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Topic: D03. Work and organization - Teams Performance

Presentation

Type	ID	Title	Date and time	Status
Poster	1628	CTB - COGNITIVE TEAM BUILDING: AN INNOVATIVE METHOD TO INCREASE TEAMS PERFORMANCE	10/12/2014 12:39:42	Accepted

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CTB – COGNITIVE TEAM BUILDING: **AN INNOVATIVE METHOD TO INCREASE TEAMS PERFORMANCE**

Abstract

This study suggests a new perspective on the cognitive processes of teams. Studies to improve group performance have a long tradition: Lewin, Lippitt and White (1943) researches on leadership; Osborne (1957) studies on creativity through brainstorming; Steiner (1972) three factors approach; Tuckman (1965) model of five stages of group development; Senge (1990, 2013) the organizational learning of teams. In psychoanalysis Bion (1961) and Foulkes (1968) study on the emotional dynamics of groups. What has been lacking in these researches? It is an analysis of the cognitive functions of a group as a thinking unit, and the view of the cognition not only as individual processes but also as result of a relational cognitive field. The concept is that cognitive relationships, like emotional relationships, express our ability to think depending on how our cognitive style is integrated with the cognitive style of the others person. Often it is more simple to talk to one person instead of another, this happens, due to differences in character, but also due to different cognitive styles. The Cognitive Team Building is an innovative method because the group members are chosen for how well their cognitive styles are integrable with the other members and functional to the objective of the group. These Cognitive Styles are: Leader, Builder, Bridger, Brighter and Insider. A cognitive team works better when its members are selected with the cognitive styles suited to the task.

COGNITIVE TRANSFERT

The starting point is the concept of Cognitive Transference, in the sense of cognitive relationship, the central point of the whole method. When we talk to someone about the cognitive relationship immediately see a hint of amazement on the face of the interlocutor, as if we were speaking a foreign language is incomprehensible. And yet, in a way that is similar to the affective relationship the cognitive relationship is the daily experience of each of us, only that we are not really aware. But in order to understand better what we mean, let's think for a moment to our personal life and how many times can we remember to have known a person with whom we could easy to talk to and, above all, to think. Or that person with whom our thoughts do not get caught but, rather, were facilitated; and the same happened to the other person who was able to interact synergistically with us through his thoughts and his words, in a natural way. And this not concern sympathy or kindness that can bring two people among them, but adheres to a phenomenon of cognitive transfer between two individuals that put together, they represent a cognitive couple capables of producing a way of thinking that is fertile and constructive. To give an example of a famous cognitive couple in the science remember Crick and Watson: together, in 1953, discovered the Dna by assuming the hypothesis that it is composed of two chains of nucleotides arranged to form the double helix. Demonstration of how two researchers, a biologist and a physicist, albeit with very different courses could be able to build together new knowledge, but at the base they had of a good cognitive relationship that has given them the ability to collaborate constructively and to do with their cultural differences and traits of the tools thinkability such as to overcome all conflicts and to arrive to the great discovery.

COGNITIVE SKILLS

The Cognitive Skills, i.e. the Cognitive Styles represent one of the central points for the understanding of this methodology. Every individual has a specific cognitive style, this it was formed through the complex interaction between genetic dispositions, cognitive imprinting in the family, and individual experiences of learning, the end result is that each person has a specific Cognitive Style. This style is developed in a sequence of relational contexts and cognitive climates and, therefore, we can consider that cognitive style has two dimensions, a typical individual, and another properly relational.

This means that a person as well having its own peculiar mode of information processing this can be expressed in a different way depending on the cognitive style of the person with whom you are comparing. In other words, ***we think according to our own way, but different manifestation of this depends on the cognitive characteristics of the person with whom we interact.*** This is the most innovative part of this work, as it supports the relational nature of the thought that is not only an individual characteristic but becomes a product of the relations, the resultant of two or more cognitive styles that cross between them, as in an organized group, in a team that needs to perform a task. To exemplify the individual cognitive styles we can refer to the following five types shown in Fig. 1:

Cognitive Skills



Figure 1.

