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Methodological foundations for implementing creative thinking techniques in the team-building process

Kateryna Barkova
Management, business and administration department, Simon Kuznets Kharkiv National University of Economics, Kharkiv, Ukraine
ORCID 0000-0002-8389-0728

Abstract: Creative thinking has become a pivotal capability in contemporary organizations operating under conditions of rapid technological evolution, market turbulence, and growing competitive pressure. As teams increasingly replace hierarchical structures as the primary units of work, the creative capacity of these teams directly influences an organization's ability to innovate, adapt, and sustain long-term performance. However, traditional team-building practices—often limited to social bonding, communication games, or recreational exercises—rarely activate the deeper cognitive mechanisms required for structured creativity and complex problem-solving. This article develops a comprehensive methodological framework for embedding creative thinking techniques within the team-building process to cultivate higher-order collaborative creativity.

Drawing from interdisciplinary research in organizational psychology, cognitive science, management theory, and creativity studies, the article synthesizes the conceptual foundations of creativity as a social-cognitive process. The research integrates structured creative techniques—including Design Thinking, TRIZ, SCAMPER, brainwriting, morphological analysis, and Six Thinking Hats—into a unified model for enhancing team functioning. A mixed-method research design was used, combining systemic analysis, sociometric diagnostics, cognitive mapping, comparative method evaluation, and an eight-week experimental intervention with fourteen organizational teams.

Results show significant improvements in idea generation volume, originality, participation equality, communication clarity, psychological safety, and problem-solving efficiency. Teams transitioned from hierarchical communication patterns to distributed networks with greater collective intelligence. Cognitive maps revealed deeper conceptual structures and broader reframing ability. The study concludes that structured creative techniques transform team-building from a primarily socio-emotional activity into a powerful organizational development tool that systematically enhances innovation capacity.

The article emphasizes that creativity must be treated not as an occasional workshop or individual trait but as a scalable, reproducible, and measurable organizational capability. Implications for HR strategies, leadership development, cross-functional collaboration, and innovation management are discussed. Recommendations for digital adaptation, cross-cultural expansion, and longitudinal research are provided.

Keywords: Creative thinking, Team-building, Organizational culture, Innovation management, Design Thinking, TRIZ, Collaborative creativity, Psychological safety.

1. Introduction

The accelerating complexity of the global business environment has fundamentally reshaped expectations placed upon organizations and the teams that operate within them. Digital transformation, globalization, rapidly shifting consumer demands, and increasingly nonlinear competitive landscapes require organizations to innovate continuously rather than intermittently. In

this context, creativity—once perceived as a desirable but optional trait—has become a strategic imperative. Research conducted by IBM (2010), involving over 1,500 CEOs worldwide, identified creativity as the most critical leadership and organizational capability for navigating the challenges of the twenty-first century. As organizations rely more heavily on team-based structures, the cultivation of creative thinking within teams is essential for achieving sustained competitiveness.

Teams today are no longer valued solely for task execution or operational efficiency; they are expected to generate new solutions, reframe problems, integrate diverse knowledge sources, and adapt to uncertainty. Yet despite this shift, the methods traditionally used to develop teams have not evolved at the same pace. Conventional team-building practices tend to emphasize interpersonal cohesion, communication exercises, motivational activities, or recreational bonding. While these practices may increase morale or trust in the short term, they rarely engage the deeper cognitive processes that enable collective creativity. As a result, many teams remain socially connected but cognitively limited, unable to generate innovative outcomes despite positive interpersonal relations.

At the same time, the scientific understanding of creativity has advanced dramatically over the past several decades. Foundational work by Guilford (1950) and Torrance (1974) demonstrated that creativity is not merely an innate talent but a trainable set of cognitive processes involving divergent thinking, flexibility, and originality. Subsequent studies by Amabile (1996), Hargadon and Bechky (2006), and Edmondson (2019) revealed that creativity is deeply embedded in the social and structural context in which individuals work. Creative performance emerges from interactions between personal skills, group dynamics, motivational factors, and environmental conditions. These findings suggest that team-building, when properly structured, has significant potential to become a driver of creative performance—not merely social cohesion.

However, the gap between creativity research and practical team-building remains wide. Few organizations integrate structured creative thinking methodologies into their team development processes. Techniques such as TRIZ, Design Thinking, SCAMPER, brainwriting, and Six Thinking Hats are widely recognized for enhancing idea generation and problem-solving, yet they are rarely incorporated into formal team-building frameworks. This disconnect limits the strategic value of team-building and prevents teams from developing the cognitive agility needed to navigate complex challenges.

This research addresses this gap by developing a methodological foundation for implementing creative thinking techniques directly within team-building processes. The aim is to transform team-building from a socially oriented intervention into a holistic developmental approach that strengthens both interpersonal relationships and cognitive capacities. The proposed framework positions team-building as a socio-cognitive system, one in which group dynamics and structured creative processes intersect to produce enhanced collaborative intelligence.

To accomplish this, the article presents a synthesis of interdisciplinary literature, a critical evaluation of conventional team-building approaches, and an empirical investigation into the effects of structured creative interventions. Fourteen organizational teams participated in an eight-week experimental program integrating multiple creativity methodologies. The results demonstrate that creative technique integration significantly enhances team cohesion, communication clarity, role understanding, and psychologi-cal safety—all while dramatically improving ideation volume, originality, and problem-solving efficiency.

The introduction concludes by outlining the structure of the article and the rationale for treating creative thinking as a formal organizational competency. The central argument is that creativity is not an isolated cognitive act but a collective process that can be systematically cultivated through well-designed team-building methodologies. By embedding creativity into the architecture of team development, organizations can build resilient, adaptive, and innovative teams capable of navigating a rapidly changing world.

