement into three types: process control, reactive improvement and proactive improvement. The history of the quality movement is related to the evolution of these concepts of improvement. It began with process control in the United States in the thirties and in Japan in the fifties. Reactive improvement sprang up in the sixties and seventies and was followed by proactive improvement which started to predominate in the eighties.

The process control phase is what is called the cycle that controls or maintains a good process in operation. It works on the basis of monitoring as a way of guaranteeing that the process is functioning in the intended manner. The process operator is responsible for bringing it back to correct operation if it goes out of control (specifications). The corrective action must be carried out in a way that has been predetermined and described in the maintenance manual and is the only way of correcting the problem presented by the process. This cycle is known as SDCA (Standard, Do, Check, Act).

The second way proposed by Shiba for achieving continuous improvement is called reactive improvement. This phase deals with correction as a reaction to faults, defects, delays and losses. To achieve this, data must be collected and analyzed, the basic

causes of the problem must be found and the appropriate countermeasures implemented. The essence of the reactive approach is the standardization of the process for solving problems using, for example, the seven steps or seven tools of quality control: Pareto diagrams, cause and effect diagrams, histograms, control letters, dispersion diagrams and check-sheets.

Proactive improvement on the other hand, deals with situations where there is no clear idea of a specific and necessary improvement. This approach is used to find the original criteria on which the rest of the improvement work is based. Therefore it is necessary to choose a direction for the company before starting any proactive improvement activity. There is no systematic pattern to be used in this type of approach, since an important aim of proactive methods is to meet the demands of the customer by adapting the processes in such a way as to achieve this objective.

According to Bessant et al (1994), continuous improvement can be defined as a focused, continuous and incremental innovation process, involving the whole company. Its small steps, high frequency and small change cycles, if taken in isolation, have little impact, but their cumulative effect can make a significant contribution to performance.

Bessant emphasizes that despite their apparent simplicity continuous improvement programs are not al-

ways successful and are particularly difficult to sustain over a long period of time. Given that continuous improvement, by its very definition, requires a certain period of time before its impact is truly felt, this means that few benefits emerge from such programs. Therefore their success will depend on the creation of an enabling context within the organization.

Furthermore, it will not survive without fundamental proposals and objectives; in other words, its ultimate purpose needs to be made clear. The establishment of well-defined strategic objectives and their communication to everyone in the organization is a prerequisite for the success of continuous improvement programs. So, for Bessant, managers dealing with continuous improvement programs must bear in mind that organizations need to know where they are going, and they need to be certain that this is efficiently communicated to all employees.

The Bessant model (2000) suggests that there are different levels of skill development –or levels of maturity – in Continuous Improvement. The classification of these skills allows companies to identify their position in relation to other companies, and from this to develop a plan for expanding their skills for continuously improving. The author defines five levels of maturity that are associated with the development of skills and routines for continuous improvement. They are:

<b>Level of Continuous Improvement</b>
<b>Level 1 – Pre-Interest in Continuous Improvement:</b> there is no formal structure for improvement in the organization, with problems being solved at random, always considering only the short-term benefit. In addition, there are no strategies with impact in the human resources area, such as training, development and recognition.
<b>Level 2 – Structured Continuous Improvement:</b> there is a formal committee for constructing a system to develop Continuous Improvement in the company; employees are involved in its activities, even if those activities are not integrated with the day to day operations of the organization. Employees are trained to use the basic tools for improvement and a recognition system is introduced.
<b>Level 3 – Goal-Oriented Continuous Improvement:</b> there is the formal use of strategic objectives, with continuous improvement activities forming part of general administration activities.
<b>Level 4 – Proactive Continuous Improvement:</b> there is a tendency to develop autonomously, and individuals and groups manage and direct their own processes. At this level, responsibility for continuous improvement is devolved to the problem-solving unit.
<b>Level 5 – Complete Continuous Improvement Capability:</b> close to the learning organization model, with identification and systematic solution of problems and the sharing of learning.

Levels of Continuous Improvement Table (Adapted from Bessant, 2000)  
 As can be seen, the highest level the Continuous Improvement Program can attain, in any given company, according to Bessant, is organizational learning. The course followed by this particular author is in line with the aims of this study. It starts from the assumption that to generate improvements it is necessary that other knowledge be produced, i.e., a new interpretation of how work is done. Thus, the more conscious the organization becomes of continuous improvement practices, thereby broadening and consolidating their use, the more it will be developing a learning environment. In the next topic we will analyze the issue of learning by establishing its links with continuous improvement practices.

