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Architectural design studio organization and creativity

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Abstract:
This paper focuses on "creativity" within architectural design studios as a key element of architectural education by analysing the "structure and organization" of the architectural design studio. Design studio education is viewed as an organizational structure, and the role of the studio instructor in creating an organizational style in studio education is the subject of investigation in order to develop creative strategies in the design studio. These strategies incorporating tools, components and layers are referred to in this paper as *"group organization; teamwork; design studio medium; roles of student-designer and studio instructor; communication; knowledge and information acquisition and transfer; representation tools; risk and motivation management".* Issues that are also important components of studio teaching, but which should be analysed as independent research areas, such as "*design problem contents or task", "individual creativity styles and design thinking processes"*, and *"design knowledge"*, are not included in the scope of this study.

The aforementioned components and layers that are underlined in this study are evaluated in terms of their creativity potential within design studio education. The aim of this paper is to create a general, descriptive reading through experience of and practices in design studio education, and to compare and evaluate within traditional perspectives rather than to put forward an alternative model. These exemplified applications and experiences are based on the author's practices and observations in undergraduate design studio instruction. As a multi-faceted studio organization concept and process, a hypothesis and related criteria evolved in the study provide a coherent framework for the exploration of creativity within the educational context of the architectural design studio. It is concluded that there is a need for greater understanding of the instructors' role as an "educational / tutoring coach" and of their implicit studies in the studio regarding teaching and leading creativity. Broadly speaking, it could be seen to consist of the range of strategies outlined in the 'creative studio environment'. This would help to address the weaknesses and to consolidate that which has been established in the practice of studio organization to activate creativity in the teaching of architecture.

Keywords: *Architectural design education, creativity, studio, organization, coach, and creative climate.*

> Organizations are better managed by designing and realizing a creative environment for their organization members. The context can then also be a driver of learning and knowledge creation.
>
> Amabile, 1996

Introduction

The topics of “creativity, human intelligence, and knowledge creation” are on a par with any other topic in historical or modern academia. These subjects have been regarded with wonder and admiration throughout the history of mankind. In fact, each of these terms has a place in every intellectual study and discipline.

Creativity and innovation are major topics for the 21st century, not only in individual, cultural or social contexts, but also within a wider perspective in business or economic development. “Creativity” is used to reflect a psychological view of creativity on a personal level in contrast to innovation as used in the world of business on an organizational level (Sternberg and Lubart, 1999). Innovation traditionally focused on products and processes. More recently, distribution has aroused interest as an area where significant innovation can lead to dramatic gains. However, the combination of product, process, and distribution still fails to capture the full potential for organizational innovation (Nadler and Tushman, 2007). In this approach, successful organization of the future can also foster the development of exceptional innovation skills in two other areas, namely, “strategy development” and “organizational design”. In the field of education it is also argued that creativity is one of the basic constituents of innovation, and innovation is described as ‘applied creativity’, whereas Hargreaves (2000) suggests that ‘you can have creativity without innovation, but you cannot have innovation without creativity’. In this context, this study discusses creativity as an important element in the production of new knowledge and concepts, meaning innovation, and the fact that it can be developed in the medium of the (architectural) design studio organization-wise.

However, creativity can be performed both individually and in groups, and it is therefore necessary to define what is intended by creativity in a collective, and mainly in an organizational context (Wolfe, 2002). Complexity may exist in products, processes, users and management or organization (Earl, et al., 2004; Özçer, 2005). From the perspective of these general approaches, the complex, vague and multi-faceted fabric of architectural design and its tuition (in the design studio) necessitate the use of creative management strategies or organizational processes, both individually and in groups.

The new shifts and developments that are the results of changing networks under global challenges –such as cultural, economic, and technological positions– are also reflected in architecture and, naturally, in the teaching of architectural design. Accordingly, as educators, we should try to widen the scope of architectural instruction and offer new perspectives to the students to prepare them for their future career.

In the context of these acknowledgments, the main aim of the study is the investigation of different viewpoints and different centres of gravity in the organizational structure of the architectural design studio in terms of creativity. The intention is furthermore to create a general descriptive reading or mapping through inferences on conceptual (theoretical) bases,

experience and practices of design studio education, and to compare and evaluate within traditional perspectives, rather than to put forward an alternative model. The exemplified applications and experiences are based on the author's practices and observations in undergraduate design studio instruction. The theoretical framework of the study is based on organizational arrangement in different areas ranging from business management to general education for the gathering of key assumptions such as the methodological elements that can be gateways to creative organization. Accordingly, the research questions are as follows:

- How can educational / instructional structure and organization in the architectural design studio be formed based on enlightening creativity?
- What are the general tools to explore creativity in a multi-faceted studio organization concept and process, besides the architectural design studio educational context?
- What is the role of studio educators in architectural design education in leading and conducting creativity and raising the awareness of students of various settings and new innovations?

In order to answer these questions, research fields that constitute the theoretical framework of this study are defined as "creativity" and "architectural design (studio) education" and evaluated in the next two main chapters. These are named as *"defining creativity and innovation: from individual processes to an organizational perspective"* and "*architectural design teaching strategies: creative versus skill-based or 'hands on' approaches".* These two main titles also include contemporary disciplines and fields other than the design field such as "managing innovation", "organizational cognition", "developing a creative organizational climate", and "approaches on transforming and revitalizing organizations" that can be related to "architectural design (studio) education". This general review of current conceptualisations on creativity in various disciplines other than design is based in particular on psychology, education, business and industry. The analysis of creativity in this context offers some distinctive and qualitative outcomes from which to develop research questions. These are summarized in the third chapter entitled "key assumptions on creative organization". These key assumptions are explained under five main headings as *organizational climate; style of leadership; resources, competences / skills and operational strategies; structures and systems* and o*rganizational culture* to represent design studio training.

Thereafter an assumption is made that can be designated as the hypothesis of this study and the criterion that needs to be focused on in order to develop creative strategies for the architectural design studio with the help of theoretical information that is gathered from other disciplines and fields. These related criteria can be termed *"group organization; teamwork; design studio medium; roles of student-designer and studio instructor; communication; knowledge and information acquisition and transfer; representation tools; risk and motivation management"*. Issues that are also important components of studio teaching, but which should be analysed as independent research areas, such as "*design problem contents or task", "individual creativity styles and design thinking processes"*, and *"design knowledge"* are not considered within the scope of this study [Fig.1]. These are reported in the basic framework as important guidelines on component settings in creativity to foster design studio instruction.

