Journal of **design studio**

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Journal of **Design Studio**

Journal of Design Studio is a peer reviewed journal published two issues per year, **July** and **December**. Journal of Design Studio is an open access electronic journal. There is not a publication charge. Articles appeared in the journal cannot be used, whole article or in part, without proper referencing.

The journal aims to publish scientific articles based on design studio education of different disciplines, especially in architecture, interior design, urban design, industrial design, communication design, graphic design, fashion design and all other design disciplines.

In addition to publication of scientific papers, the journal may include good studio practices and book reviews in the field.

All articles in the journal are subject to two peer reviewers' evaluation, all articles can be published after publishing decision of this peer review process.

ΑΙΜ

The aim of the Journal of Design Studio is bringing different design studio researchers together on a multidisciplinary design studio research platform. This design studio research platform gives the researchers who made experimental studies in their design studio education to share their works with the other researchers in the same area or similar research fields. The scope of the Journal of Design Studios include all research and experimental works realized in all type of design studios.

SCOPE

Design studio pedagogy, Design theories and methods for studio works, Architectural design studio education, Design principles for studio work, Product design studios, Interior design studios, Urban design studios, Landscape design studio, Communication design studio, Graphic design studio, Media design studio, Fashion design studio, New trends in design studios, Virtual design studios, Design thinking, Studio culture, Studio teaching. Innovative and creative works in design studios Quality assessment in studio work, Collaborative design studies in design studios, Integrated design studio, Design studio practice,

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ABSTRACTING / INDEXING

Journal of **Design Studio**

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Editorial

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Editorial

Journal of Design Studio is a peer reviewed e-journal publishing two issues per year respectively in July and December. Journal of Design Studio is an open access electronic journal available on DergiPark.

The journal aims to publish scientific articles based on design studio education of different disciplines, especially in architecture, interior design, urban design, industrial design, communication design, graphic design, fashion design and all other design disciplines. The extended scope of the journal includes research fields such as design studio pedagogy, design theories and methods for studio works, architectural design studio education, design principles for studio work, product design studios, interior design studios, urban design studios, landscape design studio, communication design studio, graphic design studio, media design studio, fashion design studio, new trends in design studios, virtual design studios, design thinking, studio culture, studio teaching, innovative and creative works in design studios, quality assessment in studio work, collaborative design studies in design studios and integrated design studio.

In addition to publication of scientific papers, the journal may include good studio practices and book reviews in the field. Articles may be submitted to Journal of Design Studio page on Dergi Park, following the instructions on the website. All articles in the journal are subject to two peer reviewers' evaluation and can be published after the decision of this peer review process.

The first issue of Journal of Design Studio comprises six research articles. The first two articles address the issue of architectural design studio theory and practice. Four other research articles elaborate various architectural design issues, including biophilic design, innovative mosque design, computational design and morphogenesis and lastly, current issues professional architectural practice.

The first article by Orhan Hacıhasanoğlu is entitled "Architectural Design Studio Culture". This article focuses on studio culture approaches in architectural design studios in 10 NAAB accredited architecture schools in United States. The article compares studio policies of schools according to its own corporate culture and criteria defined in the accreditation body.

The second article by Orhan Hacıhasanoğlu and İlgi Toprak is entitled "Architectural Design Products of Students at İstanbul Fine Arts Academy from 1930's". This article involves archival research for architecture student projects in the 1930's mainly using the visual and narrative inquiry from the journal Arkitekt.

The third article by Arwa Elmashharawi concentrates on the effects of biophilic design and its applications in the architectural design of the innovatioc centre in Özyeğin University. The inquiry puts forward that the innovation centre OZU X stands as one of the good implementations using six different elements of biophilic design.

The fourth article by Zahraa Alkhaled studies contemporary mosques in Turkey and aims to create a classification for the contemporary mosques' in terms of style expression and design approach.

The fifth article by Aseel A. Abdullah is entitled "Computational approach and morphogenesis, role of nature in concept generation process in design and architecture". The morphogenesis approach relies on the computational thinking and while integrating biology and architecture it also pushes the limits of mathematics in architectural design.

The last article by Valerio Musiitwa is entitled "Obsolete? Relevance of the architect's role and the changing nature of the architectural profession". This article addresses the issues of contemporary architects' role in the architectural design process in relation to innovation, communication and knowledge management.

Architectural Design Studio Culture

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Recieved: May 24th 2019, Revised: June 31st 2019, Accepted: July 26th 2019 Refer: Hacihasanoglu, O., (2019), Architectural Design Studio Culture, Journal of Design Studio, V.1, N.1, pp 5-16,

Abstract: Studio culture is one of the basic subject in design education. Since many design education curriculum had design studios in which design education take place as a special type of educational environment students and teachers in the studios interacted in a very special way. Studio culture basically came into architectural education in late 1990s at schools of architecture of United States of America. American Institute of Architecture Students prepared a report for studio culture in architectural education. The basic approach of this report base on the interactions and behaviors of actors in between the architectural design studio with stakeholders.

The methodology used in this study is based on the investigation on correlation between the studio culture parameters suggested by American Institute of Architecture Students in the 2002 report which are summarized as Design-thinking skills, Design process as much as design product, Leadership development, Collaboration over competition, Meaningful community engagement and service, The importance of people, clients, users, communities, and society in design decisions, Interdisciplinary and cross-disciplinary learning, Confidence without arrogance, Oral and written communication to complement visual and graphic communication, Healthy and constructive critiques, Healthy and safe lifestyles for students, Balance between studio and non-studio courses, Emphasis on the value of time, Understanding of the ethical, social, political, and economic forces that impact design, Clear expectations and objectives for learning, An environment that respects and promotes diversity, Successful and clear methods of student assessment, Innovation in creating alternative teaching and learning methodologies. Methodology of this paper based on the problem of finding interaction between studio culture approaches of 10 architectural schools of USA in bachelor and graduate level out of top 20 according Times Higher Education 2019 field ranking with parameters defined by American Institute of Architecture Students. Findings show us that each school define its studio culture policy according to its own corporate culture, although there is a common similarity in the criteria defined by accreditation body.

Keywords: Architecture, design, studio, culture

Introduction:

Architectural design studio culture is considered as an important part of educational philosophy of schools of architecture starting from late 1990's in USA. NAAB National Architectural Accreditation Board define as "Learning Culture: The program must demonstrate that it provides a positive and respectful learning environment that encourages optimism, respect, sharing, engagement, and innovation between and among the members of its faculty, student body, administration, and staff in all learning environments, both traditional and nontraditional" (NAAB, 2014).

Architecture programs had been suggested by NAAB to have "a written studio culture policy adopted a for its implementation, including dissemination to all members of the learning community, regular evaluation, and continuous improvement or revision. In addition, the plan must address the values of time management, general health and well-being, work-school-life balance, and professional conduct" (NAAB, 2014). The architectural education program should describe the ways in which students and faculty are encouraged to learn both inside and outside the classroom or studio through individual and collective learning opportunities according to NAAB. These opportunities may include field trips, participation in professional societies and organizations, honor societies, and other program specific or campus wide and community wide activities.

The American Institute of Architecture Students prepared "The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force" as one of the partner of NAAB in 2002 which had six chapters titled as studio culture critiqued, describing studio culture, current aspects of studio culture, new visions shared values, a call for action, a new program for the design studio culture (Koch et. al., 2002).

Chapter on the "Studio culture critiqued" explores the current state of studio education, examines outside forces impacting architecture education and calls for change in studio culture. Describing studio culture, analyzes the historical roots of studio culture, states a series of myths prevalent within studio education and discusses other elements that characterize this culture. In current aspects of studio culture chapter had been providing a more in-depth commentary on twelve topics that report authors feel most be questioned in order to design a more successful studio culture. New visions, shared values section proposes five values for a new studio culture for an architectural design studio, optimism, respect, sharing, engagement and innovation which are related with the expectation of the organization for necessary change for the studios. In a call for action section of the report had suggestions on the role of students. educators. administrators, and organizations can play in shaping a new future for architecture education. A new program for the design studio chapter gave a list of goals that can be embraced in creating change. In summary this report prepared to cerate a healthier and more successful studio culture, architecture schools will need to rethink existing practice and develop creative alternatives. They suggest to design a studio culture that promotes following items seen in the Table 1. (Koch et.al. 2002).

Design-thinking skills	
Design process as much as design product	
Leadership development	
Collaboration over competition	
Meaningful community engagement and service	
The importance of people, clients, users, communities,	
and society in design decisions	
Interdisciplinary and cross-disciplinary learning	
Confidence without arrogance	
Oral and written communication to complement visual	
and graphic communication	
Healthy and constructive critiques	
Healthy and safe lifestyles for students	
Balance between studio and non-studio courses	
Emphasis on the value of time	
Understanding of the ethical, social, political, and	
economic forces that impact design	
Clear expectations and objectives for learning	
An environment that respects and promotes diversity	
Successful and clear methods of student assessment	
Innovation in creating alternative teaching and	
learning methodologies	

 Table 1. Studio Culture Evaluation Parameters

This paper focus on studio culture of 10 schools of architecture which are derived out of the first 20 undergraduate and graduate level architecture schools in USA according to Times Higher Education in 2019. Those are selected to find interaction of the studio culture approaches of these architecture schools with the primary parameters of establishment of studio culture by American Institute of Architecture Students.