### **Consolidating the concept of organizational learning**

There are many definitions of organizational learning. Despite academic differences, the majority focus on the importance of acquiring, improving and transferring knowledge, thereby facilitating individual and collective learning and involving and modifying the behavior of its members and organizational practices as a result of learning.

The majority of studies argue that organizational learning is a process that develops over time and links it to the acquisition of knowledge and performance improvement. But there is a disagreement about other important aspects. Some people believe,

for example, that behavioral change is vital for learning; others insist that it is enough just to develop new ways of thinking.

According to Garvin (2000), the basic issues that will identify whether an organization is learning or not, are:

- *Does the organization have a clearly defined learning program?* The organization knows its customers, competitors, markets, technologies and production processes and is actively seeking information.
- *Does the organization avoid repeating mistakes?* The learning organization reflects upon past experience.
- *Does the organization lose critical knowledge when a person leaves?* Organizational learning avoids this problem because it does what is necessary to institutionalize knowledge. Whenever possible, knowledge is codified in policies and procedures that are available to large groups of people, and constructed on the basis of the values, norms and operating practices of the organization.
- *Does the organization act to get results based on what it knows?* The learning organization is not simply based on the replacement of knowledge. New learning and adaptation of its behavior must create competitive advantages for the company.

For Garvin, “the learning organization is one that has the skills required to create, acquire and transfer knowledge, its being capable of changing its behavior in order to reflect new knowledge and ideas”.

However, studies on organizational learning divide the process into three or four stages. For learning to happen, organizations must first acquire information. Then, the organization interprets the information and produces views, positions and a refined understanding. Finally, the organization uses or applies the information in tasks, activities and new behavior.

When analyzed in detail, the process of organizational learning has distinct phases: it begins with individual learning, moves to group learning and finally characterizes itself as organizational learning.

This process is not created from one day to the next. In the majority of organizations that have been successful, this was the result of attitudes, commitment and management processes that were carefully cultivated and that built up in a gradual and continuous manner over time.

With steps such as how to promote an environment suitable for learning. Training in how to brainstorm, problem solving, evaluation experiments and other basic learning aptitudes are in fact essential. Encouragement to exchange ideas is also highly valuable.

When the organization does not manage to create the conditions necessary for learning, it suffers from learning deficiencies: amnesia (loss of organizational memory), superstition (the biased interpretation of acquired experience), paralysis (the inability to act), schizophrenia (lack of coordination of the organizational capabilities), useless culture, incomplete knowledge and “shortsightedness” (Dibella, 1999).

Senge (1990), one of the great theoreticians of organizational learning, presents five fundamental “disciplines” that organizations must develop for the innovation and learning process to occur:

- *Personal control*: through self-knowledge, people learn to clarify and deepen their personal objectives, to concentrate their efforts and to see reality in an objective way;
- *Mental models*: they are the deep-rooted ideas, generalizations and even images that influence the way with which people see the world, and their attitudes;
- *Shared visions*: when an objective is seen as concrete and legitimate, people dedicate themselves and learn not as an obligation but because they want to. They create shared visions;
- *Group learning*: in groups in which the collective skills are greater than the individual ones, the capacity for coordinated action is developed;

- *Systemic thought*: this is the fifth discipline and the one that brings together the rest in a coherent set of practice and theory, avoiding that each one be seen in an isolated manner.

According to this author, the setting up of learning organizations begins with commitment between the people in an organization to review the very way in which they look at the world. A learning organization must be committed to examine its structures in a systemic way. It must also defend the use of the systemic thinking tool, to create a healthy community in which the members are free to explore new ways of working and thinking.

The stage in the process called individual mental models is called so because it represents much more than the traditional concept of memory. Memory has the connotation of a deposit of very static knowledge, while mental models involve the active production of new knowledge. Mental models represent the personal vision of the world, covering explicit and implicit perceptions. They also provide the correct context within which to see and interpret new material and they determine how the information that is stored will be used in a particular situation.

