



## **ELABORATION AND APPLICATION OF A SPECIFIC MASONRY TRAINING PROGRAM FOR CONSTRUCTION INDUSTRY WORKERS**

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### **ABSTRACT**

This paper presents a specific masonry training program based on quality, productivity, rationalization, hygiene and safety concepts. This paper revisits the systemic approach that brings into focus four different phases: diagnosis, programming and planning, execution and evaluation. Some concepts were developed according to a Brazilian method called SEMEAR, focused on participant teaching-learning techniques and based on the New Pedagogy principles. More important for our purposes was stimulate a better verbal communication, improve the group relationship and call the attention to the need for a new professional posture.

The validity of this training program is demonstrated through two empirical examples. The results show that this specific training program represent a viable and effective tool to improve the understanding of services orders and to increase the interaction among construction workers. This training program can also be seen as part of a group of strategies that aims to answer the new patters of behavioral and attitudinal posture, recent requested by companies.

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## INTRODUCTION

The recent Brazilian economic changes has altered the firms selection environment and, in particular, the level of competition. In response, firms have been adopting new quality patterns and restructuring labor management policies. The search for better performances and product differentiation has become a priority among firms in a tight selection environment. As well as other economic sectors, the construction business is also suffering instabilities and retractions, but recently, considerable attention has been given to constructing quality improvements, specifically the worker effectiveness in production.

The current economical and social context requests a more qualified worker, able to execute more than simple routine tasks. What firms has demanded is a skilled worker that uses more logical reasoning, able to solve problems in their activities, more opened to learn and manage new knowledge, able to identify technical opportunities, and assuming a new attitudinal posture based on cooperation, autonomy, larger communicative capacity, and above all, larger commitment with the company organizational culture.

Lucena (1995) argues that the reality appears for a country that needs to grow, to expand and to use, in wide scale, the technology, where the modern worker is qualified or he is no longer considered a worker. However, in Brazil, the majority of industries do not care about training, investing less than 1% of worked hours, when the world average is about 3%. (Costa 1994).

Emphasizing the lack of investments in training, Chiavenato (1994) argues that in 1991 a national research about industrial competitiveness revealed that only 20% of 2,9 million small and averages companies that operate at the country, drove training programs. Trying to revert that reality, Barone (1997) argues that some actions have been made to change companies structure, as well as, actions that seek a change in the quality of their employees services, through trainings, qualifications and re-qualifications, that favor the improvement of the verbal and writing communication, contributing to a better understanding of the service orders; for better personal relationships in the work and for the definition of the worker's attitudinal patterns, requested by this new business reality.

Carvalho (1988) comments that the training should not be seen as an end in itself but as an indispensable administrative tool to increase company's performance. Both, large and small companies should start to promote and to motivate education programs to increase their employees' qualification.

"If the market demands competitive companies, the society also demands competent citizens" (BRASIL, 1995, p.8).

Recently, training programs started to be seen as an investment, where the motivation and the worker's co-responsibility leads to a professional more qualified and committed with the company organizational culture. And above all, that the search for the professional qualification swallows the recovery and the valorization of the worker's professional competence.

## **OBJECTIVE**

- Elaborate a specific training program and apply quality, productivity, rationalization, hygiene and safety concepts, to the constructing industry workers.
- Use the SEMEAR method, developed by Neolabor, to help the training program execution.
- Provide the workers a better verbal communication and a larger integration.
- Put the workers aware to the need of a new professional posture and help them to incorporate new behaviors and attitudes in the new work, showing the importance of their professional qualification.

## **METHODOLOGICAL PROCEDURES**

Was decided to accomplish the study in two firms. The first, firm A, sub contract workers services, while the second, firm B, do not sub contract. In this case, was possible to do a comparative analysis regarding the employee's commitment with the organizational culture, as well as verify the effectiveness of the training. Both selected firms were stimulated in promoting actions to increase their quality patterns because were involved in the program of losses developed by Universidade Federal de Santa Catarina.

The participant population of the training was represented by 57 people, 46 participants of the firm A and 11 of the firm B, with differentiated functions, as carpenter, bricklayer, painter, among others, helping to form an heterogeneous discussion group and an appropriated environment to favor experience exchanges.

The methodological procedures followed the systemic approach principles, adopted by Bastos (1994), composed by four different phases: diagnosis, programming and planning, execution and evaluation.

At first, an informal and unsystematic diagnosis was made to identify the problems that should be solved. Many problems were identified and while some of them were related to production, such as inadequate quality, low productivity, high number of accidents, excess of mistakes and wastes in the execution, others were related to specific relationship problems and the firm work environment, such as not properly motivated workers, absent of workers' cooperation and deficiency in communications.

Starting from this diagnosis, the training was addressed to rescue the worker's self-esteem for his development as citizen and, with critical spirit and argument capacity on their work. At this point, the participants would acquire knowledge on the themes hygiene and safety of the work, rationalization, productivity and professional qualification.