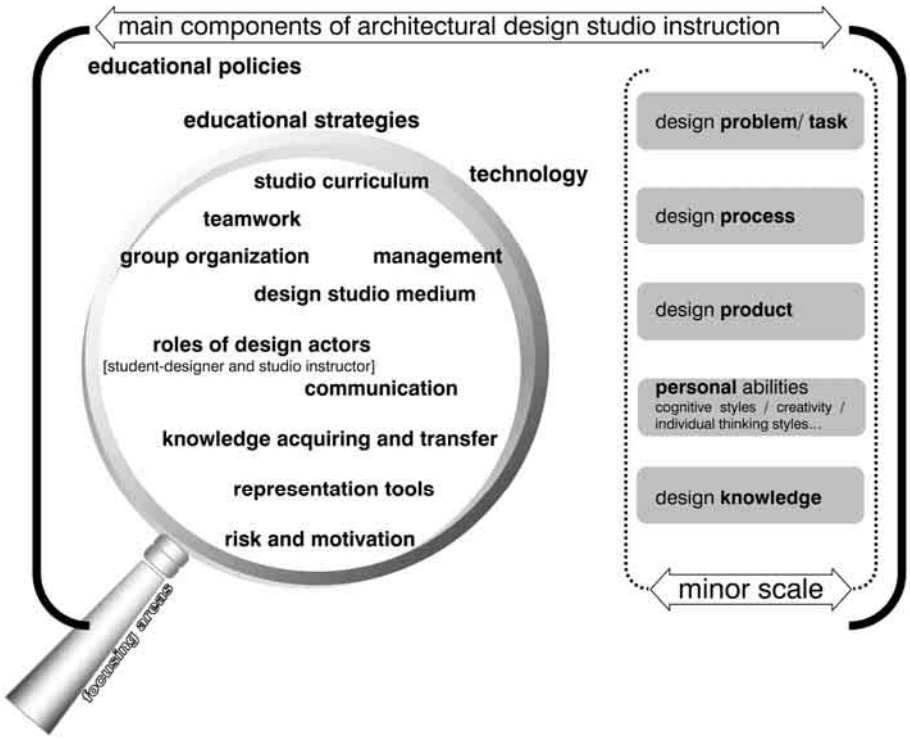

Figure 1. *General structure of the study and focusing areas*

Consequently, this paper discusses the implications of some examples that have been implemented in the undergraduate design studio by the author, within studio instruction and its organizational practices. The purpose of this discussion is to contribute to a coherent framework to explore creativity within the educational context of an architectural design studio.

Defining creativity and innovation:
From individual processes to the organizational perspective

All of the scientific disciplines or systems concerned with people ranging from psychology to economics, and urban or business management, have been called upon to contribute to an understanding of creativity. Despite the existing studies based on modelling creativity in order to form a common language on the subject, there is no single definition of creativity. Webster's dictionary defines the term 'creativity' as having its etymological root in the Latin word 'creatus' and meaning "a creation action; ability to create; to create a new thing, form or stage; outcome of an action or behaviour; produce with a unique talent". Essentially, in simple terms, creativity means seeing a relation between new information and a previous experience and developing a fresh combination out of this perspective. (Paker-Kahvecioğlu, 2001). Individuals who are successful in making new associations from unrelated elements tend to have unusual access to the potential in new input (Canaan, 2003).

Moreover, ideas that support creativity as a phenomenon that can be gained through 'time, experience and education' have more credibility than the idea that it is a natural gift. Creativity is an attitude, not a mysterious gift (Amabile, 1991; Takala, 1993; Sternberg and Lubart, 1999; Paker-Kahvecioğlu, 2001). In early approaches, "creativity" was seen as an individual thought, process or outcome that is produced in a short period of time (Amabile, 1991). These

early historical approaches to creativity defined it as centering in the creative *person, process* and *product*, which are also known as the "three Ps". This view has dominated research across disciplines. Most theories of creativity have focused on the *individual level of analysis*, with the goal of describing the nature of creative minds. (MacKinnon,1962; Torrence, 1988). Individual characteristics such as *personality* (Barron & Harrington, 1981), *cognitive abilities* (Hayes, 1989; Finke, et.al, 1992), and *intelligence* (Guilford,1967; Gardner, 1993; Sternberg, 1999) have all been linked to creativity. Essentially, the definitions on the individual base are concerned with description of how creativity is acquired rather than explaining the aim of creativity. Additional researches have enlarged this capacity, by arguing that creative behaviour results from a complex interaction between the characteristics of the individual and those of the environment (Amabile, 1983;1996).

As Amabile and his colleagues (1996) note, *creativity by individuals and teams is a starting point for innovation; the first is a necessary but not sufficient condition for the second.* In the context of an organization, the term *innovation* is often used to refer to the entire process by which an organization generates creative new ideas and converts them into noble, useful and viable products, services, and practices, while the term *creativity* is reserved to apply specifically to the generation of noble ideas by individuals or groups, as a necessary step within the innovation process. They also argue that three components were needed to enhance creativity (in a work environment): *expertise* (technical, procedural & intellectual knowledge), *creative thinking skills* (how flexibly and imaginatively people approach problems), and *motivation*.

Forms of collaboration and interaction among different geographical locations are paradoxical consequences of globalisation that also cause the process of innovation, creativity and social learning that are critical for success in the new era (Wolfe, 2002). From whatever perspective creativity is regarded, there are differing arguments among alternative theories and between the disciplines (e.g., between psychology and sociology; between cognitive science and ICT-Information and Communication Technologies). Globalisation trends shift the main focus on the role of knowledge and creativity from an individual level to a group and organizational level. This makes the studies that are being made in different disciplines directed towards “teamwork, coordination, and organizational factors” (Özçer, 2005). Based on this recent research and literature, creativity has been related to notions as varied as: *“team cohesiveness, diversity, tenure, motivation and degree of cooperation among group members”* (King and Anderson,1990; Payne, 1990; Boud et al., 2006) *”supervisory style*”; “*organizational structures”* and the provision of *“performance feedback”* (Woodman, et al., 1993; Kazanjian et al., 2000) [Fig.2].

“Creative environments” are generally described as organizations that enable the production of knowledge, facilitate learning from experience and from one other; in short, as organizations that provide knowledge sharing (Özçer, 2005). Besides, these “creative environments” contribute to the overall progress of creativity, to construct different fields of interests, to merge and to transform the information that is derived from different fields within the organizational structure and to increase active participation.