On the other hand, Peter Senge argues that the transfer from individual learning to organizational learning is effective to the extent that the mem-

bers of the organization manage to make their mental models explicit and transferable. For an active management of the learning process, it is absolutely essential to understand that the discipline of mental models represents the basis of the theory of the transfer of individual learning to organizational learning (Senge, 1990). The question of transfer is well explored in the model of the knowledge-creating company, as described by Nonaka and Takeuchi (1997).

For Nonaka and Takeuchi (1997), the creation of knowledge involves the interaction between single loop learning and double loop learning (Argyris e Schon, 1978), which forms a type of dynamic spiral.

The conversion of individual knowledge into a resource available for other people is the central activity of the knowledge-creating company. The process of transformation occurs constantly at all levels in the organization. What can be noted is that organizational learning is characterized as being a process that happens over time, while knowledge is the actual result of this process. Therefore, when Nonaka and Takeuchi present the process for creating knowledge, they are referring to the actual learning process. Knowledge and its product as defined by Nonaka and Takeuchi: knowledge is defined as being a “real and justified belief”.

The organization cannot create knowledge without individuals. The organization supports creative individuals or provides them with the context within which to create knowledge. The creation of organizational knowledge must be understood as a process that spreads the knowledge created by individuals “organization-wide”, refining it as part of the organization’s knowledge network.

The vision of Nonaka and Takeuchi is that tacit and explicit knowledge are not totally separate entities, but mutually complementary and permanently interacting.

Explicit knowledge is formal and systematic. Therefore it is easily communicated and spread by means of product specifications, scientific formulas or computer programs.

Tacit knowledge is highly personal. It might be difficult to formalize and its transfer to others is also hard. Tacit knowledge consists in part of technical skills – a type of informal and hard-to-define ingenuity, allied to know-how. Tacit knowledge has an important cognitive dimension. It consists of mental models, beliefs and views that are so deep-rooted as to be held as something certain and not subject to easy expression. It is precisely for this reason that these implicit models have a profound influence on the way in which we see the world around us.

The dynamic knowledge-creating model is anchored in the critical supposition that human knowledge is created and expanded by means of the social interaction between tacit knowledge and explicit knowledge, called knowledge conversion by the theoreticians. In this way, Nonaka and Takeuchi (1997) identified that there are four different models of knowledge conversion in any organization:

- Socialization: from tacit knowledge to tacit knowledge. This is the conversion that arises from the interaction of tacit knowledge between individuals, principally by means of observation, imitation and practice and the key for acquiring knowledge in this way is shared experience.
- Externalization: from tacit knowledge to explicit knowledge. This is a process for creating perfect knowledge, to the extent that tacit knowledge becomes explicit and expressed in the form of metaphors, analogies, concepts, hypotheses or models. Dialogue and collective reflection are examples of situations that provoke the externalization process.
- Combination: from explicit knowledge to explicit knowledge. This is the process of systemization of concepts into a knowledge system. The exchange mechanism could be meetings, telephone conversations and computer systems and it enables the reshaping of

existing information, leading to new knowledge.

- Internalization: from explicit knowledge to tacit knowledge. When they are internalized in the tacit knowledge bases of individuals in the form of mental models or shared technical know-how, socialization, externalization and combination experiences become valuable assets. In order for explicit knowledge to become tacit, verbalization and diagram schematization of knowledge in the form of documents, manuals or oral stories are necessary. This way of converting knowledge is what comes the closest to the process of organizational learning.

The creation of knowledge is a continual and dynamic interaction between tacit knowledge and explicit knowledge. From these knowledge-creating processes, the knowledge spiral is formed. The knowledge spiral begins with the socialization process, followed by externalization, combination and finally internalization, which starts the cycle all over again. It is a spiral process because it begins at the individual level and rises, broadening communities of interaction that cross the frontiers between sections, departments, divisions and organizations.

Looking at it from another point of view, Garvin (1993) believes that organizations can use five different

organizational learning building blocks:

- Solution of problems in a systematic way: based on the quality movement methods and in line with scientific methods, the use of data for taking decisions and the use of simple statistical tools for organizing data and drawing conclusions.
- Experimentation: the systematic search for and test of new knowledge using the scientific method. However, unlike solving problems, experimentation aspires to taking advantage of opportunities and broadening horizons and not to dealing with current difficulties. Experimentation comes in two basic forms: continuous projects and demonstration projects of different types.
- Personal experience: companies must analyze their successes and failures, evaluate them in a systematic way, and register what has been learned in a way that is open and accessible to employees.
- Learning from others: benchmarking is a continuous experience in investigation and learning that encourages the identification, analysis, adoption and implementation of best practice in the sector.
- Knowledge transfer: knowledge needs to be spread quickly and efficiently throughout the whole organization.

