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THE MENTORING METHOD AND THE COMPETENCE PROCESS IN INDUSTRIAL ENVIRONMENT ¹

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Summary

Competence refers to a term that has several definitions and that can be interpreted in different ways according to the context in which it is applied. In general, it is related to the ability to know how to do something and, therefore, has great importance in an industrial environment, often being translated into a form of action by workers. Several ways of enabling the sharing of experiences, in order to favor the acquisition of skills, have been proposed for use in work situations, among them, we can mention mentoring, a method in which there is frequent interaction between novice and veteran individuals to achieve of the same work activity. With the aim of understanding how the method is applied in practice, a case study was carried out in a large industry through interviews and analyzes about the interaction between operators of different levels of experience using the ergonomics of the activity as a method of approach. The study allowed us to verify that there was a sharing of knowledge among employees, generating benefits at an individual level through the transfer of practical knowledge and at an organizational level, given that the company benefited from the capacity of its operators translated into quality gains.

Keywords: competence, mentoring, activity analysis, ergonomics, experience.

1. Introduction

Competence refers to a term that has varied connotations and can be interpreted from different theoretical currents (DUTRA, 2004). The construction of skills can be favored through human mediation, through the use of instruments that help in structuring and representing the situation, through the use of simulations and a posteriori analysis devices (WEILL-FASSINA; PASTRÉ-PIERRE, 2007). It is a well-known fact that apprentice or novice employees learn a lot through imitation and comments from veterans. They use this means to develop their skills, which, in many situations, occurs without the awareness of more experienced people. Thus, forms of work evolve towards a mode of cooperation or mutual help (WEILL-FASSINA; PASTRÉ-PIERRE, 2007).

Mentoring refers to a relationship between different generations and an important method used to disseminate practical knowledge. It refers to the transfer of knowledge from a mentor to a new employee (NYGREN 2003; VIRTAINLAHTI, 2009; VALTIOKONTTORI cited by BERGER, et al., 2012). According to Abrahão et al. (2009) knowledge can be classified into two types, procedural, related to actions (knowing how to do) and declarative knowledge, related to facts (knowing what). Knowledge can also be classified as explicit knowledge and tacit knowledge (KROGH; ICHIJO; NONAKA, 2001). The first is capable of

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being codified, articulated and transmitted through formal or systematic language. Tacit knowledge refers to knowledge based on experience, which serves as a basis for continuous learning, can be acquired unconsciously in a way that is not usually communicated (WILNER, 2004). One of the ways usually used to promote the transfer of tacit knowledge is socialization, which consists of the conversion of tacit knowledge resulting from the sharing of experiences, imitation, practice or learning through observation (NONAKA; TAKEUCHI,1997). Given the lack of studies aimed at understanding how the method is applied in practice, it was decided to conduct a case study in an industrial environment.

2. Case study

A case study was conducted in a structural assembly sector in a large company in 2014 and 2015. Five male operators, structural assembly sheeters, with an average age of 31 years, participated in the study. and different lengths of experience in the industry in which the analysis took place.

Data collection took place through six visits to the industry. In a first contact with the operators who would participate in the research, the project objectives and the research techniques to be used were presented to each of the participants. Soon after, they were presented with the TCLE (Free and Informed Consent Form) consenting to the use of the data for the research.

The interviews (both individual and pair) were carried out during working hours, inside the industrial hangar with the aim of characterizing the research participants as well as their perception regarding the insertion of veteran employees in the training stage of apprentice employees. After carrying out the individual interview, on a new visit, the operators were invited to participate in a pair interview, formed by an apprentice employee and a veteran employee, aiming to understand their vision regarding the term competence and particularities of the sponsorship relationship. Finally, the operators were monitored while carrying out their activities for a period of 5 hours. The activities observed were carried out by the godparents together with their sponsored children. After the activities, the task characterization form was filled out and subsequently validated with the operators, thus understanding the data comparison stage. The collected data were transcribed into a table and grouped according to the variables with which they were related. Thus, considering the qualitative nature of the research, a systematic categorization of the data was carried out according to the topics covered during the interviews.

3. Results and discussion of data

The study included participants in a training process using the mentoring method in the company, called sponsorship. Operators who enter this area spend approximately six months in training. During this period, they take courses offered by the organization during part-time work and are accompanied by a volunteer sponsor whose role is to transmit all the information necessary for them to carry out their activities. In the first few months, novices observe the activities being carried out and acquire the necessary knowledge to, only later, begin assembling them unaccompanied.