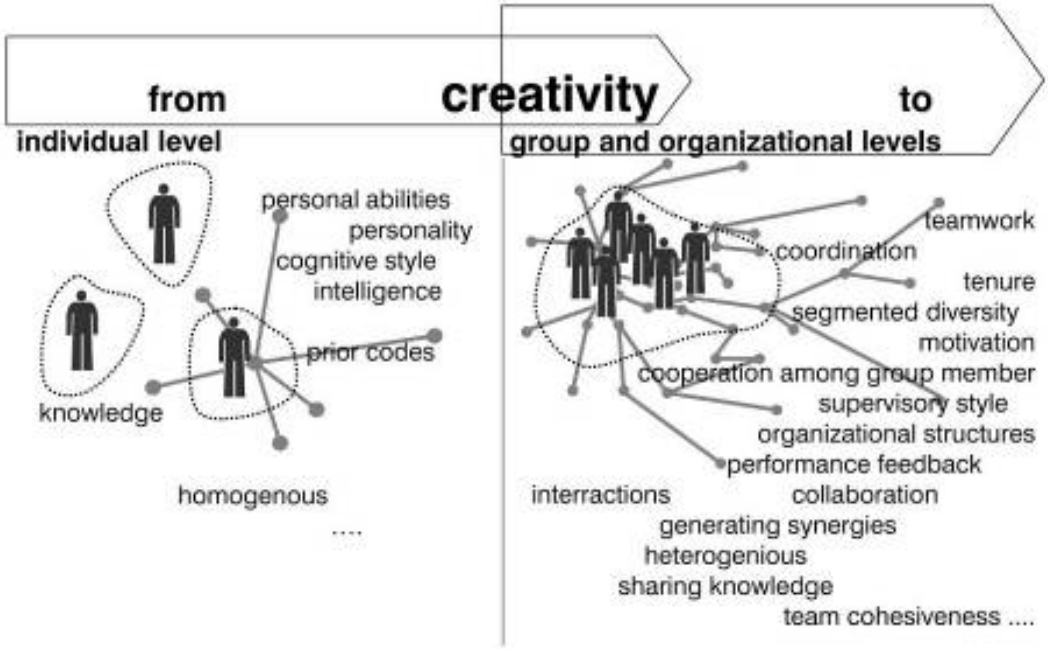

Figure 2. *Knowledge and creativity moving from an individual to an organizational level*

Architectural design (studio) teaching / coaching:
Creative **versus '*skill-based*' / '*hands on*' approaches**

It is more commonly recognized that design is a complex and multi-dimensional activity that involves various skills and dispositions such as *interpretation, communication, problem-framing, research and knowledge integration.* On the other hand Power and Koolhaas define design as an "experience-machine" that needs to be self-organized rather than operational (Power, 2002; Koolhaas, 2004). Therefore, as mentioned by Holmquis (2007), organizational aspects are going to become the means for the conscious evolution of complex adaptive systems.

Some scholars claim that all design activities are inevitably creative, on the basis that the outcome is the creation of the new; another group argues that all design activities are inevitably scientific or analytical on the basis that the outcome must involve a rational, logical analysis. Design is mainly considered as being both creative and rational by different degrees. Moreover, learning consists of technical knowledge and the process of developing a creative thought through design.

The main strategy of architectural education can be defined as the provision of the teaching and learning process through constructing and forming "new thought(s), information(s) or design / product(s) over time with a certain accumulation of knowledge through this process. Architecture is an intellectual field of study and experiment; and (architectural) design and its education are fed by intellectual curiosity, energy and awareness (Yürekli, 2007). This approach, as stated earlier, supports the idea that the design process and creativity that is formed through this process is a learned process. The main aim of design education is to provide different design experiences; to guide in the taking of an active role and / or the taking of risks in different fields of design; to facilitate knowledge acquisition, exchange and processes; to provide a powerful communication and

motivation medium and to direct it for student-designers that have different cognitive styles and intellectual superiorities. Active components for realizing this are “design studio as a communication medium”, “design task or problem”, “design knowledge” and ”different communication media” and the persons are “student-designers and studio instructors” (Paker-Kahvecioğlu, 2001).

Yürekli (2007) reviewed the early historical approaches to architecture as two different main trends; to create new things like an engineer or to make a “bricolage” in the terminology of Etlin. As the core of architectural education, the design studio has developed the tradition of learning-by-doing – the tradition of project-based education, which often seems innovative; the more specific traditions of work, review, and criticism; and the less easily-named traditions that inform of the ways in which groups of students learn from one another (Schön, 1985).

In the classical or traditional sense, design studio education dominates an occupational route for a specific profession in design. It is also dictated by *‘hands on’* experiments where the goal is to provide a medium for the master / instructor to channel his / her knowledge and professional identity to the student. This not only suppresses the creativity of the student but also transforms him / her into a reflective media (Kahvecioğlu, et al.,2002).

Formal architectural education is to be structured around compulsory theoretical and studio courses where one-to-one tutorials, small group critiques, and significant quantities of individual formative feedback and guidance sessions are led. The integration of unique activities such as workshops, informal short-term studies, and diverse group organizations into the formal curriculum will provide a more creative and fruitful atmosphere for the students (Kahvecioğlu, et al., 2002). In the context of the studio, some instructors have learned to become not only master practitioners but also master coaches. They have learned to respond to what is imperative and present in the studio, as is often not the practice, to make assumptions, strategies and values more explicit (Schön, 1985).

Within the collective transformation in beliefs, values and practices, which are implied by the concept of learning, lies a distinction between adaptation and innovation. This distinction suggests that the changes occur either within a given framework or imply a break that goes beyond the given and represents something creative. In the creative type the learner not only evaluates outcomes or chooses methods, but also defines the task and the conditions in hand – diagnosing the situation. Creative Learning (CL) occurs when groups of individuals begin to reflect upon and transform established routines, structures and practices. According to Holmquis (2007), this type of learning is similar to what Piaget calls *accommodative learning*, as Argyris and Schön (1978) call, *double-loop learning*; as March calls, *explorative learning*; as Senge calls, *generative learning* and as Engeström calls, *expansive learning*. (CL) can be stimulated by a Creative Climate (CC). A (CC) is characterized by shared information, open communication and a focus on human and professional development. (CC) is described as positive approaches to creative ideas, supported by a relevant reward system.

Through architectural design studio (as a CC) instruction, students face diverse problematic situations that present themselves as unique cases.

Because “the unique” falls outside the categories of existing theory and technique, a student cannot treat it as an instrumental problem to be solved by applying one of the rules in her / his stock of previous knowledge. If one is to deal with it competently, then one must do so by a kind of improvisation, invention and test situational strategies of one’s creation. From this perspective, short-term studies, informal practices or workshops present new potentials for innovations dealing with exceptional problematic cases.

When summarizing, in the light of a given theoretical background, design education is not a structure that is focused on a single-dimension and uniform teaching / learning process; on the contrary, design education is required to be in a structure that directs the student-designer towards a multi-dimensional and dynamic process of thinking and “ways of knowing as a designer” (Cross, 2006; Schön, 1987). Accordingly, it is of importance that the design studio be structured as a system that gives the student “potential possibility of progress”, that creates “mediums that encourage the motivation”, that organizes “time and energy” at the stages of knowledge gathering, thought production processes and the presentation of ideas. (Paker-Kahvecioğlu, 2001).