- **Leader:** this is one of the cognitive styles the core of a team. The leader is the person who has a cognitive style that is capable of taking operations of analysis and synthesis, to find both the common points that those divergent. His task is to guide the flow of knowledge that circulates among the various members of a team without interfering with the ongoing processes. The leader is depicted in the first image on the left of Fig. 1, where it highlights its role of "**Coordinator of Knowledge**";
- **Builder:** this is the base cognitive style, the one that systematizes the knowledge in a group. In essence represents a person who is able to collect knowledge and to optimize it, in the sense of proceeding to the classifications and simplifications that are useful as order a given field and promote further transformation processes in the knowledge. The builder is shown in the second image of Fig. 1, where it highlights its role: "the **Optimizer of Knowledge**";
- **Bridger:** this is a *facilitator*, it is the cognitive style that allows you to put in relation the different cognitive styles between them. It is a cognitive bridge that has the characteristics of plasticity of thought and the ability to transfer different points of view and to minimize the risk of conflict and incompatibility between different ways of thinking. In addition, the fundamental point of this cognitive style is to have the skills of mediation such as to be able to better interpret the directives of the leader, and then transmit them to the rest of the team in filtered mode and without forcing it. The bridger is pictured in the third image of Fig. 1, where it highlights its role of "**Bridge of Knowledge**";
- **Brighter:** it is the cognitive style that has like his main resource to give light to the problem addressed by finding best roads and other possible routes. It is therefore an innovator able to propose new solutions and to transform a set of acquired knowledge, improving them significantly. Its key task is accomplished when trying to innovate an existing product. The brighter is shown in the fourth image of Fig. 1, where it highlights its role of: "**Innovator of Knowledge**";
- **Insighter:** this is the cognitive profile of the *inventor*, literally the one who has the insight, or intuition, as *it is a subject capable of thinking in a radically different manner from what has already been acquired, finding solutions before ever have been thought*. It is the strength of a team that has the task of looking for new ways and the invention is its main feature. The insighter is shown in the fifth and last image of Fig. 1, where it highlights its role: "the **Inventor of Knowledge**".

Now let's see how these different cognitive styles can be made to work together in a synergistic way. The ultimate goal of the Cognitive Team Building is to form groups that are balanced cognitively, that is, where the members of the team are chosen on the basis of their personal cognitive features and how these will be able to agree with those of the other members of the team. To better understand this point, we can make the analogy of a football team where each player plays a role in the function of the group. There are defenders, midfielders and strikers because to build a good team, there should be players with different skills that, when put together make a winning team. It would not be so if we had a team made up of only attacking because at the first counterattack would lose not having any defender capable of. Hence, the art of a coach is precisely that of being able to choose players with different roles but adapted to the characteristics of the opposing team. In the CTB are trying to build, similarly, a team that has members that have different cognitive abilities, and that are the most suited to the objective that the group must achieve.

To exemplify what has been said, we can consider three types of teams that differ in structure and operations and of the knowledge for which they are intended.

COGNITIVE TEAMS

Now will be presented three types of Cognitive Teams: the Optimization group, **Builder Team**, the Innovation group, **Brighter Team** and the Invention group, **Insighter Team**. This is only an example which is useful to illustrate the method of the Cognitive Team Building, but it is quite obvious that in reality a team go built taking into account the cognitive style of people that already are present in the organization, and how these can be better integrated and balanced on a cognitive level, as well as in function of the objectives to be achieved.

It should be noted, as these three cognitive teams that we present are only one type of simplified application of the method to CTB. Therefore, we can assume that, for example, the three groups each are consisting of nine mechanical engineers dealing with the construction of a car engine:

- 1. The Optimization group (Builder team) will have the task of optimizing the same engine causing it to consume less;**
- 2. The Innovation group (Brighter team) will have to change the structure of the engine to increase the performance in speed;**
- 3. The Invention group (Insighter team) will try to invent a new engine that uses alternative fuels.**

We suppose always that, to achieve these goals, the engineers have similar professional skills and experience, but that differ significantly only in their cognitive style. So, we'll have those who need to solve the problems, the problem solvers, represented by the optimizers engineers (Builder), innovators engineers (Brighter), and inventors engineers (Insighter) cooperating with each other, thanks to the contribution of the other members of the group or of the facilitators engineers (Bridger) coordinated by the coordinator engineer (Leader). All of this may seem complex but, as we shall see later, it is rather simple to explain and understand.

1. Builder Team – The first is what we call Optimization group – shown in Fig. 2. The task that this team can perform is to improve the characteristics of a product without making any substantial change. This is a typical task of optimization and the right team has the following members: 4 optimizers (Builder), coordinated by a Leader through 4 cognitive bridges (Bridger).