Methodology:

The methodology used in this study is based on the investigation on correlation between the studio culture parameters suggested by American Institute of Architecture Students in the 2002 report which are seen in Table 1 of this paper and the studio culture approaches of 10 architectural schools of USA in bachelor and graduate level. These schools had been selected among the top 20 universities of architecture at undergraduate level according to Times Higher Education are listed as below:

- 1. (4) Massachusetts Institute of Technology
- 2. (6) Harvard University
- 3. (7) Princeton University
- 4. (15) University of California, Berkeley
- 5. (17) University of California, Los Angeles
- 6. (19) Cornell University
- 7. (20) University of Michigan-Ann Arbor
- 8. (24) Carnegie Mellon University
- 9. (28) University of Washington
- 10. (39) University of Texas at Austin

Studio culture of these schools of architecture are searched to find the inter-relation between the parameters listed in Table 1.

1. MIT Studio Culture Policy:

The Department of Architecture in MIT School of Architecture and Planning Department of Architecture promotes a learning environment that supports the diverse values of the entire MIT community of students, faculty, administration, staff and guests. Fundamental to the mission of architectural education is the stewardship of this diversity in a positive and respectful learning environment that promotes the highest intellectual integrity and cultural literacy. As architectural design learning is often accomplished through project-based activities during and outside of class times, maintaining this environment at all times is the responsibility of the entire community. Faculty and students should make an effort to understand and mutually respect the varied commitments of each other and work together to manage expectations of time and effort devoted to assignments, pin-ups, and public reviews. Students are responsible for cleaning their own studio workstations at the end of each term (URL 1.).

Design-thinking skills	1
Design process as much as design product	1

Leadership development	0
Collaboration over competition	1
Meaningful community engagement and	0
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	0
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	0
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	1
assessment	
Innovation in creating alternative teaching and	0
learning methodologies	

2. Harvard University Studio Culture Policy: Harvard Graduate School of Design suggests that "Whatever our individual roles, and wherever we work within Harvard, we owe it to one another to uphold certain basic values of the community: a) Conscientious pursuit of excellence in one's work, b) Respect for the rights, differences, and dignity of others, c) Honesty and integrity in dealing with all members of the community, d) Accountability for personal behavior" (URL 4).

Table 3. Harvard University Studio Culture Policy

Design-thinking skills1Design process as much as design product1Leadership development1Collaboration over competition1Meaningful community engagement and service1The importance of people, clients, users, communities, and society in design decisions1Interdisciplinary and cross-disciplinary learning1Confidence without arrogance0Oral and written communication to complement visual and graphic communication0Healthy and constructive critiques0Healthy and safe lifestyles for students1Balance between studio and non-studio courses0Emphasis on the value of time0Understanding of the ethical, social, political, and economic forces that impact design1An environment that respects and promotes diversity1Successful and clear methods of student assessment1Innovation in creating alternative teaching and learning methodologies1		~
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visual and graphic communicationHealthy and constructive critiques0Healthy and safe lifestyles for students1Balance between studio and non-studio courses0Emphasis on the value of time0Understanding of the ethical, social, political, and economic forces that impact design1Clear expectations and objectives for learning1An environment that respects and promotes diversity1Successful and clear methods of student assessment1Innovation in creating alternative teaching and learning methodologies1	Oral and written communication to complement	0
Healthy and constructive critiques0Healthy and safe lifestyles for students1Balance between studio and non-studio courses0Emphasis on the value of time0Understanding of the ethical, social, political, and economic forces that impact design1Clear expectations and objectives for learning1An environment that respects and promotes diversity1Successful and clear methods of student assessment1Innovation in creating alternative teaching and learning methodologies1	visual and graphic communication	
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Balance between studio and non-studio courses0Emphasis on the value of time0Understanding of the ethical, social, political, and economic forces that impact design1Clear expectations and objectives for learning1An environment that respects and promotes diversity1Successful and clear methods of student assessment1Innovation in creating alternative teaching and learning methodologies1	Healthy and safe lifestyles for students	1
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Successful and clear methods of student1assessment1Innovation in creating alternative teaching and learning methodologies1	diversity	
assessmentInnovation in creating alternative teaching and learning methodologies1	Successful and clear methods of student	1
Innovation in creating alternative teaching and 1 learning methodologies	assessment	
learning methodologies	Innovation in creating alternative teaching and	1
	learning methodologies	

The goal of the Harvard GSD studio teaching method is to achieve a free exchange of ideas in an atmosphere of mutual respect. At the core of all of our activities at the GSD are our collective values of excellence, respect, honesty, integrity, and accountability. The GSD has adopted a Community Values Statement which is regularly communicated to all members of the GSD community.

3.Princeton University Studio Culture Policy:

Studio culture policy of Princeton University based on the idea studio acts as the backbone of curriculum. Students are encouraged to work with a wide range of media, and to think about issues of process and representation parallel to design work. In studio work, material from the entire curriculum comes into play; students are encouraged to integrate material from courses in design, building technology, history/theory and professional practice. Studio work is a collaborative process: an ongoing conversation with teachers, fellow students and visiting critics.

According to studio culture document of Princeton University, studio is the place where students research, propose, test, develop, and present design propositions that synthesize material from a diverse range of sources, both inside and outside the curriculum. It is a place of collaboration, intellectual exchange and experimentation for students and faculty alike. The design studio is a place where students learn by doing; the school promotes creativity, and celebrates the values of innovation and discovery. The studio is also a place to take responsibility for what a student has created, and to be able to present and defend a student's work in public. Students are very strongly encouraged to work in studio, in order to benefit from and contribute to this crucial collective dialogue. The School of Architecture at Princeton University try to create an atmosphere of mutual respect among students, staff, faculty, and administration, in studio, in reviews, in classes, and in the school in general.

Studio culture encompasses a number of distinct aspects of design teaching: class sessions and group meetings in which ideas, studio problems or readings are discussed; individual tutorials (desk crits), which are perhaps the most characteristic component of design studio teaching; public reviews of varying degrees of formality (with and without outside critics); and finally the private time spent working in studio, where individual or group projects are developed and produced. Studio culture policy document also gives conditions about time managements of students. "While studio is a home, the School of Architecture does not expect students to live there". The section entitled "Critiques and Reviews" in studio culture policy explain studio critics as follows: "In architecture, as in other creative fields, there is no single, shared set of objective criteria that allow us to say definitively that a project or solution is right or wrong, good or bad. It is for this reason that discussion and criticism on reviews tends to concentrate on clarity and consistency, as opposed to making judgments of value or quality. Criticism should be specific in nature and dedicated to advancing the student's work. Studio Grades Taking into account the difficulty of assigning objective letter grades to the inherently subjective work of studio, all design studios are graded on a Pass/Fail basis on the student's official transcript". Criticism and advice provide in desk crits, pin-ups and reviews will form a more substantial and productive evaluation, and in all studios, the design teacher is required to give a detailed written or verbal evaluation that addresses each individual student's strengths and areas for improvement, and outlines recommendations for further work and future studios. (URL 5.)

 Table 4. Princeton University Studio Culture Policy

 Design_thinking skills

Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	0
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	1
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	1
assessment	
Innovation in creating alternative teaching and	1
learning methodologies	

4. University of California, Berkeley Studio Culture Policy:

The Studio Culture policy document has been written by faculty and students to reflect their concern for a studio culture that supports creativity and invention, respect and collaboration, health and safety, an ecology of materials, and optimism about the role of design in the larger cultural framework.

The first part of studio culture is on health and safety. Efficiency, responsibility and health are equally essential components of effective studio work, and are valued by school's design culture. Students encourage that they are not effective in their own work or in collaboration with others if they regularly work beyond their reasonable limits.

Studio culture based on the College and the Department studio culture which make a holistic approach to studio ecology. Students restraint in using materials that are unsustainable, the recycling of (ideally all) materials for the future reuse by others, and an exchange of information within the studio about material issues.

Second chapter of studio culture of Berkeley based on the idea of collaboration trumps competition. Students and faculty maintain an atmosphere of mutual respect for and interest in each other's ideas. Student work will always benefit from conversations with colleagues about shared themes, precedents and resources. Even in a portable, digital age, it is an essential requirement that design happens in the studio. Working in studio moves beyond logistics, nurturing studio culture and fostering the collaborative atmosphere that we most value. At the same time, care for our working environment is an essential part of our design ethic.

The third chapter of studio culture policy explains optimism and invention. "None of the above should serve to dampen the creative spirit and faith in the design enterprise as essential components of architecture, and its ability to serve our larger cultural agenda". This statement of policy reflects on-going values embraced by the Department. (URL 3.)

Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	0
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	0
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1

Table 5. University of California, Berkeley StudioCulture Policy:

An environment that respects and promotes diversity	1
Successful and clear methods of student	0
assessment	
Innovation in creating alternative teaching and	1
learning methodologies	

5. University of California, Los Angeles Studio Culture Policy:

At UCLA Architecture and Urban Design (AUD), the design studio is not only the heart of the formal curriculum of architectural study, it is also a space where the academic mission of the school intersects with the social and cultural phenomena that surround architectural education. Studio culture policy of UCLA School of Architecture covers twelve chapters.

The Intellectual Diversity chapter gives information about the wide variety of backgrounds, the members of AUD community which constitute a rich, intellectually diverse group. All members of UCLA community conduct themselves with the highest ethical principles and regard for others.

The second chapter of studio culture document relates studio attendance and work. Studio is offered as a collective, open environment for the sharing of ideas and opinions among both faculty and students, a crucial element in the personal development of each member of the AUD community. This world of dialogue can only be fostered through a critical mass of energy, both during and beyond studio hours. Students' participation in this community is as crucial to the success of their colleagues as it is to their own. Each student is encouraged to be organized, thoughtful, and motivated by this atelier-like setting, treating it and all within it as they would in a professional architectural studio. All drawings, models, books, computers, and any other such artifacts or tools in the studio are to be produced, used, or maintained with the utmost care.

The chapter which is entitled as "Studio Content / The Fundamental and the Experimental", explains the studio approaches. The school aims to educate students with the most innovative tools, techniques, and concepts available today. Course material presented should be based on subject matter that reflects a keen understanding of both historical and contemporary issues and how they relate to the architectural problem at hand.

A collaborative approach chapter is based on the collaborative studies in the studio. Design studio should promote collaborative learning experiences by developing both research and design components using team building and collective scenarios that reflect the profession's reliance on cooperation. In addition, Design studios should continue to encourage the active engagement of other disciplines both from within the UCLA community and from the wider professional community such as corporations, institutions, and civic agencies.

Interactions between studios defined as "Studio to Studio Interaction" in the studio culture policy. The boundary-free proximity of most studios facilitates joint studio events, both formal and informal. These events help to keep individual design studios engaged with the larger studio collective and expand the breadth of investigation. Beyond group reviews set up between studios in the core years, faculty are encouraged to invite colleagues from other levels and disciplines (within the Department) to deliver mini-lectures or conversations on diverse topics for their respective students.

Expected behaviors and responsibilities of students in the architectural design studio is defined "Studio Etiquette" chapter of the document as "Students are expected to understand the value of working in studio, as well as the importance of etiquette to ensure a respectful, civil working environment. In terms of communication and common discourse, everyone should listen, consider, and respond with respect to others and their ideas. Respectful debate is at the heart of education and it should be held within generous and supportive conditions". This chapter also explains how the studios and common spaces should be used by students.

Time Management is another chapter in the studio culture document which is giving information about the importance of time spending and scheduling. "As architecture is a demanding, time consuming curriculum, it is necessary for students to quickly develop an understanding of time management relative to workloads and deadlines." Students are urged to avoid working continuously through the night as it leads to physical and mental exhaustion.

Process / Critiques chapter dedicated the idea of work done in studio is understood to be cumulative, not entirely focused on the outcome of the final review. It is imperative for students to understand that continuous production is central to the development of conceptual and technical skills. Faculty should stress the value of preliminary studies produced for intermediate pin ups and weekly desk crits.

The review process chapter explains the studio process. Throughout the quarter, each studio will schedule mid-term and final reviews that are intended to create benchmarks for the completion of work, and more importantly, to offer each student

feedback that is critical to their development as designers. All faculty are required to stage formal reviews in a public setting so that the work and the discussion has the maximum amount of exposure and impact in the Department. Students are required to attend, present, and participate in all design reviews organized by their instructor.

Chapter which is entitled as "Public Presentations" explains the public information about studio works. The Department's year end review/celebration was instituted in 2008 as an event that would bring together all of the studio final reviews of the spring quarter on a single day. All faculty and students shall collaborate on an installation of the studio's work in designated spaces throughout the building. This event coalesces the work of the studios and allows all members of the community to gain a complete, comprehensive overview of our work at AUD.

"Community Responsibilities" chapter of studio culture document is based on AUD is a community within the larger community of UCLA School of Arts and Architecture as well as the wider University, Los Angeles, California, and the world. It should be recognized that the work and actions of the members of AUD reflect the integrity of the larger community at each level and that there is a mutual responsibility to create an environment of trust, respect and comfort for all members of the community.

Last chapter is entitled as "Studio Culture Policy Evaluation, Progress, and Implementation". To the ensure the effectiveness and implementation of the Studio Culture Policy should also be periodically, reviewed in an open forum that invites the participation of all students and faculty members (URL 6.).

Table 6. University of California Los Angeles
Studio Culture Policy

Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	1
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1

An environment that respects and promotes diversity	1
Successful and clear methods of student assessment	0
Innovation in creating alternative teaching and learning methodologies	1

6. Cornell University Studio Culture Policy:

Studio culture policy of Cornell University started with the chapter which is entitled as "Essential Components Studio Pedagogy": The department believes in and supports the pedagogical benefits and purpose of the studio teaching method: problembased learning, and learning by doing. The studio culture policy document explained the approaches on the studio space, studio culture, studio extensions, fundamental values, program philosophy, studio philosophy, policy, time management, design process, respect, collaboration, and diversity sections.

The second chapter of policy document related with studio space. The traditional studio space promotes interaction between students and faculty, as well as the opportunity for students to share in, learn from, and contribute to each other's work. The policy document gives information about studio culture as : "The predominating attitudes and behavior that characterize the functioning of a group in the studio context, in this case, the architectural community at Cornell AAP (students, faculty, administration, staff, and visitors)". Policy document also explains studio extensions as: "Extension of the traditional studio space includes fabrication and shop facilities, library, computer labs, review, and exhibition spaces." Fundamental values of the department are defined as "optimism for working towards a better world and a better-built environment", "respect for one another and respect for each other's work, goals, and differences", efforts, *"sharing* knowledge, ideas, and assistance", "engagement in studio, professional practice, and extended communities of creative practices". "innovation in studio projects, critical thinking, and alternative teaching methods".

Program philosophy section and studio philosophy sections are based on the basic approaches on architecture program and studio teaching and learning. The goal of the program is to produce conceptual thinkers, versed in the skills, history, theory, and science of their field. The studio is a creative and inclusive space that encourages dialogue, collaboration, creative thinking, innovation, and a "learning by doing" pedagogy. The design studio is a professional working environment in which students and faculty work together to ask questions, identify contemporary and emerging issues, and make proposals that explore architectural concepts and ideas.

Time management defined as an important indicator to a learning and professional working environment. The department supports its students and faculty in leading healthy, balanced lives, as well as having regard for each other's well-being. Design process section explained the idea of understanding studiobased learning as a unique and valuable model.

Studio culture policy also gives information about grades, respects, interdisciplinary learning, responsibility of faculty, in desk crits and reviews. Studio culture policy document of Cornell University ends with diversity approaches. (URL 7.).

Table 7. Cornell University Studio Culture Policy

Design-thinking skills				
Design process as much as design product	1			
Leadership development	1			
Collaboration over competition	0			
Meaningful community engagement and	1			
service				
The importance of people, clients, users,	1			
communities, and society in design decisions				
Interdisciplinary and cross-disciplinary learning	1			
Confidence without arrogance	0			
Oral and written communication to complement	1			
visual and graphic communication				
Healthy and constructive critiques	1			
Healthy and safe lifestyles for students	1			
Balance between studio and non-studio courses	1			
Emphasis on the value of time	1			
Understanding of the ethical, social, political,	1			
and economic forces that impact design				
Clear expectations and objectives for learning	0			
An environment that respects and promotes	1			
diversity				
Successful and clear methods of student	1			
assessment				
Innovation in creating alternative teaching and	1			
learning methodologies				

7. University of Michigan-Ann Arbor Studio Culture Policy:

Studio Policies and Culture of Taubman College of University of Michigan is committed to a positive and respectful learning environment through the encouragement of the fundamental values of optimism, respect, sharing, engagement, and innovation between and among the members of its faculty, student body, administration, and staff. Key to a healthy and productive learning environment is the establishment of an efficient daily routine that balances the well-being of the individual student with high academic standards. Students are advised to secure personal possessions and valuable equipment in locked drawers whenever leaving the desk area, including overnight, weekends, or during break periods. Per fire code, a clear circulation corridor through and around each studio must be maintained at all times.

Studio culture policy explain *plagiarism as that is* knowingly presenting another person's ideas, findings, images or written work as one's own by copying or reproducing without acknowledgement of the source. It is intellectual theft that violates basic academic standards. In order to uphold an equal evaluation for all work submitted, cases of plagiarism will be reviewed by the individual faculty member and/or the Program Chair.