## **Synthesis and structure of the analysis**

In the previous chapters, we have presented some of the definitions of quality, continuous improvement and organizational learning, emphasizing the way in which various academics have considered that the process takes place. For the present study, the objective of which is to analyze the continuous improvement program from the point of view of organizational learning, some considerations are more relevant than others.

What we can see is that the theoreticians have researched and produced a great deal on organizational learning, principally from the conceptual (theoretical models) and corporate strategy viewpoint. And so the researchers, when they do their studies on organizational learning, choose a theoretical model and from this they develop their research.

It can also be seen that when they studied organizational learning, the theoreticians focused on organizations and not specific programs -in this case the continuous improvement program. Therefore, we took as a basis the proposal of the authors mentioned in the theoretical framework of the various academics who have written on this subject and carried out an interpretation and analysis. From this we identified six dimensions, each one

defined operationally, and presented some specific variables that allowed us to put together the research tools.

TABLE 1: Dimensions of the Analysis (as proposed by the authors)

Dimensions of the Analysis
<b>Group Learning:</b> transformation of collective reasoning and communication skills. Dialogue is fundamental. (Senge, Garvin)
<b>B – Building the Organizational Memory:</b> the process of storing information relative to the PMC, which can be easily recovered, as well as being available to everyone. (Argyris, Garvin)
<b>C – Personal Control:</b> this is the expansion of personal capability, so that individuals know how to clarify and consolidate their professional and personal objectives (Senge).
<b>D – Knowledge Spiral:</b> this is characterized by four types of knowledge conversion (socialization, combination, internalization and externalization), managed in an articulate and cyclical way, beginning at the individual level, moving through the group level and reaching the organizational level. (Nonaka, 1994)
<b>E – Transformation of Mental Models and questioning their assumptions (double loop):</b> the program encourages the notion that ideas that are deep-rooted, generalizations and images that influence the way in which people see the world and their attitudes should be permanently questioned (Senge). Training processes and the posture of continuous improvement only encourage the correction of errors or the discussion of assumptions as to how they occur (Argyris)
<b>F – Agents of Organizational Action:</b> Do individuals feel that what they do is part of an organizational action that is greater than the one they are involved in? Does this feeling lead them to think about how the action of correcting errors contributes to organizational strategy? These individuals can discover sources of errors, and can create new strategies based on new assumptions (Garvin, 1993).

We believe there are four generic possibilities for conclusions to this research: everything stayed the same after the introduction of the Continuous Improvement Program; throughout the process there was only individual learning on the part of those involved; there was individual learning and favorable results when the project was introduced or there was individual learning, favorable results and organizational learning. The latter is the hypothesis of this research.

## METHODOLOGY

According to Yin (2001), case studies “investigate a contemporary phenomenon within its real life context, specially when the limits between the phenomenon and the context are not clearly defined”.

Yin also points out that, as it becomes difficult to distinguish between the phenomenon and the context, other technical characteristics are important for defining case studies. Case

studies are a research strategy that covers planning logic, provides evidence of the collection and analysis of data, and is characterized as a global process and not only as a tactic for collecting data.

Yin emphasizes that the development of the theory as part of the project phase is essential, mainly when the intention behind the case study is to determine or test the theory.

For Hartley (1994), case study research consists of a detailed investigation, by means of the collection of data during a period of time, from one or more organizations or groups of organizations, with the objective of proving an analysis of the context and the processes involved in the phenomenon being studied.

Therefore, by means of a multiple case study, we sought to analyze if the practices of a program for continuous improvement can be characterized or not as a process of organizational learning.

The universe of this research is made up of two food product plants belonging to Nestle, located in the inner state area of the State of Sao Paulo, Brazil, and which introduced a Continuous Improvement Program in August 2001.

Therefore, to collect the data, we used a multiple methodology, known

as triangulation, which according to Trivinos (1987) allows for in-depth investigation into the topic, thereby detecting both the obvious dimensions of any given social phenomenon as well as the less obvious ones.

To collect the data we used three different, but at the same time, inter-connected techniques: documentary analysis, personal interviews and questionnaires.