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Table 1- Characteristics of participants

Variable	P1	P2	A1	A2	A3
Age	36 years	35 years	34 years	31 years	19 years
Previous experiences	Rural worker and metallurgical.	Mason Helper; assembly assistant in construction company and warehouse stocker in supermarket.	Automotive mechanic and monitoring operator.	Rural worker, driver.	Cashier and quality inspector.
Time experience	8 years	12 and 4 months years	3 month	1 year e 6 month	4 month
Training	Higher in Administration; Electronics technician; Mechatronics technician; Mechanical technician; SENAI-machining, turning.	SENAI-machining process; Aeronautical maintenance technician; Basic English.	SENAI-Complete Mechanics (from automotive mechanics to machining); Computer technician; Studying as a mechatronics technician.	SENAI – complete trainee, technical drawing; plating; automotive paint; basic electrical; digital electronics.	SENAI-Quality inspector; Mechanical designer; Industrial hydraulic automation; English.

Source: Data collection

The data show that all operators involved in the mentoring relationship (the sponsor / veteran - P, differentiated by 1 and 2 - and the sponsored / apprentice - A, also differentiated by 1, 2 and 3) were of similar ages, with the exception of A3, in the analysis situation, the youngest operator in the area. However, differences could be observed in relation to the working time involved in carrying out the assembly in question and the previous experiences of each of the operators. Thus, it can be considered that the differences found refer to the factors experience and competence.

Regarding qualifications, it was observed that all operators have professional training offered by SENAI (National Industrial Learning Service) although the courses taken are not necessarily the same. Only one of the veteran operators completed a higher education degree.

Differences were found when operators were asked about the gains related to the sponsorship method used by the company. The apprentice operators related the benefit of using the method to the experience factor, which is important for developing their competence as an employee. On the other hand, veteran operators pointed out the gain of experience and financial gains related to the reduction of errors that could generate costs for the organization. It is possible to observe in the speech of the apprentice operators the recognition of the experience of the veteran operators.

“The godfather is responsible for clarifying doubts, helping to hand over work to them.” (P1)
“The godfather is a person responsible for you until you have training to work alone in the area. Until then he is responsible, he signs and responds for what do you do.” (TO 1)

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"Godfather has more experience than you, so he will try to pass on part of his experience so that we can do the best we can. If we have any questions, he will help, he is a professor in the field."
(A3)

When asked about the gains from using the method, the answers differed:

"Financial gain. Avoid opening non-compliance reports. Each one costs the company \$300, although this is not measured. If I measured it, there would definitely be this gain."
P1)

"You gain experience. Because he has been here for 8 years so he has a lot of experience for you to learn."(A1)

Veteran operators point out the importance of providing time dedicated to sponsorship so that they can offer attention to the apprentice, accompany them in carrying out their activities and clarify any doubts efficiently, without the accumulation of functions (operator and sponsor) , considering that godparents are volunteers:

"I just don't like it when you teach someone and then charge you to do it. Then there's no way for the person to learn, how are you going to do it right? How are you going to hold them accountable?" (P1)
"It gets in the way of the sponsor's activity, as he has to dedicate 100% to the student. In the first few days he he just watches you, then you have to let him do it but you have to follow him, you can't go anywhere else activity." (P2)

None of the operators pointed out possible changes to the sponsorship method as they considered it an indispensable and effective method to promote this training period. The operators were asked about the possibility of carrying out the training without a sponsor. Once again, it was possible to observe the issue of recognition of the veteran operator's experience by the work collective, in addition to also highlighting the difficulty of transposing practical knowledge into declarative procedures (such as assembly scripts).

"There's no way! There's no reason why the tools change. Like me, I worked in mechanics for a long time, but the tools are completely different for this assembly. You get lost when you enter, you don't know how it works, you don't know where it's going. You You know certain tools, but you don't know how to use them, the way you use them is different." (TO 1)

The operators pointed out as an important aspect of this learning period the transfer of tricks used by operators who have knowledge about the activity. The apprentice operator's speech shows that the transfer of knowledge is more related to tricks and practical knowledge than to the procedural knowledge of the activity:

" If you are in the assembly and have some tricks to do it, you can pass it." (A2)

Therefore, it is important to consider that the transfer of knowledge is not limited only to explaining what should be done, but also to the "little ways" used to guarantee the result and quality of the product.

All apprentice operators stated that learning the tricks transmitted by their sponsors is easier than carrying out the activity using the operations script, as they often guarantee the result of the task performed in addition to understanding easier ways to carry out the activities.

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"Then we pass. Easy to pass, sometimes difficult for people to understand." (P1) "In other words, bizú, right? It's easy to teach, calm. Easier than the activity itself." (P2)

Still in relation to the tricks, the apprentices were asked about the ease/difficulty of understanding them. Everyone agreed that this teaching is easily learned as it is essential for carrying out the activity.

"It's easy to learn the tricks. Depending on the assembly, you do it once and it's difficult to forget later, especially when it can cause something, kill the piece, you're forced to keep it." (A2) "It's easy to learn tricks because human beings will always look for an easier way to do, but we use the cats that are not in the product." (A3)

It was questioned what the operators understood by competence, the answers made it possible to verify the consensus of the operators in relation to the definition of the term. The operators agreed that it refers to the ability to carry out some activity, considering its particularities and also the qualification necessary for a job to be carried out. This definition agrees with what is proposed in the literature, which generally defines competence as the "capacity to mobilize knowledge, know how to do and know how to be". It is possible to observe that the operators' opinion agrees with the current proposed by Gonczi (1999) for whom competence has the character of associating personal attributes with the context in which they are used, that is, the environment and the work that the person performs.