Semester's End At the end of every semester each student is responsible for disposing of all trash, unwanted models and drawings, recycling paper, and sorting materials for re-use by others. Models may not be stored in the building.

At the conclusion of each semester, dismantle any models and bases you do not wish to take home. There are re-use bins at either end of the third floor. Any material or model deemed unusable by others should be taken to the dumpster located by the loading dock (URL 8).

culture 1 olley	
Design-thinking skills	0
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	0
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	0
assessment	
Innovation in creating alternative teaching and	0
learning methodologies	

Table 8. University of Michigan-Ann Arbor StudioCulture Policy

8. Carnegie Mellon University Studio Culture Policy:

The learning culture of the architecture program has been built upon its long history, as well as that of the SoA and the university more broadly. Strategic Plan" states: "the university is committed to cultivating an active, technology-enhanced, 'know how to learn' environment where each individual can grow and thrive. Culture that promotes both interdisciplinarity and design thinking, allows the school a great deal of personal contact from faculty to students, and from students in one program to the other, and even from one department to the next.

The official policies and aspirations of the learning culture, including the "Studio Culture Policy" learning culture, alongside SoA mission, academic curriculum, academic policies, student opportunities, and valuable resources in SoA are detailed in the undergraduate and graduate student handbooks. CMU's current interim president and past president have helped guide some of the leading universities in the nation to establish standards and policies that promote diversity, tolerance, and a desire for international outlooks. The university ethos and policy states in part:

"Carnegie Mellon is a community of diverse members committed to maintaining an environment that encourages personal and intellectual growth that promote our traditions of innovation, leadership, responsibility to society, learning, dedication, commitment to quality and commitment to each other. We are a community with high standards and high expectations for those who choose to become members, including established community standards intended to foster behavior that is consistent with a civil and educational setting. It is the responsibility of each community member to become familiar with the standards and expectations of the Carnegie Mellon community."

In the SoA "Studio Culture Policy", the philosophy is maintained that professionalism should be embodied by faculty, staff, and students and demonstrated in the work exhibited in a professional degree program. The SoA realizes that the studio is a *'melting pot' of sorts that contains these interactions* and their outcomes. Therefore, as a premise for deriving the guidelines for studio culture, they embrace the idea of professionalism as means to instill positive and productive relationships between all parties present in architectural education. Under the heading of professionalism, the SoA supports core values that further emphasize the importance of collaborative engagement, critical interaction, and decision making within the studio environment as follows:

Critical Practice: Innovate, question, reevaluate, and redefine in order to push for forward thinking in the study and practice of architecture.

Process/Product: Demonstrate the ability to actively participate in studio by creating work that challenges oneself in his/her specific skill-set level. Contribute – to the best of one's abilities – a product that is well-developed based on the conceptual objectives assigned.

Critique: Promote constant interaction between students and faculty in the critical discussion of both precedent study and student. Engage in public discourse about architecture whether it be at a personal final critique, a gallery showing, or a town hall meeting.

Engagement: Understand and be committed to studio content, and take advantage of resources. Work to achieve personal and academic goals in an effort to learn more from your work and that of your peers. Be present at every studio session as attendance and attentiveness are essential to success.

Communication: Voice suggestions, concerns, and opinions frequently. Have the judgement to understand on what level to communicate with peers and colleagues in all areas of architectural learning. Respect: Be respectful of others - their ideas, work and philosophies. Embrace the diversity of our community with regard to: race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information.

Commitment to Integrity: honestv without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations, once undertaken, must be met and commitments kept. Official policies on academic integrity, including cheating and plagiarism are outlined in The word. Keeping in mind the overarching theme of professionalism, the official Studio Culture Policy sets forth in great detail the guidelines for the development of the curriculum, the grading policy, the crit and review policy, and the responsibility of the design process. It also sets forth expectations for professional student-faculty interactions, studentstudent interactions, as well as expectations about the conduct in various SoA facilities.

An assessment of the level to which faculty, students, and staff understand the purposes for which the policy was established

B.Arch students are introduced to the School's policy on studio culture during orientation and in first semester seminar as a part of the School of Architecture policy review. In seminar, students are quizzed on policies including the studio culture policy.

SoA faculty are encouraged to read and discuss the Studio Culture Policy and staff are part of the editing process for the SoA Handbook wherein the policy is written (URL 2.).

Table 9.	Carnegie Mellon	University Studio Culture
Policv		

1 00009	
Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	1
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	1
assessment	
Innovation in creating alternative teaching and	1
learning methodologies	

9.University of Washington Studio Culture Policy:

Policy on Studio Culture of the Department of Architecture in University of Washington affirms that the design studio is the center of architectural education in the Bachelor of Arts in Architectural Design and the Master of Architecture programs. In these programs, the design studio is central as a spatial configuration, a pedagogical model, and a cultural practice. This is reflected in the space dedicated to studios, and the large number of credits and faculty contact hours the department commits to design studio courses in these programs. Each student enrolled in architecture department will be given exclusive use of a work space in a design studio as long as he or she is registered for a regular studio course, or for no less than one quarter in the master's thesis.

The studio space shall function as an effective place for students to work. Students shall have 24-hour access to studios during the quarter. The studios shall be adequately furnished with desks, shared workspaces, pin-up surfaces, and digital networking to facilitate work that can be expected of students. Students in the studio will also have access to wood and metal working labs, digital fabrication resources, computers, and a range of input and output devices housed elsewhere in the College of Built Environments. The studio environment shall be conducive to faculty and student health, safety, and productivity. Recognizing that studio spaces are subject to extraordinary usage pressures, the Department will enforce quarterly studio clean-up policies for students and work with university custodians to assure that studio spaces are adequately maintained and cleaned. Students are expected to treat studio spaces with respect at all times. Students also must comply with rules regarding studio clean-up and the use of noxious substances in studio spaces and university buildings.

Although studio faculty are responsible for the organization and progress of the studio during the quarter, much of the work students do in a design studio is self-motivated and self-directed. Because architectural design is a complex and timeconsuming process, in order to excel students must often dedicate significant time and energy to architectural design studio courses. This will often be somewhat out of proportion with the effort necessary to excel in other courses. The demands of design studio should not, however, adversely affect students' performance in other classes, nor should it upset the appropriate balance of academic and nonacademic pursuits. Faculty therefore must set fair and reasonable expectations for adequate performance in the studios, and also provide regular, productive feedback to each student on the progress of his or her work in the studio. There is a guideline for design studios.

Instruction in the studio shall foster a collaborative environment conducive to the mutual interests of the students and faculty. The department strongly encourages students to do as much of their studio course work in the studio as possible, in order to take advantage of the collaborative opportunities the studio space allows and to develop a strong sense of class cohesiveness.

Students in architecture design studios often spend many hours together during the course of a quarter. The studio must be a comfortable place for students to work and interact with other students and faculty. Students are expected to behave respectfully and professionally at all times in the studio (URL 9).

Table 10. University of Washington Studio Culture Policy:

Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	0

Confidence without arrogance	0
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	0
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	1
assessment	
Innovation in creating alternative teaching and	1
learning methodologies	

10. University of Texas at Austin Studio Culture Policy:

The University of Texas at Austin School of Architecture believes in the value of the design studio model. Studio learning encourages dialogue, collaboration, risk-taking, innovation, and learningby-doing. The studio offers an environment where students can come together to ask questions and make proposals, which are developed and discussed among classmates, faculty, visiting professionals, and the public-at-large. Studio learning offers intensive one-on-one instruction from faculty members, and provides the opportunity for each student to develop his/her critical thinking skills and spatial and material sensibilities.

The school encourages students to embrace studiobased learning as a unique and valuable educational model. Studio creates an environment which allows open-ended questions, for which there may be no "right" answers.

The school supports its students and faculty in leading balanced lives. Students are encouraged to work smarter, not necessarily longer in studio. The school affirms the value of design intention, design process, as well as design product, thus both encouraging and evaluating (1) the student's understanding of the ideas that motivate and the forces that inform the project at hand ("grasp"), (2) the student's assiduousness in the development of ideas and use of information in the process of design ("process" or "effort"), and (3) the material and graphic quality of the studio's final products — be they models, drawings, or representations in other media — as well as the appositeness of the proposed design in itsreal-world context ("product"). Grades are but one measure of a student's performance in studio. Advising and counseling are considered integral to a student's studio evaluation.

In addition to individual design projects, the school values partner and group projects at every level of

design research and development. To become effective designers of and advocates for a quality built environment, the school supports communitybased research and design opportunities through which students can acquire a broad range of skills and experiences. Faculty who teach studio are selected for their ability to inspire students to learn, to engage students in critical thinking, to bring forward their particular expertise, and to convey a sense of optimism about the field of architecture.

Public presentation and display of the work of the design studio is valued, and is essential in developing skills for effective verbal communication. The school supports active, open dialogue and the studio must be a place where diverse life experiences and opinions are shared. A culture of respect and open inquiry supports the lifelong learning process that begins in architecture school (URL 10).