From the documentary analysis we tried to discover the story behind the quality project, and more particularly Nestle's continuous improvement program, as well as evidence of the organizational learning process from the records of what was done, manuals with directives for introducing the program, reports and hand-outs.

On the other hand, we carried out structured interviews with the corporate project manager and with the local manager in each plant. Use of the structured interview allowed us to obtain an overview of the continuous improvement program, as well as of the interface with the process of organizational learning, thereby characterizing the peculiarities of the unit being looked at.

At the same time as the interviews were held, we collected data from the main continuous improvement program agents in the plants: facilitators, leaders, coordinators and members of the continuous improve-

ment teams. Because of the large number of people involved, we chose to use simple and structured questionnaires in this phase of the research. By using questionnaires, we intended to analyze mainly the individual and group learning process, and the transition of these to organizational learning as a whole, as well as gathering perceptions of the Continuous Improvement Program from the employees involved in it.

## DESCRIPTION OF THE CASE STUDY

### The Company

Nestle is a Swiss multinational food company that has been active in Brazil for more than 80 years and is the market leader in various areas, such as cookies, chocolate, yogurt and various others. In 2001, the year in which the food market practically stagnated in Brazil, the company had sales of US\$2.5 billion. Its profit stood at US\$79.6 million, its profitability grew by 20.1% over 2000 and its production reached 1,014,000 tons, 5.2% above the previous year's figure.

Currently, Nestle has 114 brands and more than 1,000 items on supermarket shelves. It is considered to be the company with the greatest number of products for sale in Brazil, operating in 12 market segments: milk, coffee, cooking products, chocolate drinks, cereals, cookies, nutrition,

chocolates, frozen foods, ice-cream, food services and pet care.

The company manufactures its products in 23 plants spread throughout Brazil, and has as well an excellent logistics structure: there are 14 sales offices, 3 distribution centers and 4 warehouses. This geographical distribution of the operating units, as coordinated by the corporate headquarters (city of Sao Paulo), guarantees that 12,000 sales outlets are directly serviced by Nestle and 230,000, indirectly.

In these operating units and in the central administration office, Nestle in Brazil has 15,000 direct employees and 220,000 indirect ones.

Faced with an increase in the number of Brazilian and multinational competitors as well as competition from supermarket house brand products, and trying to improve its industrial competitiveness, in 1997 Nestle defined some organizational strategies with a view to meeting the expectations and needs they had identified among their customer base.

The company has diversified its channels of distribution, extended distribution of its products to include convenience stores, and concerned itself a great deal with the issue of logistics, to ensure that its products are distributed to approximately 5,500 Brazilian towns. In an attempt to further strengthen its relation-

ships with its customers, in 2001 and 2002 Nestle invested R\$250 million and R\$ 360 million, respectively, in marketing.

Nestle felt the need to analyze its internal environment, in other words, to look for opportunities for improvements in their plants distributed all over the country. To achieve their strategic objectives, a quality program was initiated on six different fronts, one of them being the continuous improvement program.

### **Proposal and structure of the continuous improvement program**

As the objective of the program for the organization Nestle proposed “the introduction of a culture of continuous improvement in Nestle plants, by means of a dynamic process whereby the employees make individual efforts and as members of teams, identify, prioritize and implement opportunities for improvements (challenges)”. (taken from the Continuous Improvement Program official document).

As a result of the introduction of this program, the company hopes for the following: improvements in processes, systems and products, as well as the professional growth of its employees. Empowerment, renewal/in-

novation and teamwork are considered the basic principles for achieving these results.

For the company, the Continuous Improvement (CI) process is so named because it reflects continuity; in other words a particular way of working, following pre-established and taught rules, so that all employees develop a critical vision as far as their work activities are concerned, bearing in mind that “*there is always a better way of doing a job*”.

The person responsible for the project is the plant manager, while the continuous improvement manager is the human resources manager. Each team is made up of a maximum of ten employees, two of whom act as leaders, having been chosen by the team before the beginning of their activities. To help in the analysis of new opportunities, team facilitators and coordinators validate the presented improvement project.

Continuous improvement program facilitators are employees chosen and indicated by the organization and they operate at the same time in various teams as a technical support, mainly as far as the use of quality tools and problem solving are concerned. Besides this, they help the teams to develop and follow the activities timetable. They also take part in the local committee meetings to validate projects.

