DESIGNING TRAINING PLANS IN CREATIVITY TECHNIQUES FOR COMPANIES

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ABSTRACT

It is widely recognized that training in creativity techniques enhances the competitiveness and efficiency of companies' production processes.

As well as contributing to self-fulfilment, creativity is one of the primary sources of innovation, which is recognized as one of the main driving forces underlying sustainable economic development [1]. This driving force is fundamental in the creation of companies able to enhance Europe's competitive edge on an international level. The need for a new entrepreneurial culture capable of stimulating, encouraging and fostering the possibility of development of individual and group abilities emerges as an inspiration for new innovating strategies.

Relying on the idea that creativity is the basis of innovation, to learn and to manage creativity techniques becomes strategic in meeting enterprises' need for innovation and competitive performance. According to Hollanders and van Cruysen's system of indicators based on the European Innovation Scoreboard (EIS) [2] and aimed at quantifying creativity and design, the role of professional training is central.

The paper presents a methodology for drafting a Training Plan for companies. The methodology relies on two approaches similar in structure but different in outcome, both able to meet company's specific needs. The first approach considers innovation enhancement based on enterprises' ability to be creative (IDEActivity). This approach relies on co-design in order to actively involve enterprises in understanding and shaping their own creativity tools and gain a competitive edge. The second approach revolves around a methodology (Creative Problem Solving – CPS) enabling people to work creatively both individually and in teams, by training their ability to generate innovative and non-conventional solutions.

Keywords: Training, creativity, methodology, companies

1   INTRODUCTION

During the past century, local economies have expanded into a world-wide network in which the number of suppliers often exceeds demand, and companies must struggle constantly to gain competitive advantage [3]. This may be achieved by reducing costs, adopting productivity regimens and quality standards, or by effecting innovation, as observed in recent years by training development professionals, who have been in high demand by companies seeking to improve their market power within today's global economy [4].

Nonaka and Tekeuchi [5] state that successful companies are those that are able to constantly create new knowledge, disseminate it widely throughout the organization and rapidly include it in new products – enterprises defined by Roff as "knowledge-creating" companies, whose sole business is continuous renovation. Constant innovation, therefore, is the sole strategy for survival for both the individual and the organization [6] within our unpredictable and ever-changing modern environment.

By promoting creativity, learning and innovation [4], and designing creative work environments in which people may contribute and build upon each other's ideas [7], we focus on the importance of a favourable creative climate. We encourage R&D and design activities, which in turn facilitate the process through which ideas are successfully transformed into highly performing commercial products [8]. This high standard of innovation is vital in the creation and growth of companies which will further Europe's standing in the international market.

2   NEW PROSPECTS FOR CORPORATE TRAINING BY WAY OF INNOVATION AND CREATIVITY

Innovation is highly dependent on creativity and design [9], as it originates from creative thought, and is successfully commercialized by way of design, as stated by Shani and Divyapriya [3]: "No innovation is possible without the creative processes that mark the front end of the process Thus, we define innovation as the successful implementation of creative ideas within an organization".

Swann and Birke [10] classify three different models connecting creativity and design to innovation, focusing in the third on the importance of a creative climate. A creative environment in companies can affect the interaction between creativity, design and innovation: by means of creative thought, problems may be faced from a new perspective, and solved in innovative and effective manners, skilfully employing a solid background of knowledge. This knowledge may be individual or shared, and it is a key element in the creative process through which ideas are generated and applied.

There are various methods, techniques and tools aimed at generating creativity, breaking set patterns, stimulating imagination and improving the environment in which creative ideas originate and are developed. Within a corporate setting, the creative process requires participants to be open and cooperative towards each other, and to contribute with their specific knowledge, talent and motivation, thus enriching the group and fostering innovation. Creativity may be cultivated and nurtured, and taught through specific techniques proven to stimulate creative thinking. Subjects acquire the ability to go beyond their usual analysis behaviour, adopting new approaches to problem solving and displaying higher productivity and quality of work.

By creating opportunities for learning by doing, in which the external contributor supports selected personnel in carrying out specifically catered projects, we stimulate participation in co-design activities, furthering knowledge and access to methods and techniques for corporate innovation.

For these reasons, we have chosen to develop a Training Plan applying the principles of design to the creation of new educational scenarios focused on creativity and knowledge. Therefore, the goal of our method is not for participants to be engaged as consumers of knowledge, but rather to encourage them to take part in the creation of knowledge. To foster creativity, we create conditions in which subjects may witness and experience the creative process, during which possibilities are transformed into reality.