Culture Folicy.	
Design-thinking skills	1
Design process as much as design product	1
Leadership development	1
Collaboration over competition	1
Meaningful community engagement and	1
service	
The importance of people, clients, users,	1
communities, and society in design decisions	
Interdisciplinary and cross-disciplinary learning	1
Confidence without arrogance	0
Oral and written communication to complement	1
visual and graphic communication	
Healthy and constructive critiques	1
Healthy and safe lifestyles for students	1
Balance between studio and non-studio courses	1
Emphasis on the value of time	1
Understanding of the ethical, social, political,	1
and economic forces that impact design	
Clear expectations and objectives for learning	1
An environment that respects and promotes	1
diversity	
Successful and clear methods of student	1
assessment	
Innovation in creating alternative teaching and	1
learning methodologies	

Table 11. University of Texas at Austin Studio Culture Policy:

General Evaluation:

All score about the parameters which are driven from AIAS Report had been evaluated for each 10 university. All scores of these universities are listed in Table 12. The importance of design process as

Table 12. Total evaluation of all universities

these differences cause the originality of schools of architecture.

	MIT	Harvard	Princeton	UC Berkeley	UCLA	Cornell	Michigan Ann Arbor	Carnegie Mellon	U. Washington	U. Texas Austin	TOTAL %
Design-thinking skills	1	1	1	1	1	1	0	1	1	1	90
Design process as much as design product	1	1	1	1	1	1	1	1	1	1	100
Leadership development	0	1	1	1	1	1	1	1	1	1	90
Collaboration over competition	1	1	1	1	1	0	1	1	1	1	90
Meaningful community engagement and service	0	1	1	1	1	1	1	1	1	1	90
The importance of people, clients, users, communities, and society in design decisions	1	1	0	1	1	1	1	1	1	1	90
Interdisciplinary and cross-disciplinary learning	1	1	1	1	1	1	1	1	0	1	90
Confidence without arrogance	0	0	1	0	1	0	0	1	0	0	30
Oral and written communication to complement visual and graphic communication	1	0	1	1	1	1	1	1	1	1	90
Healthy and constructive critiques	1	0	1	1	1	1	1	1	1	1	90
Healthy and safe lifestyles for students	1	1	1	1	1	1	1	1	1	1	100
Balance between studio and non-studio courses	1	0	1	1	1	1	1	1	0	1	80
Emphasis on the value of time	1	0	1	0	1	1	1	1	1	1	80
Understanding of the ethical, social, political, and economic forces that impact design	0	1	1	1	1	1	1	1	1	1	90
Clear expectations and objectives for learning	1	1	1	1	1	0	1	1	1	1	90
An environment that respects and promotes diversity	1	1	1	1	1	1	1	1	1	1	100
Successful and clear methods of student assessment	1	1	1	0	0	1	0	1	1	1	70
Innovation in creating alternative teaching and learning methodologies	0	1	1	1	1	1	0	1	1	1	80

much as design product, healthy and safe lifestyle for students, an environment that promotes diversity are given by all 10 universities in their studio culture policies.

Conclusion:

Finding shows us that each school define its studio culture policy according to its own corporate culture, although there is a common similarity in the criteria defined by accreditation body. The main upper 3 issues related with the studio policies of 10 schools of architecture were seen in Table 12 which got 100 points "design process as much as design product", "healthy and safe – lifestyles for students", "an environment that respects and promotes diversity".

One of the concern on accreditation of educational programs is having negative effects on originality of programs. This article shows us that architectural school have different studio culture policies and

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Biophilic Design for Bringing Educational Spaces to Life

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Abstract: Bringing living structures to our educational spaces, especially universities, when most educational spaces are devoided of natural features, is a concept that needs to be pervasive within the architects and designers who are responsible to create healthy and creative spaces for the students. Our biology and psychology are in a sustainable need for a connection with the natural environment. The biophilia hypothesis demonstrates that human beings are attracted naturally towards the natural environment and the detachment from it generates negative consequences that affect the physical, psychological and social aspects of the human being. Within this paper, it is argued that educational spaces need to correlate with the environment through the adoption of biophilic design as it is a design approach that aims to rebuild the connection between the natural world and the built environment through adopting biophilia principles and elements

Not every educational space can be designed with total response to the biophilic approach; however, it is the architect's responsibility to correlate natural features with the educational space in order to achieve a healthy environment for the students. In this article, the concept of biophilic design in the built environment and integrating the nature with the interior and exterior spaces will be first illustrated, followed by a discussion about Innovation center "OZU X" at Ozyegin university campus adoption of biophilic design elements as well as the effects biophilic design on the psychological and social health of Ozyegin university students.

Keywords: Biophilia, biophilic architecture, green university, environmental psychology

Introduction:

Formal education in universities provide a pedagogy that has limited contact with the natural environment, this is because of the long teaching and learning hours which are conducted at classrooms that suffer from limited natural ventilation and lighting, with window openings that mostly have views to the outside built environment. Such universities facilitate the separation of the students from the natural environment during their study hours; this absence of the natural sense has negative impacts on the student's mental and physical health (Kellert, 2005a). The paper focuses on the concept of biophilic design, principles and elements and how they are adapted in Innovation centre "OZU X" at Ozyegin University campus. Then the paper will present the contribution of adopting the biophilic design in the innovation centre "OZU X" at Ozyegin University in enhancing Ozyegin University student's mental and physical health.

To understand the concept of Biophilic Architecture/Design in universities, first, we need to go through the notion of "biophilia". In the year of 1984, Edward, O. Wilson introduced for the first time the term "biophilia" that later became the Biophilic hypothesis (Hegerwagen, Kellert, Mador, 2013). The term "biophilia" is integration between the words "bio" and "philia" and their meaning are "being alive" and "the attraction people feel towards the natural environment" respectively (Kayıhan, 2018). Wilson explained in his book "biophilia" that every human being has deep interest and attraction to the natural environment and world. He argues that human connection with the environment will result in human well-being (Africa, Sachs, 2015). Since human evolution was in a biological environment their bodies and psychology depend constantly on the interaction with the natural environment (Kellert, 2005b). Human sensory and body are sensitive to environmental features such as odour, sound, light, water, landscape and animals (Hegerwagen, Kellert, Mador, 2013). Human well-being relies on five essential factors: environment, social, economic, psychological and physical factors (Blom, 2013). Human exposure to natural environment features such as fresh air and visual contact with water features and sensing the odours of the vegetation in

daily base results in improving human being wellbeing and life quality. From this notion, the concept of Biophilic design/Architecture has been evolved.

Gordon Orians's hypothesis also suggests that human-beings are psychologically connected to particular landscape features. He proved his hypothesis through his studies on human habitat selection and the environment (Heerwagen, and Hase, 2001). Heerwagen and Hase explained the reason behind Orians's hypothesis, that the long history of human hunting and food gathering in the early history affected the psychologically of the human and evolved an attraction between the human and the natural environment which is deeply rooted in humans brains (Heerwagen, and Hase, 2001). Existing trends in architecture and designing field mostly focus on several criteria such as form and function and ignore other important design input such as psychological and human preferences (Holm, 2006). Thus comes the necessity of the biophilic design as it focuses on filling the detached gap between the existing buildings and the natural environment in order to enhance the existence of the nature within the built environment. The notion of biophilia has been developed further by Kellert who suggested the adaptation of the context with the built environment (Kellert, Heerwagen, Mador, 2008) by merging the natural structures with the man-made structures such as using natural materials, include vegetation in the interior of the structure and allow the flow of naturals ventilation and light into the building, and therefore his suggestion has become an important element in the architectural design (Kellert, 2005b).

Biophilic design is a restorative environmental approach that benefits both human being and the environment. In order to analyze biophilic design contribution in enhancing OZU X student's mental and physical health it is important to understand biophilic design's two main dimensions and principles. The first dimension as Kellert illustrated is the Organic or Naturalistic dimension. All the shapes and forms in the environment can be categorized under this dimension. In other words, Kellert described this dimension as the direct and indirect experience of human affinity towards the forms and shapes in the natural and built environment. For instance, direct experience is referred to the human contact with self-sustaining features of the natural environment as the animals, plants and natural light, while the indirect experience is the human contact with the nature that depends on the human to survive such as aquarium and potted plants. The second dimension of biophilic design is Place-based or vernacular dimension which is describing the building or landscape meaning to the people and how by the time it becomes integrated to the individual identity (Heerwagen, Kellert, Mador, 2013). Moving to biophilic design principles, there are six principles Kellert described the biophilic design approach; environmental features, natural shapes and forms, natural patterns and processes, light and space, place-based relationships, evolved human-nature relationships (Kayıhan, 2018).

Studies on human behaviour and performance displayed that the surrounded environment either natural or artificial greatly affects human being physically and mentally and this exactly facilitate human well-being (Blom,2013). Human well-being can be achieved by living in a green environment that promote a well and healthy life which directly affect human behaviour, productivity, performance as well as learning abilities (Wilson, 1984). Grinde and Grinde-Patil (2009) stresses on the same concept, students who study in a biophilic environment are more effective and have high learning abilities, he further explains that the natural environment increases the concentration and also stimulates the brain during the learning process.