Cognitive dynamics: the knowledge circulates through the 4 Optimizers (Builder) who have the task of improving the product and they are to make the various attempts of solution. In this group the communication is favored by the contribution of the 4 cognitive bridges (Bridger) that have the main purpose to avoid possible conflicts between the optimizers (Builder), both interpersonal than professional. The 4 Bridgers then lead to the Builders also the suggestions of the Leader, who thanks to his expertise, can make an important contribution of address and stimulus. However, his contribution is filtered by the Bridgers so that the Leader does not interfere in a direct and intrusive mode on the constructors of knowledge. We avoid in this way to influence their work through a role of command or authority, and we realize the cognitive climate ideal for thinkability. In the CTB, then, we have a structure of the team, where is present and central the Leader, but his function of supervising, coordinating, and stimulus is effectively filtered by the Bridger.

BUILDER TEAM

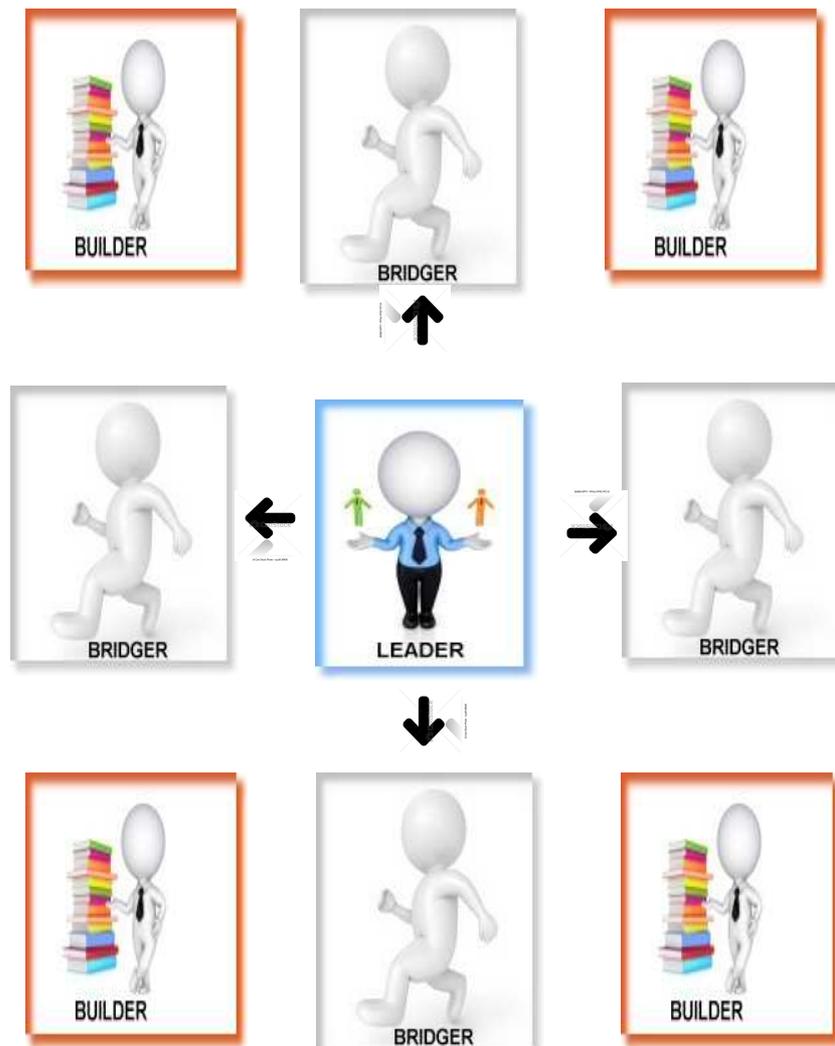


Figure 2.

2. Brighter Team - The second is what we call Innovation group - shown in Fig. 3. The task that this team can accomplish is to innovate a product with solutions before, never experienced. This is a typical task of the innovation and the right team has the following members: 2 optimizers (Builder) and 2-innovators (Brighter), coordinated by a Leader through 4 cognitive bridges (Bridger).