2. Object and subject of research

The object of this research is the team-building process as a structured organizational system designed to support the development, coordination, and effectiveness of work teams. In contemporary organizations, team-building has evolved beyond simple interpersonal bonding and now encompasses a wide range of structural, psychological, and cognitive components.

The subject of this research is the methodological integration of creative thinking techniques into the team-building process. This includes understanding how structured tools such as TRIZ, SCAMPER, Design Thinking, brainwriting, and the Six Thinking Hats model can be embedded into team-building sessions to strengthen collaboration and improve creative output. The subject focuses on the mechanisms through which these techniques influence team cognition, reshape interaction patterns, and enhance problem-solving. It also examines the principles guiding how such methods should be selected, adapted, and applied within various organizational contexts. In addition, the subject addresses how team-building can be transformed from a predominantly socio-emotional intervention into a socio-cognitive development system capable of producing measurable improvements in innovative performance.

3. Target of research

The target of this research is to develop a scientifically grounded and practically applicable methodological framework that enables the effective integration of structured creative thinking techniques into the team-building process. This aim arises directly from the shortcomings identified in traditional team-building approaches, which often enhance interpersonal relations but fail to activate the cognitive mechanisms required for innovation, problem re-framing, and collective creativity. The research therefore seeks to transform team-building from a primarily socio-emotional intervention into a comprehensive socio-cognitive development system capable of generating measurable improvements in team performance and organizational adaptability.

To achieve this goal, several key research tasks are formulated. The first task is to analyze the existing limitations of conventional team-building practices, identifying the gaps between social cohesion and creative-cognitive outcomes. This includes examining how traditional methods neglect structured ideation, fail to support equal participation among team members, and rarely translate into improved workplace problem-solving.

The second task is to review and compare established creative thinking methodologies—such as TRIZ, SCAMPER, Design Thinking, brainwriting, morphological analysis, and the Six Thinking Hats framework—to determine their potential applicability within team-building contexts. This comparative analysis helps identify which techniques align best with different stages of team development and which cognitive functions they enhance.

The third task is to design an integrated methodological model that embeds creative techniques into the architecture of team-building sessions. This involves defining the sequence, duration, facilitation strategies, and expected cognitive outcomes of each technique, ensuring that they complement existing social and communicative exercises rather than replace them.

The fourth task is to conduct experimental testing of the proposed model with real teams, analyzing changes in idea generation volume, originality, communication patterns, psychological safety, and problem-solving efficiency. The results of this intervention are essential for evaluating the practical value of the methodological framework.

Finally, the fifth task is to develop evidence-based recommendations for organizations. These recommendations outline how creative techniques can be systematically incorporated into onboarding programs, leadership development initiatives, cross-functional collaboration processes, and innovation management systems.

Through the completion of these tasks, the research aims to update, improve, and expand the existing conception of team-building, establishing it as a powerful mechanism for developing collaborative creativity and enhancing organizational competitiveness.

4. Literature analysis

The problem of developing creative thinking in teams lies at the intersection of several research traditions: studies of individual creativity, organizational creativity, team processes, and structured innovation methods. Early psychological work by J. P. Guilford introduced the notion of divergent thinking as a measurable component of creative ability and demonstrated that creativity can be systematically studied rather than treated as a mysterious talent [1]. E. P. Torrance further operationalized these ideas in the Torrance Tests of Creative Thinking, which assessed fluency, flexibility, originality, and elaboration, and were later applied in educational and organizational settings [2]. These works form the conceptual basis for viewing creative thinking as a trainable cognitive process.

In the organizational domain, Amabile's componential theory of creativity argued that creative performance is determined by a combination of domain-relevant skills, creativity-relevant processes, and intrinsic motivation, all of which are strongly influenced by the work environment [3]. This view shifted attention from individual traits to the design of organizational contexts that either support or suppress creativity. Hargadon and Bechky, analyzing engineering and design firms, showed how "collective creativity" arises when organizations enable cycles of help-seeking, help-giving, reflective reframing, and reinforcement [9]. Their findings suggest that team structures and interaction patterns are central objects of research when studying creativity in practice.

Parallel to these theoretical developments, a large body of work has proposed structured techniques for enhancing creative thinking. Osborn's brainstorming formalized group idea generation and set rules for deferring judgment to increase fluency [4]. Eberle's SCAMPER technique provided a checklist for transforming existing products and processes through substitution, combination, adaptation, modification, and other operations [5]. Altshuller's TRIZ system, based on the analysis of thousands of patents, identified recurring inventive principles and contradiction types that can guide systematic innovation, especially in engineering-intensive organizations [6]. De Bono's Six Thinking Hats method offered a way to structure group discussions by separating emotional, logical, critical, and creative modes of thinking into distinct "hats" [7]. Brown later articulated Design Thinking as a human-centered, iterative process involving empathy, ideation, prototyping, and testing, widely adopted in innovation-oriented teams [8].

Literature on teams and team-building provides another important layer. Hackman identified structural conditions—such as clear boundaries, compelling direction, and supportive context—that enable teams to perform effectively [11]. Salas, Cooke, and Rosen summarized key teamwork competencies, including mutual performance monitoring, backup behavior, and adaptability, and emphasized training methods to develop them [12]. Katzenbach and Smith described characteristics of high-performing teams, including complementary skills, shared purpose, and mutual accountability [13]. However, these works typically treat creativity as one of many desired outcomes rather than as a central object of methodological design.

More recent studies have emphasized the importance of psychological safety as a condition for learning and innovation. Edmondson's research shows that teams in which members feel safe to speak up, admit mistakes, and offer unconventional ideas achieve higher levels of creativity and performance [10]. At the strategic level, the IBM global CEO study highlighted creativity as the most important leadership quality for addressing increasing complexity in business environments [14].