Biophilic design dimensions and elements at OZU X

OZU X building is one of the good examples that adopt the biophilic design within its environment. The building is located in Çekmeköy, in the Anatolian side of Istanbul province between vast green spaces from the north, east and west sides. The building was designed in a site that faces the forest from the east and west directions. OZU X is area is 80m x 40m, located under the under the ground level from three sides and open to the sunken garden in the fourth side. The inner space of the building consists of laboratories for Engineering and Architecture students. A curves linear circulation path connects all the laboratories and lead to meeting spaces. To enter the building a ramp is provided as the first access option, while staircase and elevator might be used as well -Figure 1.



Figure 1: Innovation Center OZU X Source: http://www.ecarch.com

OZU X has adopted biophilic design dimensions and elements within its architecture and design. The organic dimension emphasizes the direct experience of nature at OZU X which can be noticed from the integrating of the natural elements such as the plants, animals, water, natural light and natural landscape within the interior and exterior campus environment. Environmental psychology focuses in the relation between the behavioral patterns of the man and the environment and understanding how the environment has indirect effects on student's behavior, state of mind which in order affect their performance (Blom, 2013). The linking between the human and the nature affects the behavioral patterns positively, stimulate the brain, and provide high concentration and productivity. On the other hand, students who study in a built environment with buildings that suffer from isolation from natural features are more able to adopt psychological and or physical distress that decrease their attention, productivity and performance during the learning classes and lectures. Such building is categorized under sick building syndrome which does not only affect few s in the environment, but also its effect spreads between the students and the academic staff, thus the performance and the productivity of the lecturers in the teaching and discussion sessions will be reduced to lower levels.

OZU X design has also adopted the second dimension in biophilic design; place-based dimension. This dimension is based on the first dimension, as the continues presence of the students in the campus that adopt natural elements in its exterior and interior spaces, a meaningful sense about learning and being productive will grow in their unconscious.

In order to achieve biophilic design goals in enhancing universities student's mental and physical health, and achieving high performance and productivity, biophilic design principles should be analyzed regarding the site and integrated during the early design phase. Kellert provided six basic design elements based on biophilic design approach:

- Environmental features,
- Natural shapes and forms,
- Natural patterns and processes,
- Light and space,
- Place-based relationships,
- Evolved human-nature relationships,

OZU X is designed with creative diversity that links outdoor areas with indoors, so students have the enough opportunity to keep in touch with the natural environment. Although every opening in the campus buildings is a connection between the nature and the students, the challenge is how to integrate climate, seasons, smell and texture and other elements of the nature through this opening. Thus biophilic design principles were carefully integrated into OZU X as it is clear when analyzing the exterior and interior spaces of the campus.

OZU X Environmental Features

The most obvious element of biophilic design is Environmental Features. It is the direct use of the natural world within the built environment. According to Wilsons' biophilia hypothesis, human being has a natural attraction to the nature, thus adopting different environmental features has a positive impacts on the students mental and physical health. Sunlight is an important feature to be considered in designing the built environment. Natural light is a preferred feature by most people, thus university classrooms design should be designed in a way that allows enough penetration of daylight into the classes in order to enhance student's concentration during learning hours and stimulate their productivity. OZU X design has implemented this concept very well. Since the building is constructed under the ground it needs a creative way to illuminate the interior of the building during the day with the sunlight rather than depending on the artificial lighting systems. A cylindrical projected glass walls is constructed in the interior that brings the exterior sunlight into OZU X interior spaces almost all day hours - Figure 2. While attending workshops and lectures at OZU X, students still have the chance to be exposed to the natural light and absorb all its benefits. Another environmental feature that was implemented in OZU X building plants. All the inner spaces and studios of OZU X are enclosed by a curtain wall that shows the natural exterior landscape around the building. This view provides the students with maximum transparency to the nature and connects them continuously to a healthy view that enhances their performance.



Figure 2: OZU X Skylight Source: http://www.ecarch.com

The second element of biophilic design is natural shapes and forms which includes applying natural motifs to the building surfaces, adopting columnar structure, implementing oval and arches in the exterior facade and interior of the building, and avoiding using straight lines and right angles. In the case of OZU X, a mixture of curve shapes and straight lines is used in the design of the interior space structure and furniture in order to meet all students' needs while spending time in the center. OZU X building adopted curved shapes in its structure and furniture. As for the interior structure, a curved curtain wall encloses the main studio spaces and opens to the main linear curved circulation areas which connect several teaching classes and studios -Figure 3.



Figure 3: OZU X Circulation paths Source: http://www.ecarch.com

Moreover, curved automatic curtains enclose a meeting space in the middle of OZU X in order to provide a quiet atmosphere space for meetings and discussions –Figure 4. Looking for the furniture of the building, a half circular seats and sofas are located next to the main entrance of the building and are part of coffee service station where the students can continue their work and enjoy their coffee using those seating.



Figure 4: OZU X Meeting spaces Source: http://www.ecarch.com

OZU X Natural patterns and processes

Biophilic indirect element is embedded in the natural patterns and processes that can be adopted within the exterior and interior building design. Under this category "Information Richness" is found which can be seen in the variety and richness of wide range of natural elements such as the landscape, natural texture and natural daylight. OZU X design is rich with natural information and processes that are clearly within its interior and exterior spaces. OZU X has implemented "Complementary Contrast" subelement which also under natural and processes category which describes disparity of features in the interior spaces in order to express the limits and boundaries of the spaces through utilizing the contrast of seeming opposites, like light and darks between by playing with the light tense between the circulation and study spaces, high and low leveling, and openness and encloses of the classes and studios. This contrast gives a different feeling when moving from space to space which keeps students attracted during their mobility in the building –Figure 5.



Figure 5: OZU X Light and shadow contrast Source: http://www.ecarch.com

OZU X interior design has played with the light and spaces in a creative way. The natural and artificial lighting system which has been utilized in OZU X has been studied. OZU X has utilized different light systems in some circulation spaces while the majority of the study rooms, classes and studios are depending on indirect daylight to illuminate them on the first hand and on artificial light as an alternative light source -Figure 6. The usage of several artificial light systems such as diffused lighting system around the coffee service station and seating area, warms lighting system in the meeting spaces as well as direct lighting system in the studio spaces, is very important for providing a pleasant view for the students in order to provide them with a convenient mindset, not only that but when utilizing the natural light in study spaces, it gives the students the suitable illumination that allows them to be more productive and perform better in their tasks. While when analyzing spatial relationship between the spaces of OZU X, a clear relationship between the natural and the artificial elements can be seen, as looking at the studio spaces that have a curtain wall which opens towards the back green areas. Two cylindrical glass structures are located in the building with natural plants in them that bring the exterior nature inside the underground building.



Figure 6: OZU X Artificial Lighting Source: http://www.ecarch.com

Place-Based Relationships

The fifth biophilic design element that has implemented in OZU X building is Place-Based Relationships. This category is mostly related to the connection between the building as a whole unit and the surrounding nature. Geographical connection between the OZU X is clear when observing the green natural hell that is located along the borders of Ozyegin University campus and exactly near OZU X building. The geographical connection can be seen as the hell is high enough to be observed while using the ramp to walk downwards to enter OZU X as the building is constructed under the ground. This connection provides the students with a sense of continuity between the natural hill and the underground structure in order to keep in their subconscious that they are still integrated to the outside natural world which will in return provide them with a calm feeling and a good mindset to work on their tasks. This is exactly what Wilson described that enhance the relationship between the human being and nature benefits mental and physical health (Wilson, 1984).

Evolved Human-Nature Relationships

The sixth biophilic design element and the final is Evolved Human-Nature Relationships. "Prospect and refuge" is the description of how integrating the nature with the built environment provide human being with shelter and sanctuary feeling, while prospect sense is because the colorful nature and especially green color is known for its positive impact on the mental health of the human being. As OZU X design had implemented most of biophilic design principles, it provides the students with the needed prospect and refuge sense especially during their final exams and presentations which is held at the building.