Cognitive dynamics: in this case, the cognitive work of the innovators (Brighter) is supported by the contribution of the optimizers (builder) who analyze and summarize the current knowledge on the problem solving, and then, thanks to the cognitive bridges (Bridger) this information is transferred in a appropriate manner to the innovators (Brighter). So the four constructors of knowledge, the two optimizers (Builder) and the two innovators (Brighter), are placed in the best conditions for cooperation and, above all, to be able to think without any obstacle. Also in this team, the constant presence of the Leader filtered by the four cognitive bridges (Bridger) provides the best opportunities for expression and creative to get a team that is effective and efficient in terms of innovation.

BRIGHTER TEAM

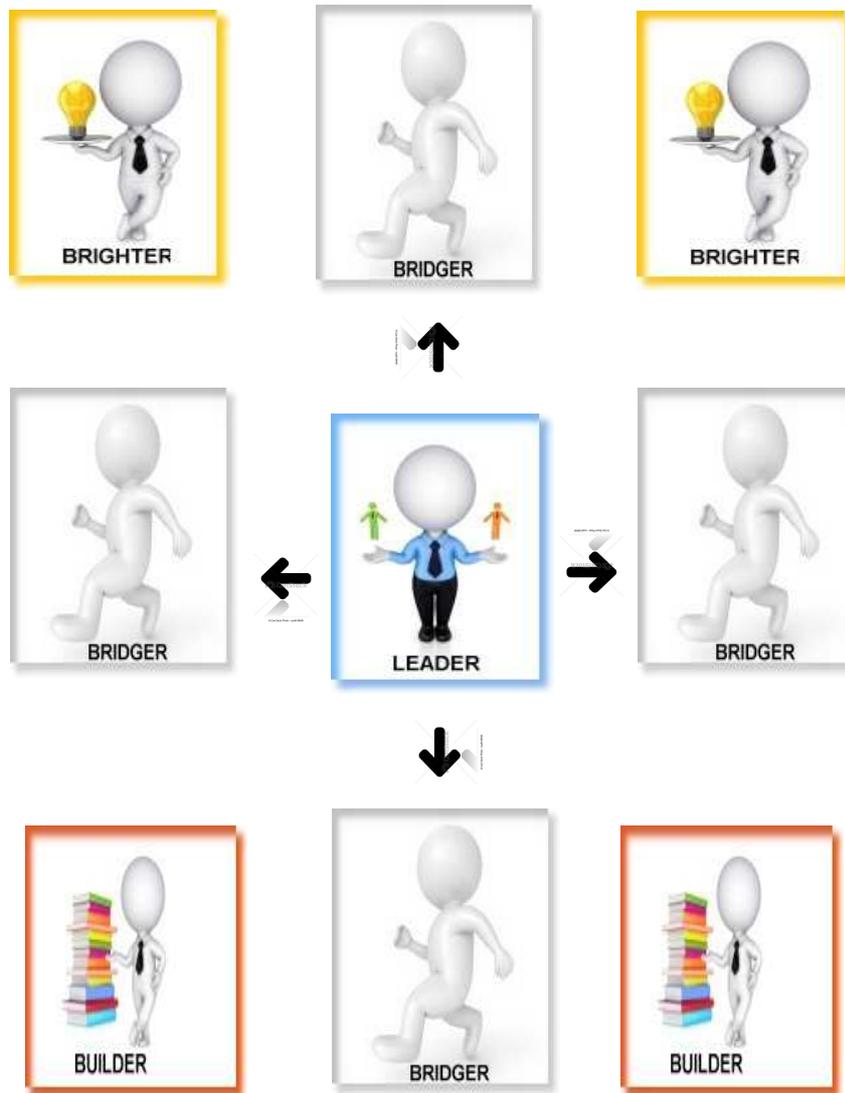


Figure 3.

3. Insighter Team - The third is what we call Invention group - shown in Fig. 4. The goal of this team is to come up with solutions radically new, or that they are real inventions or discoveries. This is a typical task of the invention and the right team has the following members: 2 innovators (Brighter) that work together to 2 inventors (Insigher), coordinated by a Leader through 4 cognitive bridges (Bridger).

Cognitive dynamics: the group that creates knowledge are the 2 innovators (Brighter) together with the 2 inventors (Insigher), the first produce many new ideas, or otherwise fruitful, that pass through the cognitive facilitation of the 4 cognitive bridges (Bridger) organized by the Leader, to the inventors (Insigher) which so helped are in the ideal conditions to capture the decisive intuition. And this is the reason why we speak of Cognitive Team Building, on how to build a group able to think in a new way, and where the ideas of each are stimulated and protected by interpersonal conflict or by different organizational roles, or different cognitive styles that can often conflict. The personal contributions are so facilitated by the cognitive interactions, realized in a balanced group, where the people are chosen on the basis of their complementarity of cognitive styles and for this reason, the team is able to think in an integrated, synergistic, and finalized mode.