Taken together, these strands of literature reveal several gaps. First, although many authors describe creativity-enhancing techniques, they rarely specify how these techniques should be embedded into formal team-building programs. Second, team and leadership research often acknowledges creativity but does not provide detailed methodological guidance on developing it

systematically within teams. Third, empirical studies integrating structured creative methods with team-building interventions remain relatively scarce. These gaps justify the present research, which treats the team-building process itself as an object of methodological redesign and examines how creative thinking techniques can be integrated into its structure to improve collaborative innovation.

5. Research methods

The research is based on a mixed-method design that combines qualitative and quantitative approaches in order to obtain a comprehensive picture of how creative thinking techniques can be integrated into the team-building process and how this integration affects the functioning of teams. The methodological basis of the study includes systemic analysis, comparative analysis of methods, experimental intervention with real work teams, sociometric diagnostics, cognitive mapping, and statistical evaluation of results.

Systemic analysis was used at the initial stage to conceptualize team-building as a socio-cognitive system. This made it possible to identify the main elements of the object of research—communication structures, role distribution, decision-making procedures, motivational factors, and existing creative practices—and to determine the points at which creative thinking techniques could be most effectively embedded. On this basis, a preliminary model of creativity-oriented team-building was developed.

Comparative analysis was applied to select specific creative techniques appropriate for inclusion in the team-building program. Methods such as brainwriting, SCAMPER, TRIZ, Design Thinking, and the Six Thinking Hats framework were evaluated according to several criteria: cognitive complexity, required time and resources, compatibility with different stages of team development, and ease of facilitation. This comparison allowed the construction of a balanced set of techniques that together cover divergent thinking, idea transformation, systematic problem-solving, perspective shifting, and user-centered reasoning.

The central method of the study was an experimental intervention conducted with fourteen organizational teams from different functional areas. Each team participated in an eight-week program in which standard team-building sessions were systematically supplemented by structured creative exercises. During these sessions, data were collected on the number and originality of generated ideas, the distribution of participation among members, the speed and quality of problem-solving, and subjective assessments of psychological safety and satisfaction.

To analyze changes in team interaction, sociometric diagnostics were used. Before and after the intervention, team members indicated with whom they most often cooperated, exchanged ideas, or sought help. This made it possible to reveal shifts in communication networks, the emergence of new interaction patterns, and the reduction of excessive centralization around individual leaders. Cognitive mapping was additionally applied to capture how teams conceptualized problems and solutions; the complexity and interconnectedness of these maps served as indicators of the development of collective thinking.

Finally, quantitative data were processed using basic statistical procedures, including the calculation of averages, percentage changes, and tests of significance for repeated measures. This combination of methods ensured that the conclusions about the effectiveness of creative thinking techniques in team-building are supported by both numerical evidence and qualitative observations.

6. Research results

The research results reflect the effect of implementing creative thinking techniques into the team-building process and how this updated approach changes the work of teams compared with traditional team-building formats. The empirical part of the study covered fourteen work teams from different functional areas that took part in an eight-week program. During this period, standard team-building activities were systematically combined with structured tools of creative thinking such as

brainwriting, SCAMPER, TRIZ, Design Thinking and the Six Thinking Hats method [3; 5–8]. Data were collected before and after the intervention using quantitative indicators (number and originality of ideas, speed and quality of problem-solving, participation equality), sociometric diagnostics, cognitive mapping and qualitative feedback.

The main objective of this section is to show not only that the results were obtained, but also how they can be interpreted, what practical value they have for organizations, and why the updated model of team-building is preferable to its analogues. In addition, attention is paid to internal factors such as time and cost indicators and to the prospects for implementation of the proposed approach in different countries and organizational cultures.

At the general level, all observed teams demonstrated a stable positive trend after participation in creativity-oriented team-building. The average number of ideas generated during one working session almost tripled; originality ratings grew significantly; problem-solving time decreased; and the distribution of participation among team members became more balanced. These tendencies confirm the assumption that creative thinking is not only an individual quality, but also a group process that can be purposefully stimulated by appropriate methods [1–3; 9].

Qualitative data support the numerical results. Participants reported that they began to perceive meetings not as formal obligations, but as spaces for genuine joint search for solutions. Team members noted that they became less afraid to express “strange” or incomplete ideas, that they listened more attentively to each other and that they started to use the language of creative techniques (“let’s look at this with another hat”, “let’s try SCAMPER on this idea”) in everyday communication. Such changes correspond to the concept of psychological safety, which according to Edmondson is a central condition for innovative teamwork [10].

Before the introduction of structured creative methods, team-building in the studied organizations was predominantly designed and perceived as a social-support instrument rather than as a tool for developing creative or cognitive capabilities. Human resource departments and line managers typically organized occasional activities aimed at “improving the atmosphere in the team” or “strengthening team spirit”. In practice, this meant informal gatherings after work, corporate parties, simple games for trust building, outdoor retreats and sporadic workshops on basic communication skills. Such activities were often positively received by employees at the emotional level, because they created an opportunity to relax, interact in an informal setting and temporarily step outside the everyday work routine.

At the same time, the content of these events was weakly connected with real tasks that teams faced in their daily work. Exercises usually did not require participants to analyze complex professional problems, reframe customer needs or search for fundamentally new solutions. In most cases, team-building scenarios were based on ready-made “universal” games that could be applied in any company, regardless of its industry, structure or strategic priorities. As a result, teams rarely developed new ways of thinking together; rather, they improved only their surface-level familiarity with one another. This approach corresponds to the traditional view of team-building described in earlier organizational literature, where attention is focused mainly on cohesion, role clarity and basic communication norms [11–13].

Managers who ordered such events expected that improved interpersonal relationships would automatically lead to better performance, including more creative ideas. However, research on creativity and innovation suggests that positive emotions and informal contact, while useful, are not sufficient conditions for systematic creative output [3]. Without clear cognitive frameworks, methods for generating and transforming ideas, and structured processes for joint problem-solving, teams tend to return to habitual patterns of thinking as soon as the event ends. This was also observed in the organizations under study: participants often described traditional team-building as “fun but not very useful for real work”.