Conclusion

In conclusion, architectural environment has both direct and indirect effects on human psychology as the human being has evolved in the nature. Human evolution in the nature has caused in creating a deep connection and attraction between the man and the natural environment. This is exactly the meaning of biophilic design which emphasis on the connection between human being in the built environment and the natural world. This is an important issue to be considered by the architects and designers who are responsible for designing a healthy and pleasant built environment for human beings. When talking about students psychological health, it comes to the mental issues about teaching and learning methods without giving much attention to the physical structure in which the students are spending long hours learning and participating in different educational task. Adopting biophilic design in educational spaces is an important issue in order to provide the student with a healthy learning environment. OZU X at Ozyegin University campus in Istanbul is one of the good examples that have implemented biophilic design in its exteriors and interiors. Six elements of the biophilic design have been utilized wheather directly or indirectly. To conclude, such approach is a trial to revive the connection between the built environment and the nature in order to provide the students with a better place for them to be creative and innovative

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Computational Approach and Morphogenesis;

Role of nature in concept generation process in design and architecture

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Abstract: This article is discussing role of nature in architecture through morphogenesis using computational approach, it's locating biology, nature, chemistry, geology, crystallography, and material structures in an objective framework in the form-finding and concept generation process. on the one hand, it's presenting a deeper, dynamic inspiration source through the integration between architecture and biology. The micro scale of biology systems, in many cases play a macro significance in providing a proper functional and aesthetical solutions, by taking a closer look on material's formation of structure, tissues, or the differentiation and growth of the organs during developments.

Although, the article is clarifying and defining related terms of computation process in architecture, by presenting a general view over the benefits architects have received adopting the computational approach and digital tools in both the early stage of design process or in production phase. The article is representing a bridging between the computation of human brain, biological parameters and digital tools.

In addition, it will be presenting the masters adopted the morphogenesis approach in architecture around the world through the past decades and their attempts in the architectural field for improving early design process, and the developments a design can reach across the integration between pre-determined parameters and the primary expectations of human brain and imagination.

Keywords: Computational approach, form-finding, biology, concept generation, digital tools, morphogenesis,

Introduction:

In able to understand how did architecture met with biology under the shade of computational approach we need to define and trace these terms to highlight the spot of intersection as two completely separated disciplines. The computation as a term itself is a mathematical calculation for a specific operation, not only in design process but in any other field as well, and mathematical here is not limited in numbers but connected operations and components such as parameters, algorithms or any other necessary inputs, it's a way of thinking that can provide a variant solutions for a situated and identified issue to be solved. In our case, the computational approach is presenting the way of dealing with design process from a computation perspective "computational thinking" using nature with morphogenesis tools, methodologies and strategies, starting of the very early stage of concept generation and form-finding process until the production phase. But what exactly is morphogenesis?

Morphogenesis linguistically, is "the organ and development of morphological characteristic", which means the changes, formation, and the biological process that may be a reason behind a specific development of an organism or the way cells grow and organize. It's listed under patterns of life, which was discovered or released by biologists, biochemists, and embryologist.

In addition, Rudge and Haseloff, (2005) defined Morphogenesis in three different categories basing on their transformation and growth of tissues, these types are *proliferation*, which has an architectural application by Tom Wiscombe, who designed "San Francisco Bus Terminal" using the logic of proliferation morphogenesis. Figure (1) the second type was *coordinated growth*, then the last was *cell lineage* and positional information.



Figure 1. San Francisco's Bus Terminal is an Investigation on Parametric Design and Voronoi Algorithms.

The embryological text of Joseph Needham was one of the discussions that revolves morphogenesis in his publishing of "Biochemistry and morphogenesis" in 1950, In this publishing Joseph Needham defined Morphogenesis as "the process by which an organism acquired its characteristic form". In the 1952, a publishing with the title "Morphogenesis: an essay on development" was released by John Tyler Bonner, a biologist who had the studies of cellular slime molds, were he discussed the development and differentiation for variant organisms; searching for common process in their patterns of growth and development operations.

On the one hand, when taking a look at the educator, mathematician, and code-breaker in the second world war, Alan Turing, we can find an abstract illustration of the integration between morphogenesis and the computational approach in his life accomplishments; he published his first paper 1936 "seminal", which presented a prove of the impossibility of having a universal algorithm as a method of determining truth in mathematics, besides being a code-breaker he made a mathematical explanation for the patterns of animal's skins, when he assumed metaphorically that the skin is a white canvas were two different chemical component of the genetic cells spread on and compete, and the one with the higher hegemony wins and change the shape on the patterns. Turning, put this assumption into a mathematical frame work and wrote an algorithm for the skin pattern. Turning, through his professional career and his biography was completely believing that all surrounding operation issues already has a mathematical solve in nature itself through material's behavior.

Stanislav Roudavski (2009), also in somehow supported the same thinking of Turning, through his biological knowledge in architecture when he said:

"architectural designing aims to resolve challenges that have often already been resolved by nature". As well as who supported that the morphogenetic design has the ability to coordinate between several functions through the morphogenetic intelligence that provide us with "ecological understanding of architecture".

Traditional design process vs. generative design process, digital computation approach:

Referring to the previously mentioned definition of morphogenesis, we can crystallize a relationship between morphogenesis and the generative design process. Generative process, is presented in a method that has a results gained through considering a set of rules or an algorithm, it's a form finding process that can mimic nature's evolutionary approach to design, and mostly such type of processes relay on computer usage and software as the production system that increase the quality of results and developing processes during design.

In fact, designers and architects has a noteworthy archive through the past few years in using nature as an inspiration source by doing analogies for nature systems and recalling cases, especially for aesthetic ideas and formal styles, or solving design issues. On the one hand, it used to be stated in two main engines as mentioned by (Herbert, Lionel March), these two engines are presented in one for generating the idea and the other for evaluating the extracted solutions.

The conventional "traditional" design process and design thinking methodology, always starts with accumulating the project data, understand it, then go for further investigations depending on the project's pre-identified needs, in able to build design concept and find the proper architectural form and solution. Such a node process has a prominent limitations manifested in the number and type of preserved solutions (El-Khaldi, 2007). Figure (2)



Figure 2. The traditional- computational morphogenetic process, simplified flow chart

Whereas, the computational approach using Morphogenesis sciences, during the analogical reasoning tends to escalate similarities instead of simplifying it, the computational approach is presenting an associative circle that push designers and engineers to use another level of cognitive thinking in able to formulate the issue and generate all possible solutions. But also, the authentic image for nature's systems need to be dragged under the microscope to understand types of relationships and processes complexity's in a simple formula, this formula can be developed to help designers during design process, and because nowadays our world's need to smart cities and sustainability is increasing speedily; digital tool occupied a significant role in developing design process. Figure (3)



Figure 3. The digital- computational morphogenetic, generative process simplified flow chart

Although, as per other approaches, the digitalcomputational design process and tools have variant identifications referring to the framework of each one of the field's maters preferences. For instance, (Kotnik, 2010) in one of his publishing's about computable functions in digital architecture identified three levels of design computability namely, which is the representational, the parametric, and the algorithmic.

The representational level of the process is particulated in using digital computing tools for representation purposes only, in this level of functions the thinking form by using computer tools is not regarded as computational thinking, since that processes with computer tools in not necessary in every computational thinking, but in every digital computing process, computational thinking Is a main component.

On the one hand, the second level of digital computational design process by (Kotnik, 2010), parametric level, is associated with the praxis phase of the process as a conductor between various parts of design process, when the third level is Algorithmic level, which focus on the development and flow of the process and care about the logical sequence of the operations and data transfer.

Whereas, another classification method was released by (Oxman 2006), that categorized digital computational design process into five models, starting of the shallowest process into the most complex and integrated process as "CAD Model, Formation model, Generation Model, performance model and the last model was integratedcomputational model". The generative model for Oxman is directly connected to the process of morphogenesis approach that involves interplay with intricate computational mechanisms of

form generation derived from principles of morphogenesis.

When (Kolarevic, 2000) had a totally different perspective of categories generated out of the conceptual content of the design processes into six products as:

- Topological architecture: in topological approach the light is spotted on the nonuniform rational B-spline process of controlling points and knots to achieve a coherent space, surface and curves.
- Isomorphic architecture: it's characterized of dynamic behaviors and usually present synthesis of variant irregular shapes and geometries.
- Animate architecture: and for animate approach it's more of a representational software medium than being a generative tool.
- Metamorphic architecture: in the metaphorical approach, it provides designers and architects of a wider ability of controlling geometries using variant techniques, including lattice deformation, key shape animation, and path animation.
- Evolutionary architecture: a design approach that express the procedure of testing and accelerating the architectural concepts and the generative tools that was previously imported to the system in able to be developed using computer models.

Eventually, the variation between the conventional and digital design process can be summarized in the process flow as one start point of the manual sketches or any initial conceptualized design drawings, as an input to solve a design issue, where both orientation runs their inspirations and recall solutions from a data base as the "thesaurus" that feed the design process in both orientations either in

the conventional or the digital process, but the articular point that is presenting the substantial difference between the two orientations is located between extracting and recalling the data to initiate the concept sketches and refining design, in the conventional process, the initiated conceptualized sketches has a direct connection to the refining stage of design process, when the digital computational translating process branch to influential environmental forces and processes in able to generate and formulate the algorithm understanding for the entire design process, testing the inputs and to the informative draft, the draft that crosses other alternatives and processes, designer influence, and an evolutionary process.

The conventional and digital orientations meet up again in the design refining process with noteworthy gap between both according to the stages after, that which goes around the production and construction draft, and design details, where usually digital process's results record a further progress that the conventional process and more clear to the level of production stage.