One of the apprentices also related competence to efficiency, considering the time available to carry out the activity.

"What is always said, the competent person is the one capable of doing it." (P1)

"People do the right job." (A2)

"Competence is receiving the action and doing what was requested within the specified period." (A3)

It is possible to observe in the speech of the apprentice operator the concern with the recognition of his work activity in the production sector. This recognition is often measured by the approval of leaders or anyone else who represents the organization's point of view. In this section there is a definition of competence more related to the notion of task, as it relates to the performance of an already determined action within an established deadline.

When the same question was directed specifically to the structural assembly carried out by them at the time of analysis, the operators cited as the main factor one of the operators' qualifications, reading technical drawings, care in carrying out activities, efficiency and knowledge. practical.

"The first thing is for the guy to be qualified." (A1) "Person who performs the activity carefully." (A2)

"Doing the activity that is requested on the day, there are always unforeseen events and mistakes can happen, but it is deliver on the day." (A3)

Considering the scheme proposed by Abrahão et al. (2009), in which competence is defined as knowledge, skill and experience, we can verify that, according to the definitions presented by operators, in assembly sectors there really is an intersection between these factors.

During the analysis of the activity, several operators worked on the same product, but in different activities. Operators communicated all the time. Operator P determined the activities that should be carried out and monitored by operator A. It was possible to observe that P explained all the steps to be carried out while A carefully observed.

Veteran operators defined the activity that should be carried out, the materials and tools to be used and even the method of execution. On the other hand, the apprentice operators observed everything carefully and sought to carry out the activity in the way that had been transmitted to them. It was possible to observe that the godfather's form presented action verbs on a larger scale, while the sponsored form uses passive verbs. The definition of what should be done by the experienced operator relied on the use of tricks and practical knowledge acquired by them so that apprentices did not need to create their action strategies. Another important factor observed was that at no point did the apprentice operators resort to the operation scripts, with any doubts being clarified by a more experienced operator in the area.

Thus, it was possible to observe that, by transmitting the knowledge arising from practice, as well as the tricks used to carry out the work, the sponsors contribute to the apprentices' process of acquiring experience by accelerating knowledge that would otherwise be learned through trial/error.

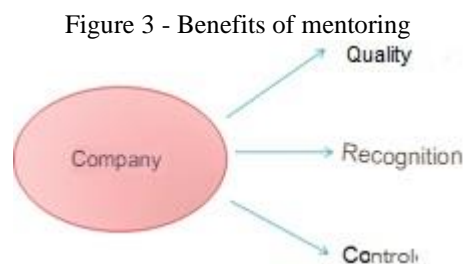
4. Discussion of results

In summary, the comparison of the responses obtained through individual interviews allowed us to observe that the godparents had difficulty verbalizing the activities carried out.

Analysis of the activity made it possible to observe the importance of communication between operators throughout the work shift. During the activity, the godfather was responsible for defining what and how would be done, in addition to explaining in detail and answering the apprentice operator's doubts. This, in turn, presented himself as a listener most of the time. This became evident when filling out the characterization form for each of the operators, given that the veterans' form was essentially composed of action verbs while the apprentice collaborators' form showed greater passivity. The veteran operator was also concerned with transferring the tools necessary to carry out the activity.

The operators' statements regarding the method allowed us to verify three gains for the company through the use of the method: quality of the work carried out (avoids opening non-conformities, reducing the company's expenses), recognition of the apprentice operator's experience in the work environment (accompanied often of motivation and appreciation of the professional in an occupational environment) and control of the work carried out (apprentices only carry out the activity accompanied until the process of acquiring skills necessary to develop the activity is completed) as shown in Fig. 3.

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Source: Author

5. Final considerations

Conducting the case study allowed us to observe that the use of the mentoring method not only favors the appreciation of experienced professionals within the production environment but also facilitates the transfer of tricks through the creation of a relationship of trust between veteran and apprentice. Furthermore, it assists in the process of developing the skills of apprentice operators, presenting itself as a valuable and effective tool in training new workers. From an organizational point of view, it can be considered that the company also benefits from this interaction given that the use of the method guarantees the quality of the product through the control of the work that is carried out with monitoring in addition to eliminating unnecessary expenses related to the opening of non-conformity reports.

Although the study made it possible to understand the factors related to the use of the mentoring method in an industrial environment as an auxiliary tool in the process of acquiring skills, limitations were found in relation to the sample size and the absence of other comparative measures allowing for a greater in-depth understanding of the positive/negative aspects. Therefore, it is recommended that further studies be carried out to achieve a global understanding of the topic.

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