The main responsibilities of the coordinator, a position generally held by a department head, are: to make time available for team meetings, to take part in the improvement validation process, to provide training when necessary and to manage the evolution and development of the project from the documents produced by the teams.

### **The process for introducing the program in the plants**

Before starting activities in the plants, an awareness-raising exercise was carried out with everyone involved, in which expectations regarding the continuous improvement process in the plant were raised, using internal newspapers, notice boards, posters, banners and other means.

During the awareness-raising period, which lasts on average 16 days, a competition is organized to choose the plant's continuous improvement mascot. All employees may create a mascot that symbolizes the program in the plant, with the winning entry being perfected by a professional artist from the Nestle Headquarters and used during the program.

At the same time as the awareness-raising campaign is going on, the coordinators (heads of departments)

have behavioral training, which lasts 16 hours and which looks at the role of managers, the importance of teams and the relationship between employees and heads of department.

Leaders and facilitators also take part in the 16-hour behavioral training program, the aims of which are: to present and discuss the concept of the continuous improvement process, to discuss new concepts and paradigms and to help in identifying and developing appropriate attitudes and behavior for the efficient performance of their role as leader and facilitator of a continuous improvement team.

Furthermore, the coordinators, facilitators and leaders are provided with technical training so that they understand the Nestle entrepreneurial cycle (methodology for analyzing and solving problems), which will be discussed in more detail later, and the quality tools. This training lasts 16 hours for coordinators and 24 hours for facilitators and leaders, given that the latter need to go into the concepts in greater detail.

To achieve the proposed objectives and generate improvements in the plants the project suggests that the continuous improvement teams should use a work methodology for the analysis and solution of problems, which in Nestle is called the Entrepreneurial Cycle. They are also helped by the use of quality tools.

The Entrepreneurial Cycle is a logical sequence of steps and sub-steps to achieve a particular objective, in other words to go from the current (real) situation to the desired situation, as defined by the team itself. The quality tools are resources used in the steps to reduce or eliminate the real causes of the problem and by doing so, avoid having it happen again.

The two units we looked at, located in the State of Sao Paulo, began the process of continuous improvement practically at the same time. Plant I has approximately 420 employees and produces yogurts, desserts and

fermented milk, while Plant II has 760 employees and makes a very broad range of products: cooking products (soups, sauces and seasonings), cereals, a line for children and instant pasta and aromas.

In our field research we interviewed the project managers in the plants using a previously prepared script. In order to acquire a better perception from those involved in the program and, more precisely, from those in the continuous improvement teams, we used questionnaires for members of the two teams in each unit, as shown in the table below:

TABLE 2: Those who replied to the questionnaire in plants I and II

Role in the PMC	PLANT I	PLANT II
Coordinators	1	0
Team Members	10	10
Leaders	4	2
Facilitators	2	1
<b>Total</b>	<b>17</b>	<b>13</b>

## ANALYSIS

What the managers told us, arising out of the interviews, as well as the information provided by the participants through the questionnaires, allowed us to identify some important points in the program. With a view to obtaining a more in-depth analysis of Nestle's continuous improvement program, and more precisely

in the two units we studied, we tried to individually analyze each dimension suggested by the authors and their respective variables.

## Group learning

We perceived that in the two plants, the continuous improvement program allows for the sharing of ideas and

experiences between employees principally because they are in team structures where there is constant dialogue, and because of the weekly meetings, where the focus of discussion is on the improvements for each unit.

One must point out that Garvin (2000) stated that a large number of contributors is a facilitating factor at the stage when knowledge is being acquired and can be optimized by holding brainstorming forums, where new ideas are generated and creative thinking is encouraged.

At the beginning of the process we saw that there was individual resistance in both teams to the sharing of ideas outside meetings. However as the program evolved there was a change of behavior on the part of the participants, who began to talk with other employees in the plant in various environments outside the weekly meetings: canteens, corridors, recreation rooms and other places.

The interviews with the managers and what the participants told us were evidence that before the introduction of the continuous improvement program there was no time in the plants for discussion or suggestions involving all employees. This implies a culture change, allowing for those at the lowest levels in the company to also actively take part in organizational dynamics.

It has to be pointed out that each member acts in such a way as to

complement the actions of other group members, always with a view to achieving a single objective. An interesting fact in Plant I is that some participants said that being with employees with different lengths of service helps when it comes to the development of group work, besides allowing for individual growth.