Key assumptions on creative organizations

This part of the study aims to argue from analogy to define the structure and organization of the design studio that forms the basis of architectural education. These arguments can be defined as a summary and classification of two components, namely, “creativity and (architectural) design” and “creative techniques and organizational characteristics” in the educational field that form the theoretical framework and are also mentioned in the two previous sections. In the light of this classification, the objective of the next stage is to make basic key assumptions that can be related to design studio organization concepts and processes. These are demonstrated with the different dimensions of design studio coaching.

As mentioned earlier, creativity can be considered as being one of the competences required for managers in addition to the traditional ones in production, architecture, finance, marketing, etc. Creativity is not an innate attribute, nor the prerogative of the few, but it is owned by every person and it is possible to improve it through the utilization of the creative techniques as indicators of organizational characteristics. When summarized as prevalent headings from recent studies developed by academia and business / industry, these techniques require the existence of the *“right climate; style of leadership; resources, competences / skills and operational strategies; structure and organizational systems; and culture…”* (Goleman, et al, 1992; Gurteen, 1998; Nickerson, 1999; Kimbell, et al., 2000; Pham, et al., 2006).

These key assumptions are explained under the following headings and are also summarized in the image [Fig.3] along with the related criteria evolved in the study.

- *Organizational climate:* It is the **atmosphere that people breathe** in an organization; and to support creativity, it **requires,** the ***active participation*** *of all the members****,*** ***cooperation*** *and* ***knowledge exchange*** *among all participants,* ***freedom of expression*** *and* ***the definition of performance***.
- *Style of leadership*: It is well known that a **democratic style of leadership** fosters creativity within an organization, while an autocratic one stifles it. The leader:

    * **encourages the experimentation of new ways** to manage the business;
    * **encourages active participation of collaborators**;
    * **requires the examination of strategic alternatives** deeply different from the traditionally accepted ones, to **"surprise"** (in order to challenge what is "taken for granted" in the existing organization).
    * **disseminates the responsibility** of preparing strategic inputs **among different people;**
- *Resources, competences / skills and operational strategies:* This is the ability or talent to perform a task well, or better than average. Strategies that **operate between high-level abstract ideas** and **functional competences** are strategic and operational. **Acquiring distinctive abilities** such as: ***unpacking 'wicked' tasks, optimising values, modelling future, coping with risk*** *and* ***managing complexity***.
- *Structures and systems*: To enable creativity to grow and increase within an organization suitable new structures and systems must be developed. In particular, considering the current conditions of **turbulence of the competitive context**, in every organization **changes need an accelerated feedback**. It is also useful to underline the important role of building **motivation** and **intensity generators,** an incentive system to create **a real passion for innovation, stimulating and rewarding curiosity and exploration, focusing on mastery and self-competition**, and **team-work interaction** within the structure of the creative organization.
- *Organizational culture:* To support the development of creativity within organizations, a culture that balances three factors: **controlling, freedom of action** and **taking risks**, is fundamental.

Besides these summarized headings that constitute the management of operative activities, with special attention to the creative process, "**control**" is the external expression of convergent thought. It is one of the critical functions for management and it aims to eliminate surprises. On the other hand, the aim of **divergent thought** is to ***create surprise*** and to support the *creation of a* ***dynamic environment***.

Subsequently to simplify both individual and organizational creativity, cognitive and organizational **blocks to the creative process** also have to be signified. These can be indicated as the following obstacles;

- **limiting paradigms** that represent the way in which each individual perceives, communicates and looks at the world;
- **limitations of traditional teaching methods** that are unable to exploit the learning potential related to the play and game phase;
- **inappropriate belief in absolutes**: it is never absolute;
- **fear and lack of trust**: the fear of making a mistake;
- **infanticide**: the tendency to suppress new ideas as they arise;
- **overload information**: extreme trust in the quest or analysis of information;
- **judgments**: preferable to suspend and postpone them.
- **self-criticism**: as an inner judge
- **self-setting barriers**: existing clichés, rules, and control mechanisms…..

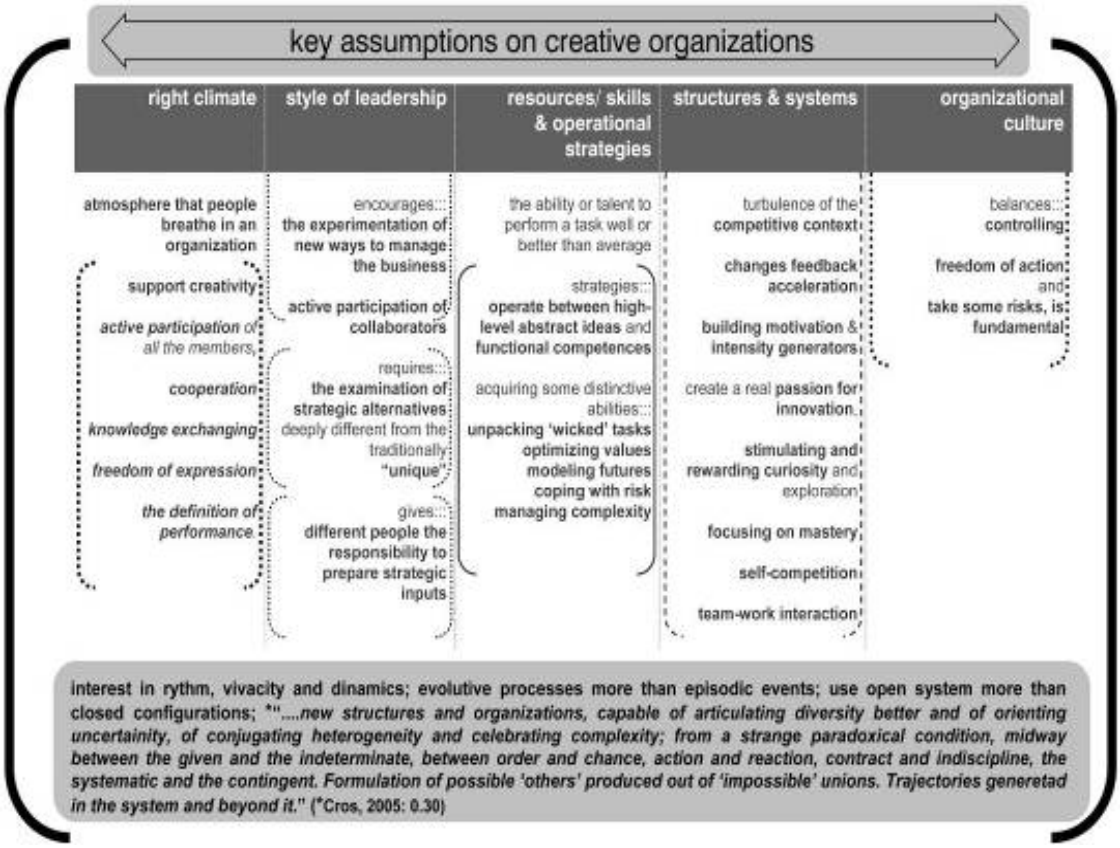

Figure 3. *A general synopsis on the key assumptions for creative organizations*

The basic framework: On component settings in creativity to foster design studio instruction

In today's constantly changing circumstances, the contribution to design education of design studio education constitutes one of the current contemporary debates in academic and professional terms. While in the past the architect was the dominating actor within the architectural process today the architect has become one of the actors. The focus of interest in the study is the dynamics of creativity, mainly in architectural design studio instruction and its organization, the processes for accelerated and sustainable change. As mentioned before, (architectural) design studio instruction is taken as a form of group management and an organizational arrangement. Enhancing organization requires dealing with different ways of managing innovation, developing a creative organizational climate, and approaches to transforming and revitalizing organizations (Andreasen et al., 2002).