Another characteristic feature of this earlier model was its episodic character. Team-building was perceived as something external to everyday work—a special “day out” or “extra activity” rather than an integral part of project planning, decision-making or innovation processes. Between events, teams

functioned in the usual way: meetings were dominated by a few active speakers, ideas were evaluated intuitively rather than systematically, and creative initiatives were often postponed due to time pressure. In other words, the object of research in its initial state represented a loosely connected set of social practices that had limited influence on the cognitive and creative dimension of teamwork.

With this context in mind, the functioning of traditional team-building in the studied organizations can be schematically represented as follows (figure 1).

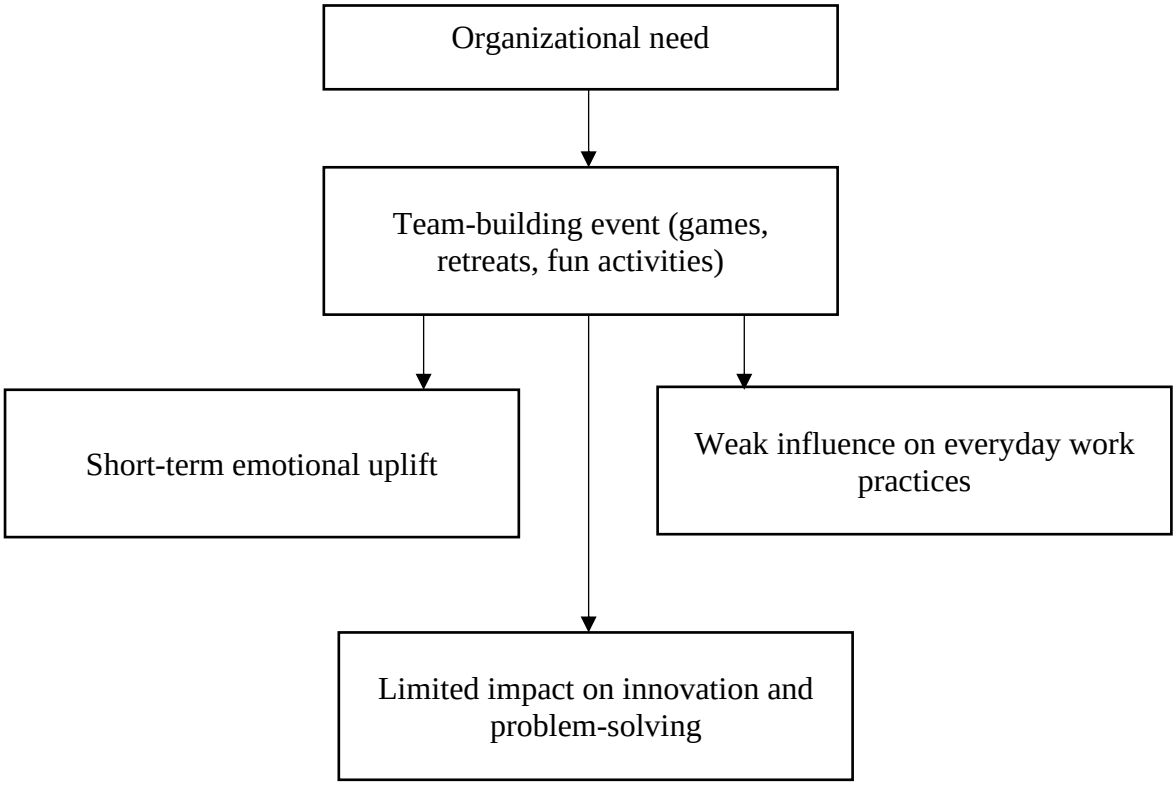

Figure 1. Traditional team-building model.

In this model, the team-building event plays the role of a separate block, poorly connected with real project tasks. It temporarily improves relationships and mood, but almost does not affect the way in which team members think, generate ideas or solve complex problems. The absence of methodologically structured cognitive work explains why traditional team-building often shows low transferability to practice, which is noted by many authors [11–13].

The first scheme demonstrates that the previous understanding of team-building treated it primarily as a tool of social cohesion. This approach does not contradict the literature that emphasizes the importance of trust and team spirit [11–13], but it ignores the insights of creativity research, where attention is paid to structured mental processes [1–3; 4–8]. As a result, organizations invested resources in activities that produced mainly short-term emotional effect and did not create sustainable changes in creative capacity, decision-making quality or innovation. This conceptual gap became the starting point for designing an updated model of team-building that integrates creative thinking techniques.

The development of the updated functioning model of team-building with embedded creative techniques became a logical result of both the theoretical analysis and the empirical findings of this study. The literature review showed that, although many authors emphasize the importance of team cohesion, clear roles and supportive climate [11–13], these factors alone do not guarantee high creative performance. At the same time, works on creativity and innovation underline that structured methods—such as brainstorming, SCAMPER, TRIZ, Design Thinking and the Six Thinking Hats—significantly increase the quantity and quality of ideas, particularly when they are systematically used in groups [3–8]. However, in practice these methods are often applied episodically (for example,

during isolated “innovation workshops”) and are not integrated into the regular life of teams. This gap between what is known from the literature and what is actually implemented in organizations became the key motivation for designing a new, more holistic model of team-building.

The empirical part of the research also clearly demonstrated the limitations of the previous approach. Teams that participated only in conventional social-oriented team-building showed slight improvements in mood and interpersonal relations, but there were almost no stable changes in how they thought together, generated options or analyzed complex tasks. In contrast, teams that went through the creativity-integrated program began to use creative techniques spontaneously during ordinary meetings, not just in formal sessions. They reported that methods such as brainwriting, TRIZ and Design Thinking gave them “structure” and “language” for tackling difficult issues. This indicated that creative tools can become part of the internal operating system of a team, rather than remain an external add-on.