In the programming phase, starting from knowledge and attitudes that were considered important to be developed, were decided which workers should be selected; what contents should be transmitted in the training; which methods, techniques and instructional resources that should be used; the place; periods and schedules of the training; the basic necessary resources, the work tactics, and at last, how should be evaluated the results achieved through training.

A questionnaire composed by closed questions was formulated to characterize the participants of the training. Information about age group, the origin, the professional function, the education level, the way as they learned their profession and the time of service in the firm, was researched.

Giving continuity to the programming phase, based on the theoretical research of the methods and existent training techniques, it was diagnosed the some advantages and limitations, and were determined the most appropriated method that should be used in the training, regarding the number of individuals to be trained; the types of behaviors to be acquired; the individual differences among the participants; the costs to develop each activity of the training and which the pedagogic principles of learning that would be incorporate.

It may be admitted the effort to prepare the training contents, considered updated and trustworthy; and very related to the personal experiences and the interests of the participants; susceptible to the adaptations, renewals or enrichments; considered suitable at the education level of the participants and in resignation at the available time.

The conceptual, simulated and behavior methods were used in the execution of the training to facilitate the learning process, all mentioned by Biscaro (1994). Audiovisual resources were used to enrich the encounters and fortunately, it made possible conjugate the vision and the audition, turning the communication more efficient.

Though simple activities, was possible stimulate the workers to obtain a more open mentality for new concepts, process and ideas, to increase their curiosity, to rescue his originality and to urge the creative and innovative spirit.

Following these principles, the training used the force of the multi skilled group, to open the communication channels, to create a casual and decentralized environment, where the mistakes were accepted, where the participants had freedom to discuss ideas and problems, where all were responsible for their learning and for the effectiveness of a dynamic training program.

Concluding the activities developed in the training program, the evaluation aimed to get information that could allow futures improvements in the training process. Were accomplished, among the levels presented by Bastos (1994), the evaluation of the learning, the evaluation of the reaction and the behavior evaluation. To evaluate the learning, were made exercises elaborated by the instructor, given at the end of each content topic, being accomplished by the participants individually or in-group.

The applied exercises had the intention of supplying feedback to the instructor regarding the learning of the concepts, principles and ideas transmitted in elapsing of the

training. This evaluation form didn't have the purpose to approve or to reprove, but to verify the learning.

At the reaction evaluation level, was checked the impressions, opinions and the participants' attitudes, regarding the developed content, the methods and techniques used, if the environment was favorable to the learning, among others. A questionnaire was applied to the participants, with the intention of measuring the intensity of the opinions and attitudes in a possible more objective way, was used, as instrument, the scale of Likert in the end of the training process.

Considering the behavioral evaluation as a more complex evaluation level, because of the need to deal with changes in the participants' behavior, was decided to take place this phase only in the company B, where all of the participants were integrally involved in all activities accomplished in the training. In this evaluation level, was tried to capture the influence of the training over the participants behaves and attitudes changes, in the work relationships, in the responsibilities or in their habits. It was used, as a measuring tool, interviews semi-structured with the manager of the firm B.

### **Teaching Contents**

An informal and unsystematic diagnosis was made to focuses themes detected as problematic. Some of them were production problems, as inadequate quality, low productivity, high number of accidents, excess of mistakes and wastes in the execution, and others problems were related to the firm environment; an indifference and lack of the workers' cooperation; and a deficiency in communications. This way, the content of the training was addressed for these subjects, trying to avoid technical subjects that would overloading the training with unnecessary information.

For the class plans elaboration, was taken into account the specific characteristics of the two selected firms and of the training participants. Starting from this data, differentiated class plans were elaborated, with the same themes and adapted to the reality of each firm and the language of the participants. Were transmitted the following concepts:

- Relationships: Aiming to make the participants to establish and to maintain good relationships.
- Work Safety: Aiming to explain what work accident is?; what is individual safety Equipment?; what is Collective Protection Equipment?, and what is Norma Regulamentadora NR - 18.
- Health and hygiene: Aiming to explain the importance of the human physical well-being.
- Productivity: communication at work; productive, unproductive and auxiliary times; organization of the work place and of the work stonemason; rationalization of the work; ergonomics; forms of executing the service; waste

and forms of avoiding; time of preparation of the service; technological innovations. Aiming to make the professional dedicates some time in thinking before beginning an activity, being able to make his work in a safer and faster way, with less material expenditure and more quality.

- Training and professional qualification: Aiming to demonstrates the need of professional updating and to call their attention to the fact that the work can be improved starting from a more qualified professional.

### **Teaching Plan Presentation**

The concepts about work safety, health and hygiene, productivity and professional qualification were developed according to the constructivist method called SEMEAR, centered in participant teaching-learning techniques and based in the New Pedagogy principles.

The SEMEAR method was developed by Neolabor, a consultancy company in the building industry area, to increases the competitiveness, productivity and the quality of the services of the firms. According to Neolabor, this teach-learning method is focused at adults' formation, and facilitates the students' involvement.