Inputs for creativity in the design studio as an organization can generally be articulated from different levels of many branches such as "educational policies and strategies; technology; design studio curriculum; styles of management and organization; medium; design task or problem; time processing; design actors' experiences, a-priori and accumulated knowledge and cognitive style". These are also summarized as the headings, *"the design strategy we formulate", "the design task we choose to solve", "the way we choose to design", "the organization we create for the task and how to use it", "the actual context and how we react upon it"*.

When creating a basic framework on “creative techniques and organizational characteristics”, the key assumptions corresponding to studio instruction are defined in the previous sections and the significant assumptions are highlighted as *“key elements”.* The aim is also to identify and evaluate the situations for all creative approaches of when the examples and applications of the different approaches, activities or works take place in the organization of the (architectural) design studio. An exploratory approach to establish a promising classification is organised as a method to be used for identifying situations and means for design studio organization. These key elements that foster creativity for organizational characteristics are determined by descriptive readings and observations on examples of the author’s studio experiences as a supervisor in the undergraduate program at ITU Faculty of Architecture.

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These key elements that are *related* to the “key assumptions” in the emerging framework of the study are: s*tudio curriculum / contents; design studio milieu; styles of knowledge and information acquiring and transfer; roles of design actors; ways and tools of communication; taking risks giving initiatives; and “motivation” and “intensity generators”.*

“Studio curriculum / contents” as structures and systems

The importance of a studio curriculum within architectural instruction with the settings or contents that are constructed by the studio instructor, highlighted the need for *a calm, supportive environment conducive to confidence* and *active role giving to students to take part in different areas in the studio and also the design world in general.* The *Studio curriculum* should provide a medium for creating new ideas and enable creativity to be reflected in all different cognitive styles through different types of activities and formations (such as, informal, collective / group works, short-term studies like workshops, work-ships, work-trips, one-day-charettes, or casual studio programmes, competitions,….), instead of using clichés and existing templates.

The students experience integrated teamwork, and through the process gain respect for both the skills and issues found on site, learning about the many areas of project development and procurement, from consultation to constructional tolerance.

An example of a one-week workshop that is the latest in a series of collaborative projects between staff and students of Architecture from Istanbul Technical University and from the Queen’s University of Belfast is evaluated here as a case study. ‘Re-discovering the Golden Horn’ was a one-week workshop held in early March, 2007 [Fig.4]. Over the period the students worked very hard together; experienced real conflicts, as different ideas and different approaches emerged from within the task and each group went through the process of negotiating and coming to an agreement on the design. Of the different world-views that were expressed and sometimes intensely debated, one example must suffice: a proposal to introduce cycling both as a way of commuting to work and for leisure, was greeted in turn, by lack of understanding, disbelief, argument, and finally acceptance.

Experiences like this are a kind of a shock therapy that can change the students’ views forever – which is the basic, if sometimes forgotten, purpose of all education.

Figure 4. *Integration of unique activities such as workshops and diverse group organizations to the formal curriculum will provide a more fruitful atmosphere.*

"Design studio milieu" as a creative organizational climate

More than just being a place for knowledge transfer and sharing, the design studio medium should be a social environment triggering creativity. Today's architectural design studios differ from those of former times in terms of critique, knowledge acquisition, educational strategies, products and so on. Design studio training results in 'knowing how to design' and the process of design with an emphasis on studio organization.

The design studio milieu as a creative climate is an environment not only for defining and transferring the architectural knowledge for using existing clichés and templates, but it is also a productive environment open to use of information falling within the scope of other disciplines, for creating new design knowledge and thoughts and for teamwork. The design studio is a place of *intellectualisation, communication, transition, interaction, sharing and participation besides games and fun*.

If the most critical characteristic of the new design studio environment is accelerating the pace of change, then the ability to develop quickly and creatively and implement new strategies and the organization designs required to make them work will become a major source of competitive differentiation.

In this sense, the framework defined in the debate of the conceptual analyses conducted by the author at different times on project topics has been chosen as an example. These are the seminar programmes generated by using presentations of concepts such as "public space, boundary, recycling, daily life, interface, confrontation, transition or museum", which were to be debated in an urban and architectural context, and tools of the free media. The seminar was prepared by small groups splintering off from

the whole group of the students. The presentation of its concepts was introduced in the format of a mini-competition and as a preliminary exercise/ game to the design, and this enabled a variety of presentation techniques (short-films, posters, video films etc.) to be used and created the opportunity for interactive and permanent memory in the sharing of knowledge [Fig.5].

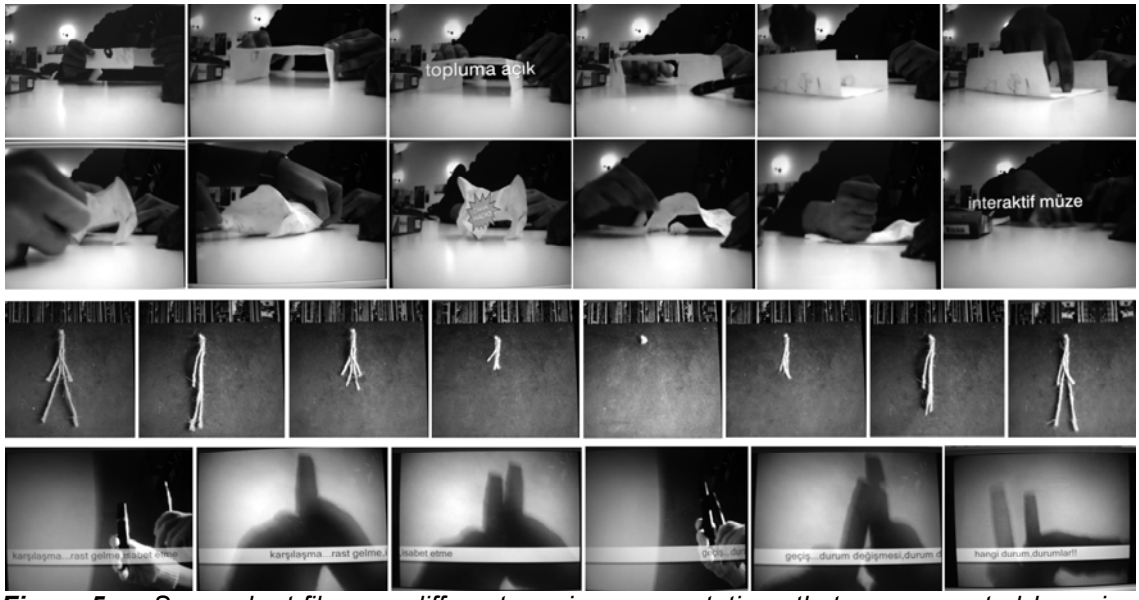

Figure 5. *Some short-films on different seminar presentations that are generated by using concepts such as "museum, public space, interface and confrontation" in an urban and architectural context.*