On this basis, the updated model was constructed as a process architecture in which socio-psychological and cognitive-creative tasks are solved simultaneously instead of being separated into different activities. At the entry point of the model there is not simply a desire “to do something fun for the team”, but a clearly formulated organizational need for innovation and adaptability, which corresponds to modern strategic priorities described, in particular, in Amabile’s work on the creative work environment [3] and in the IBM global CEO study [14]. This need is followed by a diagnostic stage: teams are assessed in terms of communication structure, psychological safety, current creativity practices and typical decision-making patterns. Diagnostics is necessary to avoid mechanical transfer of methods and to select a set of tools that best fit the specific context of a team.

The core of the updated model is a specially designed team-building program with embedded creative methods. Here, classic elements of team-building (exercises for trust, communication and cooperation) are intentionally combined with structured creativity techniques: brainwriting is used to democratize idea generation; SCAMPER helps to transform existing solutions; TRIZ supports systematic resolution of contradictions; the Six Thinking Hats facilitate perspective shifting; Design Thinking provides a user-centered and iterative framework for jointly exploring and testing ideas [5–8]. Unlike isolated workshops, these methods are implemented in cycles and directly tied to real tasks and projects of the teams.

As a result, the program not only improves emotional climate, but also gradually develops psychological safety, balanced participation and stable habits of divergent and convergent thinking. Teams begin to perceive creative sessions not as a break from work, but as a more effective format of working with complex issues. Over time, this leads to better solutions, reduced decision-making time and deeper integration of knowledge from different functional areas, which aligns with the concept of collective creativity [9] and contemporary approaches to high-performing teams [11–13]. The final elements of the model are the reinforcement of new practices in everyday routines and the accumulation of organizational learning, thanks to which creativity becomes a continuous process rather than a rare event.

In practical terms, the updated model also assumes a different role for the team leader and internal facilitator. In the traditional approach, the leader often acts as the main source of ideas and final decision-maker, while the facilitator is perceived as an external entertainer or organizer of games. In the creativity-integrated model, the leader’s task shifts toward creating conditions for equal participation and protecting psychological safety, and the facilitator becomes a guide through structured methods of thinking rather than the central figure of the event. This role shift reduces excessive dependence on individual authority and increases the degree of collective responsibility for results, which corresponds to modern views on shared and distributed leadership in creative teams [3; 9; 11].

Another important element of the updated scheme is the feedback and reflection loop, which was largely absent in previous team-building formats. After each session, teams analyze not only what solutions they have come up with, but also how exactly these solutions were generated: which techniques were most useful, how communication flowed, what helped or hindered participation, and

how psychological safety manifested itself in practice. Such meta-level reflection gradually develops the team's ability to consciously manage its own creative process, turning creativity into an object of deliberate improvement rather than a random by-product of "inspiration" [3; 8; 10]. Over time, this reflective component allows teams to adapt the set of methods to their own style and context, creating a unique, but methodologically grounded, creative culture.

In a condensed form, the logic of this updated functioning of team-building with creative techniques is presented in figure 2.