The method makes an analogy of the training with a plantation work, according to which one must take care of the seed, treat the earth, plant, water, hope to sprout, remove the weeds, combat the plagues, for later to have a good crop. In other words, the worker is the earth and the seed is the knowledge, falling to the instructor the task of preparing the fertile earth for the seeds to germinate.

Each letter of the word SEMEAR is related to several actions that compose this method and it is part of the structure of the class plans:

The phase Sensibilizar aim to stimulate the student participation in the learning process, in other words, the objective is to motivate the student to learn.

The phase Estimular aim to revisit the knowledge related to life and work experience of each person, acting in the level of thinking.

The phase Mobilizar aim to valuate the student participation, focusing on the knowledge that the student has about the theme.

The phase Experimentar aim to broke the resistances and to make the student wakes up to the need for continuous improvement in the acting of their activities, as well as to the need for constant search for information that aid the correct development of their functions.

The phase Avaliar aim to inform the student about his performance. It is extremely important for the student to obtain information about his performance and if it is being satisfactory or not.

The phase Ralizar aim to advert student about the need for a continuous effort to learn. This step is intimately linked to the phase Sensibilizar, according to which student is challenged to change his attitude.

Based on SEMEAR method, ten class plans were developed, one for every week, subdivided in three moments: warm up, development, mobilization and closing, as the structure presented by table 1:

**Warm up:** Before beginning the class the content given in the previous encounter should be reviewed. Only after the verification of the understanding of the subject, should begin the subject of the day.

Initially, questions are made to the participants about what things they have learned in the last encounter. At this time, should be made an evaluation of how the developed work is being assimilated already. It is important to recall the contents previously supplied.

When noticing that a lot of thing was forgotten, it is important to make a reinforcement, in which should be retaken the essential parts and to comment on the opinions of the participants.

Then it is formulated some questions including the transmitted contents, a small revision to verify what they already learned, and only start a new subject when noticing that the learning is consolidated. The participants must be reminded about the things they already learned and questioned if they are applying what was learned through the training in the day-by-day activities.

When beginning a new subject, the instructor must stimulate the group for the class, presenting the goals of the encounter and searching the knowledge that the students possess about the subject. To stimulate the reasoning, at this time, it is advisable a friendly activity as games, an informal conversation about the theme of the day or other entertaining activity, to relax and to warm up the group. The participation must be encouraged to participate the class.

**Development:** When the group is less tense and integrated, the instructor must present the planned theme, providing information on the theme in discussion. The subject should be previously ordered to facilitate the understanding of the student, doing it the simplest possible way, for not to scare and not to generate blockade in relation to the subject.

**Mobilization and Closing:** At this time, the instructor should retake the most important points of the transmitted concepts and verify if the students assimilated the concepts that have just learned. It is the moment to remove doubts, ask the participants if the transmitted concepts are being helpful, rescue comments about the development of the class, verify if the class time is being appropriate, ask about specific subjects the participants would like to see in the training and if the knowledge of the group is adapted with the development of the course. Do not forget to communicate the evaluated results of the group. To synthesize and to assimilate the approached theme, materials printed papers were used, such as: exercises, study aids and posters.

## **CONCLUSIONS**

This specific training program can be seen as part of a group of strategies that aims to answer the process of behavioral and attitudinal pattern change, requested by the firms. It is an initiative that comes to the encounter of the new philosophies of the human beings valorization in the organizations, in the sense that prioritizes qualification and creating a favorable cultural change to the professionals' continuous learning, because of this practice results the competitiveness of the organization and the people's capacity to be allocated in the labor market.

For many workers, the training was a tangible expression of the interest of the administration for the worker's well-being, fact that gives to the employees reason to feel valued regarding the administration, what made possible build new communication and relationship bridges.

The presented training revealed as a viable and effective tool, for the objectives that was intended, although a quantitative evaluation has not been accomplished, could be observed that changes happened and the participants become more conscious about rationalization, safety, organization and cleaning of the work, and also improved the social relationships and the order services communication, demonstrating the viability of this program, as well as the importance of continuity of actions that seek to develop the professional of the building industry.

It was apparent that the participant of the training started to contemplate and to question more about their actions in the daily work, and to improve their personal relationships during the activities at the work, contributing to create an healthier work environment and reduce the material loses. It was noticed that the participant workers of the training, desire for acquiring knowledge to make possible to improve their methods and performances in the work activities.

The participants ratify the positive influence of the training program, affirming that the same was important for their professional improvement. According of this, it is not correct to think that the worker is naked of conscience in relation to the need of professional qualification, to the point of believing that they only need manual abilities, and a strong body.

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CLASS PLAN N <sup>o</sup> :	DAY:		
ACTIVITY	RESOURCE	ESTIMATED TIME	REAL TIME
- WARM UP			
- DEVELOPMENT			
- MOBILIZATION AND CLOSING			
TOTAL:			
= NECESSARY MATERIAL:			

Table 1–Structure model of the class plans