"Styles of knowledge and information acquiring and transfer" as resources, competences / skills and operational strategies

Design studio tutoring is an act that relies heavily on interaction. It is like a kind of performance art. The interactions between tutor, student, the subject taught and the studio setting form a phenomenon of non-scripted drama. There is no one-way, clear-cut, step-by-step routine procedure to perform adequately in the act (The holding of domain knowledge is the premise, but not the promise, of competence to teach it).

In the traditional approach, from "tutor" or "expert" to the learner, one way and linear structure of the knowledge flow is improved in a way that includes different channels and relations. Therefore, knowledge acquisition and transfer from students to instructors and among students themselves, provide a multi-channelled and dimensional structure fed from different virtual environments and information technology. Different knowledge management strategies can be defined from codification to personalization styles. Designers have to use all styles for operating the design process in creative ways. Students and teachers actively learn from each other, by 'learning-through-interacting'. Learning in this sense refers to the building of new competencies and the acquisition of new skills, not just gaining access to information or to codified scientific and technical knowledge.

The approach taken in the studies conducted was that, "the contemporary architect should be fluent in the use of constructional technology, the fundamental grammar and syntax of architecture" (Cave, 2000). In this context the role of precision and close observation in the making or craft

process, the linking of hand and eye, the use of one's intellect to control a physical outcome should be honoured and rewarded. This has led to the development of a series of live and experimental design and construction projects, which included projects working with local standards, materials or technology. This sustained program includes four projects that were conducted in different terms and in different project groups as the case studies: "3xwaLL Project: material and texture; structure; and function analyses on a wall", "Skin_Surface and Sunlight-shelter Design for the Corner Building Project", "Pedestrian Bridge Design on the Motorway" and "Roof and Ceiling Project: exercises for gaining the daylight on the elevation". On each project, sixth and seventh semester architectural design students led by an architect / tutor have designed, estimated the cost of and constructed the project on a large scale - delivering directly useful structures within tight constraints using intense creativity [Fig.6].

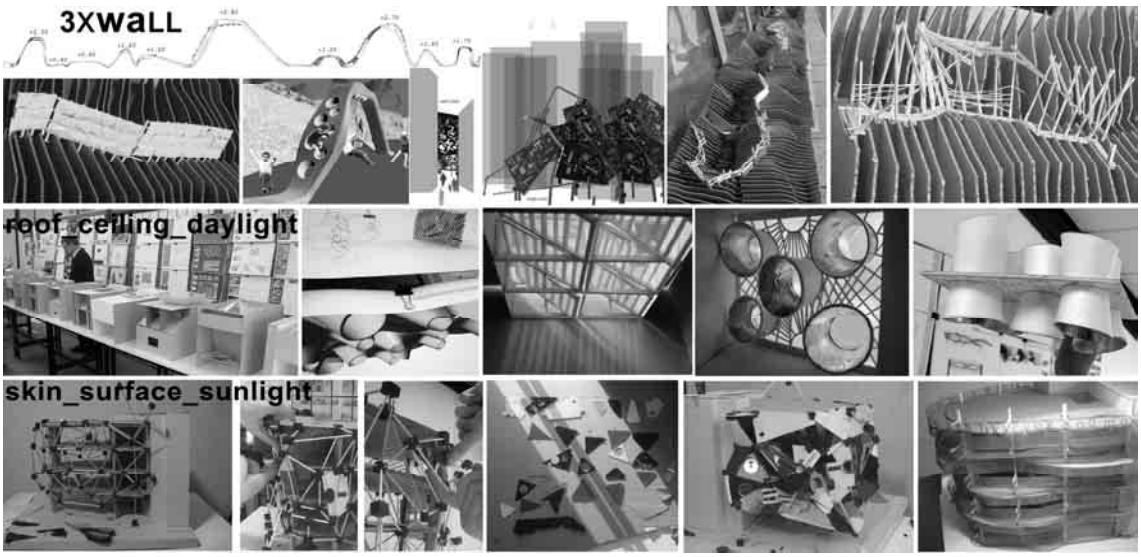

Figure 6. *Some experimental design and construction projects which are using the role of precision and close observation in the making or craft process.*

"Roles of design actors" [student and studio instructor]

The studio instructor as a leader should not be the arbiter and the only expert. On the contrary, the student should have a more active role, and become a person who experiences and produces rather than being a passive learner. Pedagogically speaking, a studio instructor is placed in design studio organization on the strength of his / her instruction and leading performance rather than individual skills and creative potential [Fig.7].

Beyond analytical, cognitive, psychological, symbolic and discursive activities, we identify four sets of activities carefully coined to acknowledge the everyday work of the project manager involved in creative projects. It may be suggested that the studio instructor acts as a sense-maker, a game-master, a chess-player or a flow-balancer.

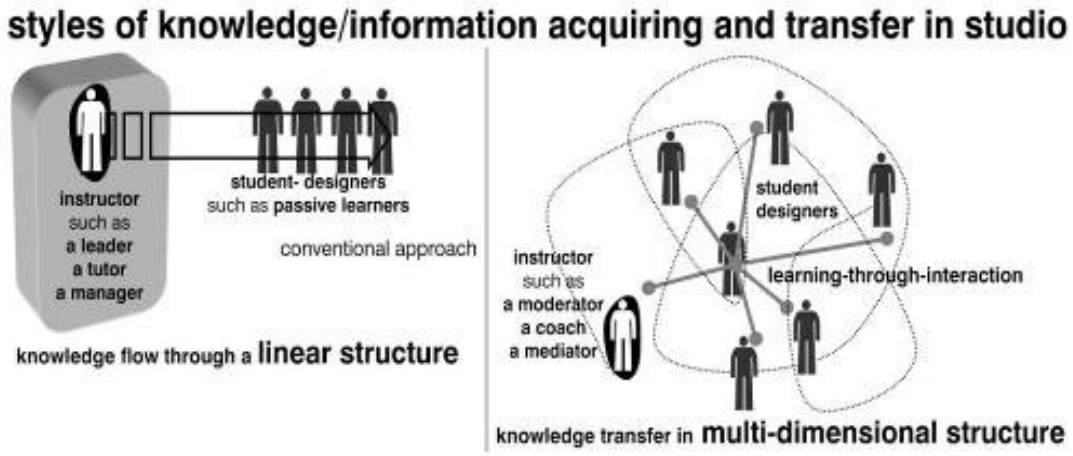

Figure 7. *Styles of knowledge acquiring and transferring and roles of students and studio-instructor in the studio.*