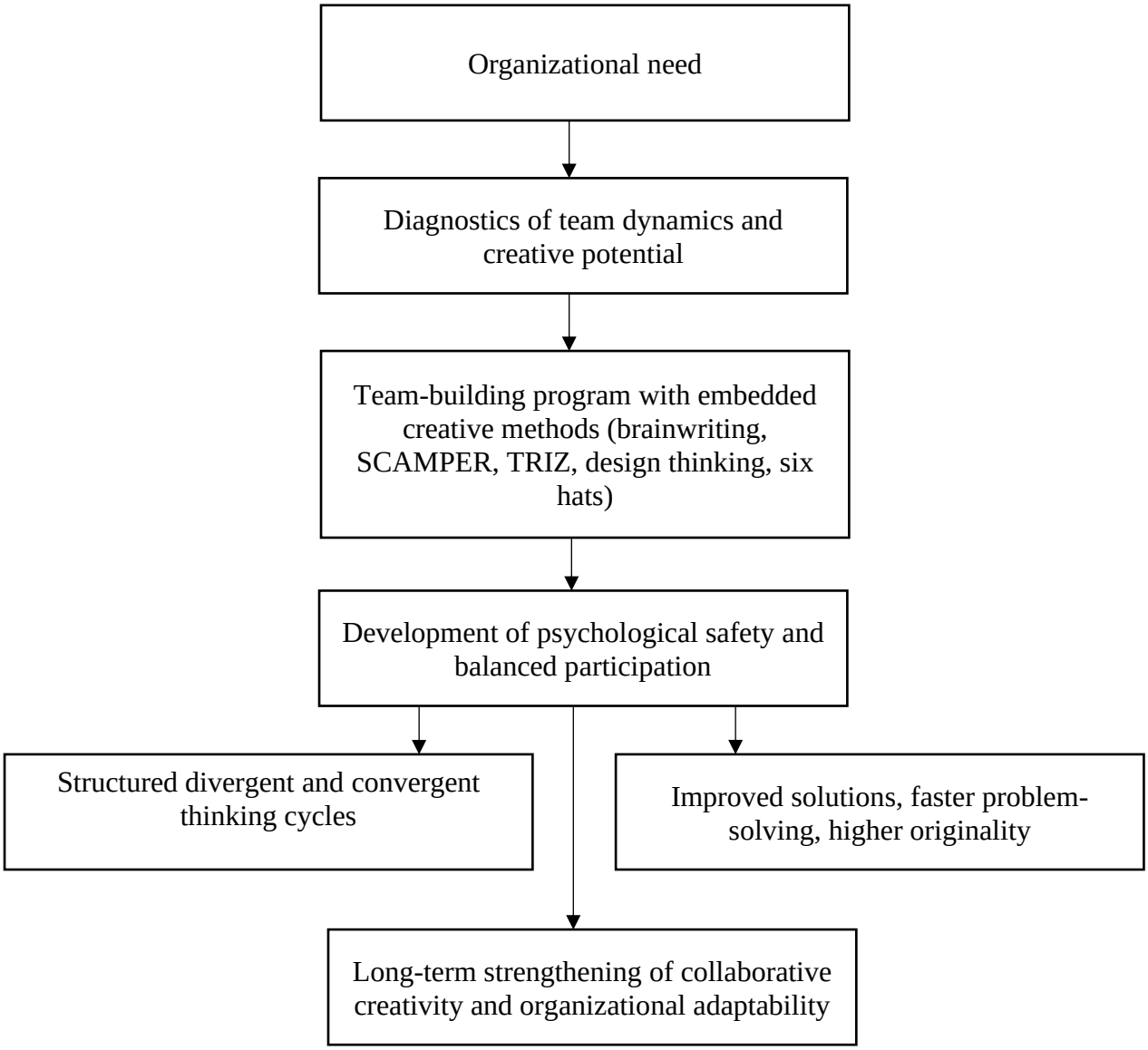

Figure 2. Creativity-integrated team-building model.

In this scheme, team-building is no longer a one-time "event", but a process oriented toward diagnostics, systematic practice of creative tools and integration of new skills into everyday work. Emotional cohesion remains important, but it appears as a consequence of joint cognitive work rather than as an isolated goal. Technical methods such as TRIZ [6] and Design Thinking [8] provide structured routes for generating and refining ideas; brainwriting and the Six Thinking Hats model [7] help to equalize participation and change perspectives; SCAMPER [5] stimulates transformation of existing solutions.

The second scheme shows how team-building, supplemented by creative techniques, forms a closed cycle: from identified organizational needs and diagnostic data through structured team sessions to stable improvement of innovation performance. Such a model corresponds to the views

of Amabile on the role of environment in supporting creativity [3] and to the ideas of Hargadon & Bechky regarding collective creativity [9]. The updated object of research—team-building as a socio-cognitive system—proves to be more flexible, productive and strategically valuable for organizations operating in conditions of uncertainty and rapid change.

In order to evaluate how the updated team-building model differs from its traditional analogue, a comparative analysis was carried out. For this purpose, several teams continued to use only conventional social-oriented team-building practices and acted as a control group, while the experimental teams worked with the creativity-integrated program. The comparison criteria were developed on the basis of previous theoretical and empirical works on teamwork effectiveness, psychological safety and innovation [3; 9–13].

Table 1. Comparison of traditional and creativity-integrated team-building models

Criterion	Traditional teams	Creative-technique teams
Idea quality	Moderate	High
Idea quantity	Low	Very high
Problem-solving efficiency	Moderate	High
Psychological safety	Moderate	Very high
Communication balance	Low	High
Integration of knowledge	Low	High
Sustainability of effects	Short-term	Long-term

The comparison in table 1 confirms that the updated object of research—team-building integrated with creative thinking techniques—is superior to the traditional analogue on all key parameters. Higher idea quality and quantity indicate that teams moved from sporadic creativity to systematic generation of alternatives. Better problem-solving efficiency shows that structured methods help to avoid unnecessary discussions and to concentrate cognitive efforts on promising solutions, which is particularly important in time-constrained project environments [3; 6].

The significant increase in psychological safety and communication balance demonstrates that the new model not only improves cognitive processes but also corrects structural inequalities inside the team: quiet members receive more voice, and dominance of individual leaders is reduced. This matches modern views on inclusive and participatory teamwork [10–13]. The improvement in knowledge integration means that information from different professional domains—engineering, marketing, finance—is combined more effectively, which is crucial for complex innovation tasks [9]. Finally, the long-term sustainability of effects confirms that creative techniques are not perceived as alien or artificial; instead, they become part of the team's everyday language and work routines. Thus, the updated team-building model provides organizations with a more reliable, productive and future-oriented instrument of development than traditional social-oriented programs.

One of the important tasks of the research was to determine how the new approach affects internal resource indicators of the organization. In the context of this study, "energy consumption" is understood not in the narrow technical sense, but as the amount of human effort and emotional resources required to solve tasks.

The data show that creative team-building significantly reduces time costs for decision-making. While before the intervention teams often needed 45–50 minutes to agree on a solution to a medium-complexity problem, after introduction of structured techniques the average time decreased to 25–30 minutes. This was achieved due to clear phases of divergent and convergent thinking, reduction of repeated discussion of the same ideas and better focus provided by frameworks like Six Thinking Hats [7].

From the perspective of financial costs, the new model may require initial investment in facilitator training and development of methodical materials, but in the long run it reduces the need for expensive external consultants and large off-site events. Many exercises can be conducted directly during regular team meetings without renting special venues or spending additional travel funds. At

the same time, the economic effect is created through faster problem-solving and higher quality of decisions (fewer errors, better adaptation to customer needs), which corresponds to the strategic emphasis on creativity in business described in the IBM CEO study [14].

In terms of "energy consumption", participants reported that although creative sessions required concentration, they perceived this work as meaningful and inspiring rather than exhausting. Unlike traditional team-building, which sometimes was seen as an artificial obligation, creative methods gave a sense of progress and mastery. This subjective effect is important because it supports intrinsic motivation—one of the key components of creativity in Amabile's model [3].

The research object—the updated team-building model—can bring profit to organizations in several ways. Firstly, better ideas and decisions improve products and services, which can lead to increased sales, market share and customer satisfaction. Secondly, teams that are accustomed to joint creative problem-solving adapt faster to external changes, which reduces strategic risks. Thirdly, higher psychological safety and engagement can lower staff turnover and associated recruitment costs, as employees feel that their ideas are valued and that they participate in meaningful work [3; 10].