This paper presents a methodology for drafting a Training Plan aimed at the acquisition and employment on the field of skills tied to inventive problem-solving and creative techniques. This path is based on an innovation program focusing on methods and models developed by the IDEActivity Centre. Network for Creativity of the Department of Design (Politecnico di Milano), as applied to the needs and requirements of each company. The methods, tools and techniques suggested in the Training Plan as effective vehicles for innovation, may be applied both during the various phases of production, and to the final product.

3   THE ROLE OF DESIGN: INNOVATING THROUGH NEW TRAINING SCENARIOS

Breaking fixed patterns, encouraging imagination and, independently from the method employed, improving the conditions in which ideas are produced, are fundamental elements in the creation of new training scenarios catered to the specific needs of individual companies.

Relying on the idea that creativity is the driving force of innovation not due to its singularity but as a systematic approach, the ability to learn and manage creativity techniques becomes strategic. We have decided to adopt a process which is able to contribute to the development of creative skills and which, through a pragmatic approach, proves that every step may be applied to the specific properties of individual companies.

During the initial preparatory phase a demand analysis study was conducted, taking into consideration local enterprises so as to identify their specific training needs, and coming up with new training scenarios which could host targeted training interventions designed for individual companies or groups of companies. The goal of this initial phase of the process is to gather information on the degree of understanding, interest and application of creativity on a personal, group and company level [11]. The information obtained concerns the acquired skills, needs, expectations and demands of participants regarding the concepts of creativity and creative thought. From the studies conducted it is evident that a single model for ascertaining or measuring the creativity of individual companies does not exist.

Every company is different, it is therefore important to assess creativity in a manner that allows distinctive features to emerge. Our method employs various techniques, some of which call for the involvement of participants, while others for the observation of individual and group dynamics, both intended and generated. The mix of tools employed during the initial phase to collect information for the development of a course, for the individual company or groups of companies, is experimental in nature. In fact, we chose to intersect results from different techniques so as to locate the focal points to be target through training.

To analyze creativity and innovation within companies, an assessment must be made, identifying parameters to quantify and measure creativity levels, and appreciating the crucial role played by the key elements effecting individual and group creativity. Therefore, we will identify the most critical areas, to which the training plan will be targeted.

The survey of needs makes use of targeted questionnaires, mind maps, wordstorming, Give&Take focus groups and assessments aimed firstly at mapping data and information on the current knowledge and opinions regarding the concepts of creativity and innovation.

The tool by which we collect quantitative data is a questionnaire. We then utilize mental maps to gather information on knowledge and perception tied to the concept of creativity and creative thought, both generally and in relation to innovation. Through the means of Give&Take we also acquire information on participants' expectations and on the degree of involvement and contribution the course should require, both on an individual and group level.

The formative program is then defined in terms of specific fields of application, case studies to be examined, objectives and results to be achieved, and timetables.

Each individual training operation is catered to the formative needs ascertained, and is designed by determining training objectives while also considering the specific characteristics of target subjects, their position within the company, and the sector in which they work. By processing all data acquired it is possible to create a specific Training Plan able to meet new educational scenarios.

This phase is essential, and quite delicate: it must be carried out with great concentration, and the resulting data must be processed in a way that often requires empirical interpretation. For this reason, we have improved our method in this phase. The tools to be employed had been chosen for their diversity, which, in our opinion, would allow both emotional and empathic aspects to be grasped through quantitative and qualitative data. However, this variance of data has proven too complex and difficult to manage. The interpretation and processing of the data has required a significant effort, proving that the required information could be obtained by employing a simple combination of only two tools, Give&Take and Mind Maps.

Specifically, the Training Plan is organized around two complementary areas:
- The first approaches innovation enhancement based on companies' ability to be creative, employing co-design in order to actively involve enterprises in understanding and shaping their own creativity tools using targeted methods and techniques to gain a competitive edge (IDEActivity);
- The second is centred around a methodology enabling people to work creatively and efficiently both individually and in groups, training in innovative and non-conventional problem-solving skills (Creative Problem Solving – CPS).

The process will be achieved through a twofold approach:
- an initial approach during which the training needs of each company are analyzed collectively. Specifically, training activities aimed at the acquisition of inventive problem solving and creative skills will be implemented.
- a secondary approach aimed at outlining training activities catered to each company's specific features, through a close connection with actual daily work activities (corporate mode).