"*Ways and Tools of Communication*"

Ways and methods of communication between the studio-instructor and the students should be designed in a way other than a standard communication format with a conventional protocol, where the critics only focus on making corrections. Ideas are developed in the mind, while also exploiting various ways of external representations. The contemporary design studio within architecture education is the medium itself, and also contains the presentation tools. The design studio changes from a place that uses traditional analogue systems and their tools of presentation (such as sketches, drawings, reproduction-models, 2D-3D graphics…) to a place that opens itself to various media (such as, photography, cinematography, audio-visual recordings, computer-based representations –animation, 3D-4D, virtual or hybrid mediums…–, graphic-art-based presentations –collages, pictograms, ideograms, calligraphies…–) [Fig.8]. It provides an advantage in changing the way of communication. In studio instruction, when self-expression tools are given to each student-designer, communication channels are limited by these presentation tools. As a tool for the design process, when a student is given the opportunity to use the presentation method, he or she will look for ways of choosing the best tool to express himself / herself. A good performance shown by these means can also encourage other students to develop their own expression tools.

Figure 8. *Some examples of various media representations (models, films, collages, sketches etc.) as one of the communication tools.*

"Taking risks giving initiatives"
In the traditional sense, studio education uses control in order to eliminate surprises, it contemplates problem-solving, creates a stable environment, and avoids taking excessive risks, while on the other hand there is the need to enhance new ideas, which requires a certain freedom of action, that is to say, the possibility of translating one's own ideas into something practical, and also allows the possibility of making mistakes. Here is an example (on giving initiatives); the student takes on the role of a person giving criticism, and has the experience of producing ideas, and criticizing someone else's thought; by shifting from inside to the outside of the design problem, it also provides the student with "a new, acquired experience" for moving out of the classical instruction system. Organizing sub-teamwork design activity can also be given as an example in taking creative risk. In a design study performed by a group, different experiences can be gained from the individually performed design activities. During individual design processes, equal performance is expended on each stage and scope of the design task, while in teamwork, each participant can reach the limits of looking for areas that lead him / her to inventions and testing the potential of being more selective.

"Motivation" and "intensity generators"
In the drawing up of the programme for the design studio, which undeniably has an effective role in design education, among the organizational priorities should be individuals who are creative, original, and open to critical thought, who follow changes and developments in all fields and motivate, and projects that are future-oriented (AIAS, 2008).

Challenging work, recognition, responsibilities that give positive satisfaction and self-actualisation are growth-motivated rather than deficiency-motivated. In knowledge-sharing communities and organizations, people often cite altruistic reasons for their participation, including contribution to a common good, a moral obligation to the group, mentorship or 'giving back'. In the studio, increasing the student's production can also increase, qualitatively and quantitatively, the trust and motivation.

Conclusions
This paper discusses "creativity within architectural design education" which is analyzed through "structure and organization of the architectural design studio". Design studio education is taken as an organizational structure, and the position of the studio instructor in constituting an organizational style in studio education is the subject of investigation.

For this reason, an attempt has been made to put forward common key assumptions that are representative of a pioneering approach and that can be used to constitute data for design education in different fields and provide creative organization in studio design education within an organizational framework.

With this approach, the fundamental ground for debate of the study is to focus on the questions of "which contextual key elements that can influence the level and frequency of creative behaviours and encourage creativity will facilitate learning and knowledge creation in the organization of the design studio that is the core of design education".

Creativity is the production of useful and noble ideas (Amabile, 1996), and it can be taken as a starting point for learning and knowledge creation. It is also broadly influenced by the orientation to innovate, availability of resources, and practices that encourage challenge, freedom and risk-taking. Based on these (environmental) influences, five contextual elements can be developed. First, a creative atmosphere needs freedom of expression and the definition of performance for the organizations. Second, leadership is required to provide an organizational orientation toward learning and knowledge creation. Third, sufficient resources should be made available for quality improvement. Fourth, engaging in challenging work systems can lead to innovative solutions. And finally, trust building creates a psychologically safe environment for freedom and risk-taking in learning and knowledge creation.

These influences practically become an article of faith that the supportive instructional environment, which is the studio in the context of architectural education, is a key factor for ensuring that a person's creative potential is realized. This is a factor that, unlike the characteristics of students, can be influenced by the instructor through the organization and management of the (design) studio and the teaching strategies that are used.

Design education, due to its nature of perpetuating itself as an ongoing process in daily life and outside the formal education system, has multiple inputs that effect and form its creative value. It is not sufficient to train the students in just gaining skills. To move away from this approach and to help students to become more creative opportunities should be given to them to develop their talents or good work habits. There is a need to help the students to identify where their interests and skills overlap. The instructor was the key factor in the studio in fostering creativity by influencing students by, for instance, being tolerant, taking risks and being pro-active. A key factor was the ability of the instructor to provide a supportive, rewarding, well-resourced and safe studio milieu where students were encouraged to take risks and work co-operatively.

Variation in organizational perspectives provides a key source of creative tension necessary for the design process. Commonality in organizational perspectives provides the foundation for decisive action. Furthermore, individuals or groups working together for the same organization often develop a common base of tacit knowledge in the course of their research and production activities.
This study provides empirical evidence for the importance of leadership commitment, incentives and student interaction on the process and outcome of organizational structure. It is supportive of many conceptual studies in the literature. The results show that each of these factors has a different role and impact on the organizational process and outcomes. From the management point of view, the results in this study suggest several meaningful implications. For the organizations that want to enhance organizational creativity, the most important emphasis is the full commitment of leadership. From this commitment, supportive attitudes, behaviours and incentives will follow. This creates an environment in which knowledge acquisition, sharing and utilization will be facilitated. The organizational structure and operations should also be designed in such a way as to maximize the interaction among students in terms of knowledge and information. Lastly, a creative culture and climate should be nurtured on a

continuous basis. The findings about leadership commitment are similar to what might be expected in a design studio.

An architectural design studio should be more than a place of knowledge transfer and acquisition for students as active participants, and for the studio tutor as a moderator, and should become a medium for improvisation. In this approach, the *studio tutor* is more of *a 'mediator'* or *'moderator'* than a director or manager. In other words, a *"coach for a creative climate"*.