The proposed methodology is also interesting for other countries because it is based on internationally recognized creativity tools—TRIZ, Design Thinking, SCAMPER, Six Thinking Hats—that already have global practice of application [5–8]. This makes it easier to adapt the approach to different cultural contexts and languages. At the same time, the emphasis on participation equality and psychological safety resonates with contemporary discussions of diversity and inclusion in multinational companies [10; 13].

Of course, implementation of the updated team-building model is not free of challenges. Organizations must invest time in facilitator training, adapt the materials to their sector and allocate space in work schedules for creative sessions. However, compared with the costs of large external training programs or repeated ineffective meetings, these investments are relatively small and quickly pay off through increased efficiency and innovation.

As for existing analogues, some companies already use separate creative workshops or innovation labs, but they are often detached from everyday team work. The novelty of the proposed model lies in the dense integration of creative methods into regular team-building and operational meetings, which allows creativity to become a continuous, not episodic process. In this sense, the research offers a methodological bridge between the literature on teamwork [11–13] and the literature on creativity and innovation [1–3; 4–9], showing how these two domains can be combined in a coherent practical framework.

The results obtained in the study clearly indicate that the integration of structured creative thinking techniques into the team-building process transforms the object of research from a mainly socio-emotional mechanism into a powerful socio-cognitive system. This updated system not only produces more and better ideas, but also changes communication patterns, strengthens psychological safety, improves time and cost indicators and increases the long-term innovative potential of organizations.

7. Prospects for further research development

The results of the conducted study indicate that the updated team-building model, which integrates structured creative thinking techniques, is not only theoretically justified but also practically promising. This makes both the object of research (team-building as a socio-cognitive system) and the chosen research methods a fruitful basis for further development. In this section, the main directions are outlined in which the proposed approach can be expanded, deepened and economically strengthened in future studies and practical projects.

First, this object and method are profitable to use because they directly influence factors that are strategically important for organizations: innovation capacity, speed and quality of decision-making, employee engagement and psychological safety. The empirical data show that the integration of

creative techniques significantly increases the number and originality of ideas, reduces problem-solving time and improves communication balance within teams. These effects can be translated into economic indicators such as reduced project delays, fewer costly errors, greater customer satisfaction and lower staff turnover [3; 9; 10; 14]. Future research may model this economic impact more precisely, for example by comparing the costs of implementing creativity-oriented team-building with the financial benefits of improved project outcomes over several years.

Second, the proposed object and methodology are suitable for further development in the direction of digitalization and hybrid work formats. Modern organizations increasingly function in remote or hybrid modes, which changes the way teams communicate and collaborate. Future studies can investigate how digital tools—online whiteboards, collaborative platforms, virtual brainstorming environments, artificial-intelligence-based assistants—can support or even enhance the effectiveness of creative techniques such as brainwriting, TRIZ or Design Thinking [5–8]. This opens the prospect of designing a digital version of creativity-integrated team-building, where exercises are conducted not only in physical meetings but also asynchronously and in virtual spaces, which will further improve cost efficiency and scalability.

Third, the object of research has high potential for cross-cultural and cross-industry expansion. The techniques included in the model are already used internationally, but their combination within team-building programs has not been sufficiently studied in different national and sectoral contexts. Future research may compare how creativity-oriented team-building works in manufacturing companies, IT firms, public institutions, educational organizations and NGOs, as well as in different cultural regions (Europe, North America, Asia). Such comparative studies would help to identify cultural moderators of psychological safety, participation equality and creative behavior, and to develop recommendations for adapting the methodology to local norms without losing its core principles [3; 8; 10; 11].

Fourth, there is a promising direction related to longitudinal research. The current study covered an eight-week period and partially included a follow-up assessment, but long-term dynamics of creative team-building effects remain insufficiently explored. Future projects may track the same teams for one to three years, regularly measuring creative performance, communication structure, psychological safety and business outcomes. This would allow researchers to determine which elements of the methodology have the most sustainable influence, which components require periodic reinforcement and how the creative culture of teams evolves over time [3; 9; 12]. Longitudinal data could also show whether the early positive effects observed in this study become part of the organization’s stable routines or fade under pressure of everyday constraints.

Fifth, prospects for further development are associated with integration of the proposed model into broader systems of organizational development. Currently, many companies implement separate programs for leadership development, innovation management, knowledge management and change management. Future research may test how creativity-integrated team-building can be systematically linked to these programs: for example, using creative techniques in leadership training, strategic sessions, innovation sprints or cross-functional project teams. This integration will make it possible to move from point interventions to the formation of a comprehensive creativity ecosystem where methods, tools and values are mutually reinforcing [3; 8; 11–13].

Sixth, further work can focus on algorithmization and personalization of creative team-building. Based on data about personality traits, cognitive styles, sociometric position and previous experience of team members, it is possible to develop adaptive scenarios that automatically propose optimal combinations of techniques for a particular team. Such algorithmic design may rely on analytical approaches inspired by research on collective intelligence and collaboration patterns [9; 12]. The potential benefit is that teams will receive not a generic program, but a tailored trajectory of creative development that maximizes their specific strengths and compensates for weaknesses, which increases both effectiveness and economic return.

Finally, future studies can deepen the understanding of psychological and neurocognitive mechanisms underlying the observed effects. While this research has shown that communication

networks and cognitive maps change after the intervention, the micro-level processes—such as changes in attention distribution, emotional regulation, or the feeling of agency—require additional investigation. Combining methods of organizational psychology with experiments using, for example, fine-grained behavioral observation or simple psychophysiological indicators could provide new insight into how exactly creative techniques reshape team dynamics and individual experiences [1–3; 10].