The plan is aimed at the implementation of the model defined as "Officina Creativa – Creative Lab" that is, a work environment allowing participants to express their creativity. During this exploratory phase of the new training scenario, the existence of an unfulfilled need, expressed by the participants, has surfaced, coinciding with the possibility of creating an open environment able to provide: "the opportunity for free expression, and to share ideas with no external influences" (requests identified during Give&Take).

4   THE POTENTIAL OF INTEGRATING TWO METHODS

The theory from which we set off is that the intersection of different methods could increase companies' knowledge, growth, and innovation potential. To this day this is an exploratory phase of our method. Therefore, we have given great importance to exploration, so as to allow the concepts of dynamism, and adaptation of a method to a company's actual needs, to surface, in order to identify new approaches to design education. Consequently, in this moment of economic crisis, we find it appropriate to test a new flexible method, which promotes a creative environment and is able to foresee new scenarios. IDEActivity and CPS are substantially similar in their approach to problem-solving, enabling the development of a creative attitude. However, they are aimed at different outcomes: IDEActivity is more specifically targeted towards innovation and product development, while CPS aids in strategic planning, service optimization and process management.

The IDEActivity integrated method is designed as a flexible and versatile tool that can be adjusted to meet the specific needs of enterprises with different corporate profiles and objectives. Through an integrated method, we set in place a structure able to blend and combine various well-known techniques. This method relies on a fundamental "play" component, and leverages the potential of self-exposure, collaboration, teamwork, and the ability to look at things from new perspectives, both individually and with the help and influence of others.

IDEActivity [12] is divided into two main phases: the first, EXPLORE, includes Clarify Goal and Define Opportunity; the second, GENERATE, comprises Set Up and Idea. Designed by the IDEActivity Centre, this method makes use of a toolkit that includes a set of cards and a set of corresponding tools. The toolkit is an operational instrument illustrating the main steps of each phase and sub-phase, and providing guidelines for the tools required in each portion.

EXPLORE casts the groundwork from which to pinpoint a significant and feasible objective, structuring the point of view from which to approach a topic or problem while taking into consideration both scientific data and structured research, as well as the user and the market.

During the exploratory phase and beyond, it is necessary to analyze and organize the subject material by graphically visualizing data through images, photographs and key words, creating easily identifiable mental pathways and locating sometimes unexpected connections. GENERATE is aimed at eliciting innovative ideas pertaining to the project objectives determined in the EXPLORE phase.

Once the objective has been identified and the areas of application and potential have been defined, we move on to the actual design of tools for eliciting creativity, to be employed during creative sessions. During these sessions, IDEActivity couples specifically designed tools with other knowledge-elicitation methods, such as card sorting, brainstorming and storyboarding.

Taking into consideration the objective and specific characteristics of the enterprise, we then select the techniques and scenarios to be employed during sessions. Scenarios are constructed on the basis of preliminary interviews, considerations from participants, and surveys gathered during the previous phase, also making use of experiential stimuli (videos, graphic representations, evocative imagery).

The set up phase begins by designing a set of cards, inspired by the IDEO Method Cards [13], which will be used as an elicitation tool during creative sessions. IDEActivity cards call back to the conceptual format of those created by IDEO, yet are different in substance. As opposed to the IDEO cards, IDEActivity cards are designed ad hoc for each creative session and are closely linked to the objective of the project.

Once the session has been planned and materials have been prepared, participants in the training program will move on to the idea-generation phase. The creative session makes use of the brainstorming technique, tracing the two distinct phases: the divergent phase (freewheel idea production) and the convergent phase (assessment and selection of options).

The IDEActivity method and the tools it employs are complemented by the Creative Problem Solving method (CPS), particularly on a theoretical and conceptual level. The Creative Problem Solving model [15] is built on our natural creative processes. CPS is a form of deliberate creativity: a structured process for solving problems or finding opportunities, used when you want to go beyond conventional thinking and reach creative (novel and useful) solutions. The creative problem-solving process ideally comprises these procedures: (1) Clarification Stage (2) Transformation Stage (3) Implementation Stage. With this method we can: improve critical thinking and problem identification and response skills; assess the efficacy and feasibility of suggested options; select and expand on solutions considered most effective.
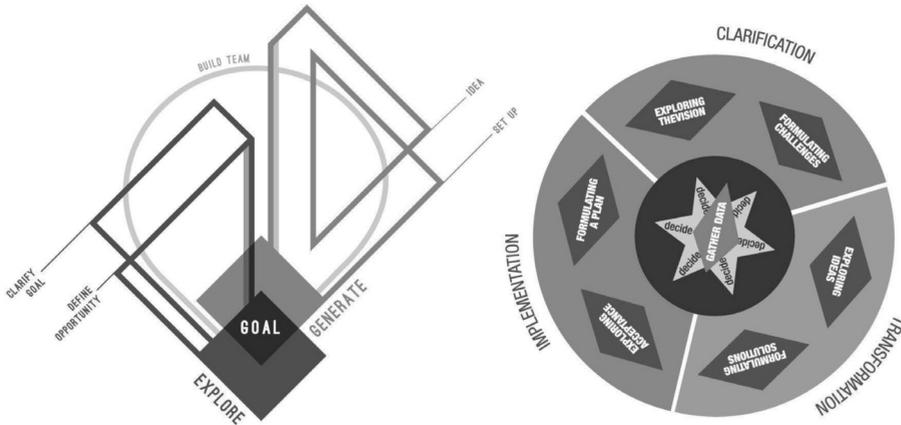
Figure 1. IDEActivity model from Research Network for Creativity Centre of the Politecnico di Milano Creative Problem Solving (CPS) model from Puccio, Murdok & Mance (2007) [14]