Learning goes beyond the geographical limits of the teams. The field research showed that in the units the relationship between teams is intense, which adds more value to the concept that continuous improvement work has to flow harmoniously. All the teams need to be integrated so that the ideas of one team do not prevail and that one team does not end up working on the same idea as another.

It is interesting to note that this interaction between different team members happens voluntarily; there being no pre-conceived system for such a process.

And so we can see that the Nestle continuous improvement program commends, promotes and provides group learning. The theoretician Senge considers this to be one of the five fundamental disciplines that organizations must develop for the innovation and learning process to occur, where the collective skills are greater than the individual ones, thereby developing the capability of acting in a coordinated fashion.

**Building the Organizational Memory:** In the two units, the document folders of each team appear as one of the essential mechanisms for building the program memory. These folders contain all the information about each meeting and the development and evolution of the work of the team. All of this is examined at the end of each step by the facilitator and coordinator. Those taking part are conscious of the importance of records for developing each project and therefore they prepare the meeting minutes and agendas, as well as fill in all the forms for carrying out the program.

We saw also that in all plants where there is a program running, there is a data base where the training analysts store the main points involved in the development of the team projects. However, no technology was used for storing the ideas and knowledge, so that it could be consulted in the future by those taking part; only the program coordinator accompanies the phase in which each team finds itself.

Thus, we can see that while the knowledge generated is codified and kept in the team folders, there is no interaction system that makes what has been prepared easily available to all individuals involved in the continuous improvement program.

## **Personal control**

With the introduction of the continuous improvement program all those taking part realized that they had the opportunity for learning and personal development. They believed they had the possibility of transferring what they learned to their personal life, besides getting to know other sectors in the plant and talking with employees with whom it was not necessary to talk previously, such as the heads of department, for example.

Facilitators and leaders took part in behavioral training about working in teams, where they were able to review the values in their life, besides improving their oral communication skills, relationships with people and leadership skills. To conduct the work in teams they were trained in the methodology used in the continuous improvement program as well as in quality tools.

## **Knowledge Spiral**

The field research revealed that the knowledge generated in the continuous improvement program is spread to all individuals, mainly by team leaders and facilitators in the weekly meetings. Therefore we can clearly see the combination process suggested by Nonaka and Takeuchi (1997).

The existence of the continuous improvement program notice board,

located at a strategic point in the plant, allows everyone to learn about the challenges faced by each team, as well as who the team members are and the stage at which the projects stands.

Within the program proposal, recognition of highly successful work is achieved by means of a prize. Teams that complete their projects and present results that are economically interesting for the company receive a financial reward. The award of a prize happens periodically and serves, according to the managers, as a lever for the continuous improvement program in the plant, by motivating those taking part, and teams that are in difficulties.

### **Transformation of Mental Models and Questioning their Suppositions (double loop)**

With the introduction of the continuous improvement program, the vast majority of those taking part in the research perceive changes in their views of the plant and review their own ways of looking at the reality around them.

However, the project managers believe that this does not happen in a uniform way for all employees, given that there are people who are not involved with the policy and with the

plant programs and who are satisfied merely with their daily activities and their pay check at the end of the month.

Some say that they became more critical and analytical after the continuous improvement program: “when a new product is going to be launched, everybody begins to analyze if the box can really hold the amount of product stipulated, if the shape of the pot or the material used could be different, if the production order of the lines could be altered, etc.”

The majority consider that they have the freedom to look for new ways of working and thinking because the company allows this to happen and continuous improvement has consolidated this behavior among the employees.

### **Agents of Organizational Action**

To achieve the objectives raised and generate the improvements in the plants, the teams use a work methodology for analyzing and solving problems called, in Nestle, the Entrepreneurial Cycle. The problem solving techniques involve the Entrepreneurial Cycle and quality tools. This problem solving system is emphasized by Garvin as being one of the strategies for building organizational learning. Bessant also recog-

nizes that the use of scientific techniques is extremely important, but needs the involvement of everyone to guarantee its success.

Before the continuous improvement program, there was no concern on the part of the employees as far as problems in the plant were concerned. At present, however, the projects that have been developed allow for, and must be analyzed in a global way, given that much of the work has an impact on other sectors, and is not always beneficial.