Innovation research often highlights the importance of value profiles that support both flexibility and control. Likewise, "what is clear is that the design studio organization of the future", in order to succeed, will become less dependent on the independent actions of disaggregated individuals. To succeed, organizations will have to develop a competency in the design and leadership of executive teams, a collective skill that will be just as important as the ability to design innovative strategies and organizational architectures.

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Mimari tasarım stüdyo organizasyonu ve yaratıcılık

Günümüz küresel ortamında, sosyal, kültürel, fiziksel, ekonomik yapılarda yaşanan değişimler; endüstriden-eğitime, pozitif bilimlerden sosyal bilimlere kadar, farklı ölçeklerdeki yönetimsel (kamusal, özel ve sivil içerikli oluşumların: ülke, kent, üniversite, özel işletme, STK vb.) organizasyonlara ilişkin yeni ve yaratıcı açılımları gündeme getirmektedir. Bu durum, doğal olarak mimarlık alanını ve eğitimini de etkilemekte; mimarlık alanının bütünü veya alt bileşenlerinde kurgulanabilecek, yeni / yaratıcı yaklaşımları ve potansiyel açılımları araştırmaya yönlendirmektedir.

Yaratıcılık, ilk kuramsal yaklaşımlardaki tanımlamalarında, kısa sürede ortaya çıkan, "*bireysel"* bir düşünce, süreç veya ürün olarak yer almıştır. Ancak, günümüzde sözü edilen değişim koşulları, ihtiyaçları, iletişim kanalları, 'disiplin-içi, disiplinler-arası ve disiplinler-ötesi' oluşan yeni etkileşimlerin gerekliliklerin de etkisiyle; güncel yaklaşımlarda, yaratıcılık üzerine yapılan tanımlamaların ve çalışmaların odağı, bireysel düzeyden, grup ve organizasyonel düzeye yönlenmektedir. Böylece, yaratıcılık üzerine farklı disiplin alanlarında yapılan araştırmalarda, *'grup çalışmaları, koordinasyon ve organizasyonel kurgular'* üzerine odaklanan çalışmaların sayısı artmaya başlamıştır.

Mimari tasarım eğitiminde yaratıcılık konusunu, "stüdyo eğitimi" üzerine odaklanarak ele alan bu makalede; stüdyonun organizasyonel bir yapı olduğu ve bu yapıyı kurgulayan kişi olarak stüdyo yürütücüsünün, stüdyo eğitimi için "organizasyonel bir kurgu ve stil" oluşturmadaki konumu sorgulanmaktadır. Bu amaçla, özellikle stüdyo eğitiminin organizasyonel yapısı için, yaratıcı stratejiler geliştirme konusuna odaklanılmış ve çalışmayı bu yönde şekillendiren aktif bileşen veya katmanlar,

- *grup organizasyonu,*
- *ekip çalışması,*

- *iletişim ortamı olarak 'stüdyo',*
- *öğrenci-tasarımcı ve stüdyo yürütücüsünün rolleri,*
- *iletişim,*
- *bilgi ve informasyonun elde edilmesi ve aktarım şekilleri,*
- *farklı temsil ortamları ve araçları,*
- *risk ve motivasyon yönetimi*

olarak kabul edilmiştir.

Tasarım eğitimi için yaratıcı stratejiler geliştirme konusunda, makro ölçekte, *"eğitim politikaları, eğitim program ve stratejileri, teknoloji"* gibi; mikro ölçekte ise, bireysel üstünlükler ve tasarım alanının alt-bileşenlerinden sayılabilecek, *"bilişsel stiller, bireysel yaratıcılık değerleri, tasarım bilgisi, tasarım problemi ve tasarım süreci"* gibi - her biri ayrı bir araştırmaya konu olabilecek- katman ve bileşenler ise çalışmanın odaklanılan çerçevesinin dışında bırakılmıştır.

Çalışmanın kuramsal çerçevesinde, öncelikle, farklı disiplin alanlarında (iş yönetimi, işletme, pazarlama, eğitim vb.) yapılan güncel araştırmalarda, "yaratıcılık ve yaratıcı organizasyonlar oluşturma" konularında ortaya konan ortak kriterlerin belirlenmesine odaklanılmaktadır. Bu ortak veriler üzerine kısa bir değerlendirme yapıldığında, yaratıcılığı tetiklemek ve arttırmakla ilişkilendirilen konuların başında; *"takım birlikteliği; çeşitlilik ve farklılık yaratma becerisi; motivasyon; grup üyeleri arasındaki etkileşim, iletişim ve paylaşım dereceleri; yönetme/yönetim stilleri; organizasyonel kurgunun bileşenleri; performans yükseltme kriterleri "* gibi konular gelmektedir.

Bu noktada, -çalışmanın varsayımsal boyutunu da oluşturacağı düşünülen- amaç; sözü edilen kuramsal verilerin ışığında, mimarlık eğitiminin temelini oluşturan tasarım stüdyosunun kurgusu ve organizasyonuna ışık tutacak kritik çıkarımlar yapabilmektir. Bu çıkarımlar, çok yönlü bir stüdyo eğitiminin organizasyonel kurgusu içinde, "yaratıcılığa" getireceği potansiyelleri dikkate alınarak tespit edilmeye çalışılmıştır. Amaç, alternatif bir model ortaya koymak değil; farklı disiplinlerde ortaya konan **"yaratıcı-organizasyonlar" oluşturmada etkin olan ortak kriterlerin**, -yaratıcı bir ortam ve organizasyon olarak tanımlanan- **stüdyo eğitimindeki karşılıklarının** ve **yaratıcılık potansiyellerinin** araştırılmasıdır. Çalışmanın varsayımsal alanını oluşturan, bu *"kriter-karşılaştırmaları"*na ait üst başlıklar:

- organizasyonel bir sistem olarak, ***"stüdyo programının kurgusu ve içeriği"*,**
- yaratıcı-organizasyonel bir atmosfer olarak, **"*stüdyo ortamı*";**
- stüdyonun aktif aktörleri olarak,***"öğrenci-tasarımcı"*** **ve** ***"stüdyo yürütücüsü" nün rolleri;***
- operasyonel stratejiler, kaynaklar ve yetenekler/yetkinlikler olarak, ***bilgi ve informasyon kazanımı* ve *aktarım stilleri/ tarzları;***
- ***iletişim yolları* ve *iletişim araçları;***
- ***"risk" alma* ve *"insiyatif" verme*;**
- ***"motivasyon"* ve *"konsantrasyon üretkenleri"*** olarak ele alınmıştır.

Çalışmada bu üst başlıklara ilişkin karşılıklar, yazarın yürütücü olarak içinde yer aldığı farklı stüdyo organizasyonlarında edindiği deneyim ve uygulamalar temel alınarak örneklenmeye çalışılmıştır. Bu örneklerin belirlenmesi ve yorumlanmasında, "gözlem" ve "betimleyici okuma/ haritalama" tekniklerinden yararlanılmıştır.