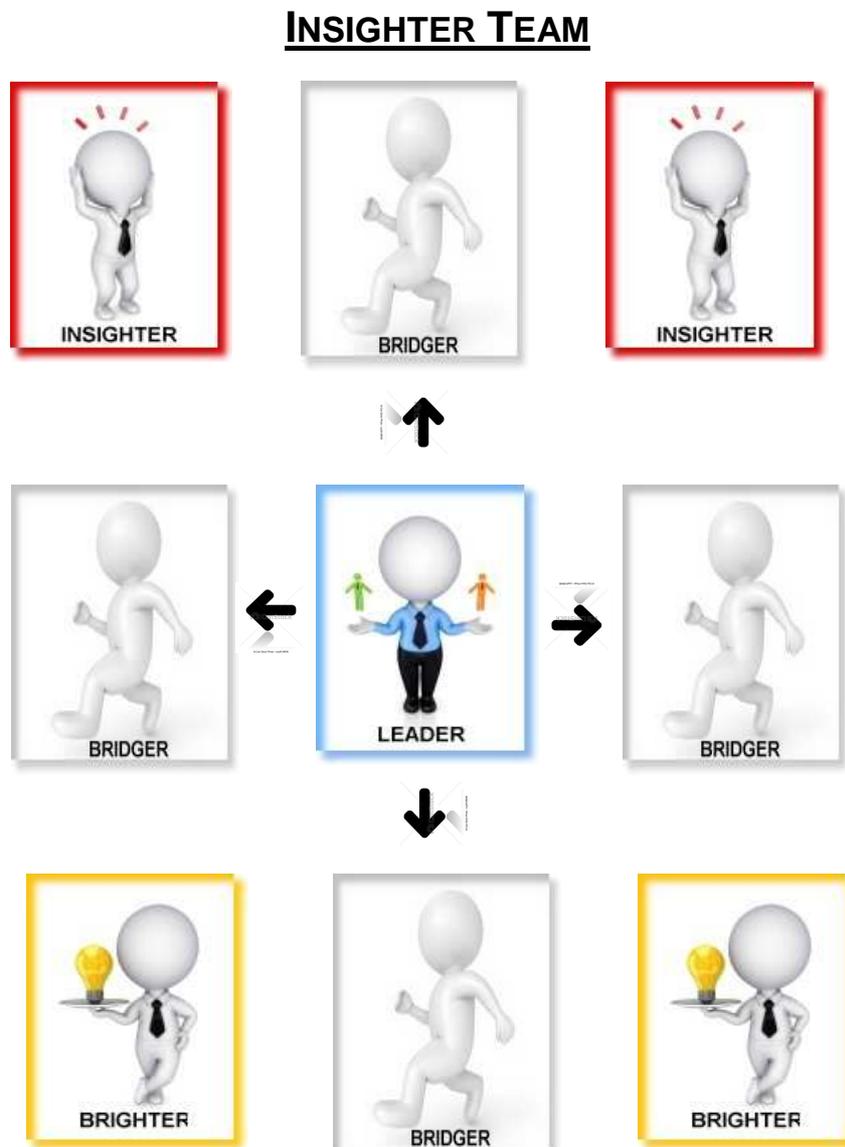


Figure 4.

These three types of teams are only examples of what is the methodology of Cognitive and Team Building. It is easy to imagine how in business reality, is much more complex to balance the different cognitive styles of a group already formed. The task requires in addition to the assessment of individual members also the possibility of modifying the existing group by adding or removing some elements. *But above all, it is desirable to emphasize this, the group must be built in function of the objectives to be achieved.* There is not a group that is valid for all the purposes of the company. The objective of the group can be sometimes innovative, other inventive, or, in yet other cases a combination of the purposes for which it is not able to predict exactly what resources would be those most suitable. In this case, which is not uncommon, you have to constitute an integrated group, a sort of mixed group, where there are all the cognitive styles, so be open to various cognitive possibilities. We could say, in summary, ***that more degrees of freedom of thought has a team, than greater will be its creative choices.***

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