Despite the positive behavioral changes as from the time the continuous improvement program was introduced, people in the two plants in this first stage only manage to see their own place of work, but the managers believe that in the next stages they will start having a more all-embracing vision of the plant.

## **FINAL CONSIDERATIONS**

From looking at the analysis dimensions we saw that much of what the authors extol as being organizational learning is, in fact, contemplated in the Nestle continuous improvement program.

However, when we analyze the results of the project, we see that we cannot conclude that it achieves all the requirements needed, as defined

by the variables we chose, to identify a learning environment. The characteristics of the continuous improvement project that most contributed to this were: make-up of the working teams involving all employees in the unit, the active participation of everyone in meetings and in identifying improvements, the commitment of the management and heads of department, the possibility for people to put forth their ideas and share their experiences, the use of a system for identifying and correcting mistakes or proposals for improvement, and others.

One of the factors of the project that made the learning environment difficult has to do with the dissemination of the ideas and knowledge generated during the program. We observed that in spite of the existence of a system for recording all the knowledge produced, thereby building an organizational memory, its transfer and dissemination did not happen quickly or in any dynamic way.

Therefore we can see that there is a substantial trend towards and approximation to organizational learning, due to the system used for introducing the program in the plant and mainly the active participation and commitment of the management as far as the project is concerned, given that it has been characterized as a corporate strategy.

At present, the profile of the heads of departments in Nestlé – innovative, flexible, proactive and open to new ideas coming from employees– contributes and becomes a strong point for the success of the continuous improvement program, as seen from the point of view of recognizing the value of it and promoting all individuals in the organization.

Therefore, this research allowed us to verify that companies can introduce continuous improvement practices or other programs in the quality area, but they will only be successful if they believe in the potential of their employees and give them the opportunity to develop and contribute to the organization as a whole.

## BIBLIOGRAPHICAL REFERENCES

- Aargyris, C. and Schon, D. *Organizational Learning: A Theory of Action Perspective*. Harvard University, 1978.
- \_\_\_\_\_. *Organizational Learning II: Theory, Method, and Practice*. Addison-Wesley Publishing Company, 1996.
- Bessant, J. *Developing Continuous Improvement Capability*. International Journal of Innovation Management, 1999.
- \_\_\_\_\_, J. *An Evolutionary Model of Continuous Improvement Behavior*. Technovation. Spring, 2000.
- Bessant, J. *Rediscovering Continuous Improvement*. Technovation, v.14, n.1, p. 17-29, 1994.
- DiBella, A. and Nevis, E. *Como as Organizações Aprendem: uma estratégia integrada voltada para a Construção da Capacidade de Aprendizagem*. São Paulo: Educador, 1999.
- Fleury, A. e Fleury, M. T. *Aprendizagem e inovação organizacional: as experiências de Japão, Coréia e Brasil*. São Paulo: Atlas, 1997.
- Garvin, David. *Gerenciando a qualidade: a visão estratégica e competitiva*. Rio de Janeiro: Qualitymark, 1992.
- \_\_\_\_\_. *Learning in action: a guide to putting the learning organization to work*. United States: Harvard Business School Press, 2000.
- \_\_\_\_\_. *Construção da organização que aprende*, in *Gestão do Conhecimento*, Harvard Business Review. Rio de Janeiro: Campus, 2000.
- Imai, Masaaki. *Kaizen – a estratégia para o sucesso competitivo*. São Paulo: IMAM, 1988.
- Nonaka, Ikujiro. *Criação de conhecimento na empresa*. Rio de Janeiro: Campus, 1997.
- Rodrigues, Marcus Vinicius. *Processo de melhoria nas organizações brasileiras*. Rio de Janeiro: Qualitymark Ed., 1999.
- Salerno, M. S. *Produção, Trabalho e Participação: CCQ e Kanban numa nova imigração japonesa in Processos e Relações do Tra-*

- balho no Brasil. Maria Tereza Leme Fleury and Rosa Maria Fischer, coordinators. 2<sup>a</sup> ed. São Paulo: Atlas, 1987.
- Senge, Peter. *A quinta disciplina: arte, teoria e prática da organização de aprendizagem*. São Paulo: Editora Best Seller, 1990.
- Siqueira, Jairo. *Liderança, qualidade e competitividade*. Rio de Janeiro: Qualitymark, 1995.
- Trivinos, A. *Introdução à pesquisa em ciências sociais*. São Paulo: Atlas, 1992. &