The two methods are both flexible and share a common general structure in their approach to the design problem/opportunity. CPS remains the more theoretical of the two, even though factoring in specific tools for each phase (Clarify, Idea-generation, Implementation), whereas IDEActivity is more project-oriented, and employs typical design tools crafted specifically to the project's requirements.

By integrating these two methods, through alternating phases of convergent and divergent thought, we provide a procedure for the management of thought and action, which prevents premature or inadequate judgment, and is based on a flexible structure able to incorporate different creative tools and approaches.

Both processes are cyclical: it is possible to move freely from one step to another, and to skip ahead or back between steps and methods. This allows us to consolidate procedures, which may be adapted to meet specific needs. Therefore, integration is an opportunity to supply operational tools and methods for training employing the principles of design.

By pairing these two methods together, we are able to provide companies with a dynamic structure to refer to, which employees can use depending on their specific needs. Our role throughout the course is to help participants to understand the importance of selecting the adequate tool within the toolkit to address the problem/objective at hand, redefining the method on each occasion. For companies, it is like having a palette of colours which, when expertly combined, give access to an infinite scale of shades. This is the potential of our method, as well as the part that is most difficult to teach. While experimenting the method, we have noticed that, in order to correctly assimilate these notions, the techniques must initially be tested on topics not pertaining to the company's core business, otherwise participants' involvement inevitably leads them to focus on the content rather than the method.

5 CLOSING CONSIDERATIONS: GIVING STRUCTURE TO THE TRAINING PROCESS

Recognizing the current strategic importance of creativity, as maintained by the Nomura Research institute: "Creativity will be the next economic activity, replacing the current focus on information", we have outlined a training process aimed at generating a creative environment within companies. This has become essential in creating a new link between creativity, design and innovation, meeting companies' need for competitiveness and innovation in an original way.

The preliminary research is centred around the creative process, whereas research carried out by simultaneously employing the two methods, CPS and IDEActivity, is focused on the environments and activities, which foster or inhibit creative potential.

The structure of the creativity training process described is flexible and can be adapted to meet the individual needs of companies in which it is employed, nonetheless maintaining fixed large and small-scale objectives.

The Training Plan designed by our research group aims to enforce creative behaviour and thought processes within companies: that is, teaching people to adopt a creative 'mental attitude' as an ingrained approach, and fostering creative group behaviour.

Through a preliminary application within a network of three enterprises we are testing and evaluating the proposed method through theoretical and practical sessions regarding all phases of the creative process. One of the first results we have appreciated is the development of an attitude of constant creativity in all participating employees, who recognize the need for a collective environment where ideas are generated and otherwise unpursued cues may be catalyzed. This need had previously surfaced in the initial phase, and became evident during in-class training, being voiced by participants upon testing the techniques and wishing to share them with colleagues. Therefore, the companies have chosen to design a physical and temporal space, linked to a multimedia platform, in which to meet and share ideas and know-how both with regard to companies' shared and individual projects. A flexible space that can be used and customized according to specific needs, in which to meet, share knowledge and compare ideas. Together with the participants we then initiated the final stage of the training plan, designing a "Creative Lab" as an essential work tool within companies.

During this final exploratory phase with the three companies, we have taken note of the need for a space/structure able not only to allow idea and knowledge sharing, and to integrate training, but also to allow research to be carried out constantly: a space able to transform the proposed methodology into a systematic approach and constant opportunity for innovation. Along with the three companies involved in the training, the research group is currently creating a model compliant with these requirements.

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