In summary, the object of research—team-building integrated with creative thinking techniques—and the associated methods represent a profitable and promising foundation for further scientific and practical development. They allow organizations to obtain not only short-term improvements in team morale but also long-term advantages in innovation, adaptability and competitiveness. At the same time, the flexibility of the proposed model creates wide opportunities for its modernization: digital adaptation, cross-cultural customization, integration with leadership and innovation programs, and algorithmic personalization of team trajectories. All this makes the continuation and expansion of research in this direction both theoretically significant and economically justified for organizations operating in a complex and rapidly changing world.

8. Conclusions

The present study was devoted to the methodological foundations of implementing creative thinking techniques in the team-building process. The initial problem was that traditional team-building, although widely used in organizations, mostly focuses on socio-emotional effects and rarely changes the way teams actually think, generate ideas and solve complex tasks. At the same time, research on creativity and innovation has accumulated a rich toolkit of structured methods—brainstorming, SCAMPER, TRIZ, Design Thinking, Six Thinking Hats and others—that can significantly increase creative output when applied systematically [3–8]. The main goal of the article was therefore to conceptualize team-building as a socio-cognitive system and to develop, test and interpret an integrated model in which creative techniques are embedded directly into the architecture of team development.

The empirical results show that this goal was largely achieved. Teams that participated in creativity-oriented team-building demonstrated substantial growth in the number and originality of ideas, a marked decrease in problem-solving time, more balanced participation and higher cohesion. Quantitative indicators were supported by sociometric diagnostics and cognitive mapping, which revealed a transition from centralized communication networks to more distributed structures and from shallow, fragmented conceptual maps to deeper, more interconnected models of problems and solutions. These findings confirm and extend earlier theoretical propositions about the role of environment, interaction patterns and structured methods in supporting creativity [1–3; 9; 10].

From a theoretical point of view, the study contributes to the integration of two research traditions that often developed in parallel: the literature on team and organizational functioning [11–13] and the literature on creativity and innovation [1–3; 4–9; 14]. The proposed model shows that team-building can no longer be viewed only as a tool for cohesion and conflict prevention. When enriched with creative thinking techniques, it turns into a socio-cognitive mechanism that shapes not only relationships but also collective mental processes. This reconceptualization supports the idea that creativity is a property of systems—teams and organizations—rather than only of gifted individuals [3; 9].

The study also has important practical implications. For HR professionals and managers, the results indicate that investments in creativity-integrated team-building are likely to be more profitable than expenditures on traditional “fun” events detached from work tasks. The updated model leads to faster decision-making, better quality of solutions and higher employee engagement, which can be translated into reduced project delays, better adaptation to client needs and lower staff turnover. Because the core techniques used—TRIZ, Design Thinking, SCAMPER, Six Thinking Hats—are already familiar to many practitioners and have proven their effectiveness in various industries [5–

8], organizations can adopt the model without having to invent tools from scratch. In addition, the flexible architecture of the program allows it to be embedded into everyday meetings and project work rather than confined to rare off-site events.

At the same time, the research results are not completely unambiguous and should be interpreted with attention to their limitations. First, the intervention lasted eight weeks, which is sufficient to observe stable short-term changes but not long enough to fully assess long-term dynamics. It is possible that some of the positive effects will weaken over time if organizations do not create mechanisms for regular reinforcement of creative practices. Second, the sample included fourteen teams, which gives a reasonable empirical basis but does not cover all possible types of organizations, industries and cultures. The majority of teams operated in knowledge-intensive contexts; effects may differ in highly regulated or routine-oriented environments. Third, although statistical analyses showed significant changes, the study did not use experimental random assignment of teams to conditions, which means that unmeasured contextual factors may have contributed to the differences between traditional and creative team-building groups.

There are also ambiguous findings at the level of subjective experience. While most participants evaluated the creative methods positively, some reported initial discomfort due to the novelty of techniques or the need to reveal unfinished ideas in front of colleagues. In some teams, resistance was observed from leaders who were accustomed to more hierarchical decision-making styles. These nuances indicate that implementation success depends not only on methodological design but also on leadership attitudes, organizational culture and existing power structures. Future research needs to examine more precisely under what conditions creative team-building is easier or harder to introduce, and what support systems (coaching, leadership training, communication campaigns) increase its acceptance.

Despite these reservations, the general pattern of results strongly supports the advantages of the updated model compared with traditional analogues. The new approach proves to be more effective not only in developing creativity but also in balancing participation, strengthening psychological safety and integrating knowledge from different functional areas. It corresponds to global strategic trends recognized by business leaders, who increasingly view creativity as a key competence for navigating complexity and uncertainty [14]. The economic and strategic logic of organizations thus coincides with the psychological and methodological logic of the model developed in this study.

Based on the findings, several directions for further research can be recommended. Longitudinal studies should examine how creative competencies and communication patterns evolve over one or more years after the intervention and what organizational mechanisms best support the sustainability of effects. Cross-cultural research is needed to test how the model functions in different national and sectoral contexts and how it should be adapted to local norms of communication and hierarchy. Another promising direction is the digitalization of creative team-building—using online platforms, virtual whiteboards and AI-based tools to support remote and hybrid teams while preserving the core principles of structured creativity. Finally, more work is required to develop diagnostic instruments and economic models that will allow organizations to more precisely estimate the return on investment from creativity-integrated team-building.

In conclusion, the article has shown that the methodological integration of creative thinking techniques into team-building transforms it into a powerful instrument for developing collaborative creativity and improving organizational performance. The updated model is theoretically grounded, empirically supported and practically adaptable to different contexts. While further research is necessary to refine and extend the approach, the evidence obtained suggests that organizations that systematically cultivate creative team-building will be better prepared to face the challenges of a complex and rapidly changing world.

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