Cases: Implementations of biology in architecture:

[1] The "Potato Beetle bug" pavilion:

In the ICD's "institute for computational design and construction" project of 2013/14 pavilion a novel design showed the actual meaning of digital morphogenesis in computational approach, it was presented by a cooperative team of students from multi-disciplines of biologists, paleontologists, architects and engineers. Figure (4)

The project took a year and a half of planning, manufacturing and constructing, and adopted the "bottom-up" design criteria, they created a prefabricated cells structure composite of natural fibers that was groomed over metal base, it was a reinforced polymer structure, and the fabrication process was mainly relied on two robotic arms for the grooming process work together at the same time.



Figure 4. The "Potato Beetle bug" pavilion, source: ICD/ITKE Research Pavilion 2013-14

The main aim behind the project or we can say, the tested issue in architecture and engineering was a geometry freedom with a light weight structure using double shell components. The biomimeticmorphogenesis inspiration of this pavilion was extracted from a deep analysis and simulations of the "Potato Beetle bug", they scanned the back shell of the organism and simulated micro computed tomography for the shell tissues "morphogenetic analysis", the analysis was extremely exquisite" analogical reasoning" for the structure layers of the organism's shells tissues formation, the deepest micro level of simulation generated the macro component of the pavilion's main structure. whereas, the growth of the organism's tissues inspired the fiber fabrication process as the covering material of the cells, using multi layers of glass fibers and carbon fibers applied by the robotic arms. Figure (5).

The pavilion ended up with a total weight of 593.9 KM, and a total area of 50.27 sqm, and consummated 58.54 KM of glass fiber, and 42.48 KM of carbon fiber.



Figure 5. The "Potato Beetle bug" tissues analysis, source: ICD/ITKE Research Pavilion 2013-14

[2] Dublin landmark tower:

Dublin tower is a proposal for a competition that was designed by a cooperative team "Michael Hensel, Michael Weinstock, and Achim Menges" in 2003, they started the design process using the "seed" which is the primary inputs of the system and it was presented in a "tubular element" as the main component of the process, these tubular elements swept around a helix rout. This project obtained (T. Rudge's) classification types of morphogenesis, and developed under the proliferation subsequent.

On the one hand the planning process included the environment mathematical limits and dimensions of the competition site, and not to forget the forces that was applied to the geometry global level and produced variant forms.



Figure 6. The Dublin landmark tower's evolutionary process

the received forms out of the testing simulating process was filtered depending on the selected orientation for development s through the evaluation process to what fits into the following process, the base and top flared and the waist that has the slightly narrowed dimension was selected, where the form taken into a geometry relaxing process using the rules of parallel construction planes and it was applied for both the inner and the outer shell of helices.

In this project the plant morphogenesis was the generative engine using digital mathematics extracted from nature and imported into the tessellated surface geometry testing algorithm of the "custard apple "that generated the differentiation of the parameters of the panels helped the panels adaptation.

[3] the lightness of being:

Frei Otto as one of the most significant pioneers in observing material behavior's in the nature and morphogenetic processes, thought of soap bubbles as a source of deep insights that provided a fully computational performance. Otto used to say that he might have built only a little on earth but he built hundreds of castles in the air since his soap bubbles inspiration recorder a noteworthy performance in providing a light weight structure, he also mentioned "houses which are two or three kilometers high and balls spanning several kilometers and covering a whole city, actually we have to ask what does it really makes? What do the society need?"

Otto used to obtain the principle of bubbles behaviors extracted from his observations and reapply it through analogue modelling. It's presenting a sufficient explanation for having all needed processes, behaviors, scientific equations, and how to go direct to the point through your investigations to be able to focus on extracting the most

professional results, and that was inspired by the one material of the soap bubbles using air It's absorbing the less amount of materials any process might need, but the ability to present a significant structure solution is not recording any decreasing signs, it motivates the concentrating on the direct relations through design process, and as Otto think less that act as much and fill the society needs is what we need for the future. Figure (7)



Figure 7. The Olympiapark, Munich lightness of being, Fri Otto's structures inspired by soap bubbles – source: revue Connaissances des arts

Conclusion:

The morphogenesis approach and the presented benefits of building nature knowledge and bridging it with the architectural field formulized an explicit module of dragging architects, engineers and designers to a completely different level of dealing with issues and design process itself, when relaying on computational thinking and a computational cognitive level, morphogenesis is presenting the infinity of inspiration sources by nature. This paper aims to introduce the wide variations and orientations of integration between biology and architecture and how field's masters obtained different approaches and criteria but still nature phenomena's can fit differently in every situations referring to the architect or engineer who developed it and evaluating process

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Architectural Design Products of Students at İstanbul Fine Arts Academy in the 1930's

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Abstract: One of the oldest schools of architecture in Turkey is Mimar Sinan Fine Arts University. Art historian, archaeologist, painter Osman Hamdi Bey founded the school in 1882 under the name of Sanayi-i Nefise Mektebi and began teaching on March 2, 1883. The institution, which is the first art and architecture school in Turkey, was renamed the Academy of Fine Arts in 1928 and thus became the first higher education institution in Turkey to receive the title of Academy. In the project studio known as Egli Cubic Atelier, the aim of the course was to provide students modern architecture concepts which foresee functional architecture. With the new system brought, the student has the right to work with different instructors in each project by selecting the workshop group that he wishes without depending on a workshop and the same teacher. Archive inquiry was used in this study to reach the student work in 1930's Istanbul Academy of Fine Arts. *Mimar (Arkitekt),* one of the journals of architecture in the 1930's. The modernist approach, defined as "cubic architecture" in that time, was preferred by the students in architectural design studios when examples of student projects were examined in the sources. This article aims to give information about the student projects of architectural design studios of Istanbul Academy of Fine Arts and stories about students' architectural works.

Keywords: Academy, architecture, design, studio, student work

Introduction:

Mimar Sinan Fine Arts University is one of the oldest schools of architecture in Turkey. Art historian, archaeologist, painter Osman Hamdi Bey founded in the school 1882 by the name of Sanavi-i Nefise Mektebi and began teaching on March 2, 1883. The institution, which is the first art and architecture school of Turkey, was renamed the Academy of Fine Arts in 1928 and thus became the first higher education institution in Turkey to receive the title of Academy. The Fine Arts Academy gained scientific autonomy with the adoption of the State Fine Arts Academy Law in 1969. The institution was renamed Mimar Sinan University by being transformed into a university with the Decree Law No. 2547 adopted on 4.11.1981 and the Decree No. 41 of 20 July 1982. The school changed its name to Mimar Sinan Fine Arts University at 2004.

Between 1930 and 1940, German, Austrian, French architects and scholars moved to young Turkish Republic and continued their professional and academic studies especially in Ankara, the capital city of Turkish Republic and Istanbul, the biggest metropole in Turkey. Many foreign faculty members served as teachers in different courses and also as design studio tutors in Istanbul Fine Arts Academy in this period. Professor Ernst Egli was one of the foreign architects who worked as professional architect to serve the Turkish Republic government in designing and constructing new buildings. He was appointed as a faculty member of Istanbul Fine Arts Academy. He inaugurated an educational reform for architectural design education in the "Academy". In the project studio known as Egli Cubic Atelier, the aim of the course was to provide students modern architecture concepts foreseeing functional architecture. As a new system, the student has the right to work with different instructors in each project by selecting the workshop group that s/he wishes without depending on a workshop and the same teacher. The workshops that transformed into a professional competition environment with the new system, allowed the exchange of ideas between the larger working groups. Also, the system was helpful for the students with lower grades.

Besides establishing a modernist approach in studio environment, the Egli reform removed the old workshop system of Mongeri which was depending on neoclassic and Turkish architectural patterns where large-scale drawings of the front elevations and watercolor drawings were important outputs. The reform also tried to remove the studio approaches of Ottoman-Turkish architectural styles of architect Vedat Tek who created this style in his own architectural works.



Figure 1. Students working in architectural design studio 1933. From left Şekure Bengi, Asım Mutlu, Aristidi Pasedeos, Reşat Akıncılar, Fazıl Aysu. (Hızlı, Aysel; 2017)

Methodology

Archive inquiry was used in this study to reach the student work in 1930's Istanbul Academy of Fine Arts. *Mimar (Arkitekt)* - one of the architectural journals of 1930's is the main source of this inquiry. The other sources of the research inquiry are based on the literature related to the memories of architects who were architecture students in those days. Many students of that period had active roles in the construction of new buildings of young Turkish Republic when they graduated as architects.

The journal Mimar (Arkitekt) was the only architectural magazine which was published by a group of architects who want to support and promote Turkish architects and their modernist architectural approaches. Researchers can find many examples of modernist architectural products of Turkish architects and foreign architects' modernist architectural approaches in the journal. The journal also supported national architectural competitions: the results of competitions and prize-winning projects are published in a detailed way. The mission of Mimar (Arkitekt) was defined by architect Abidin (Mortas), in the journal as follows "our journal made the first attempt for publishing the architectural heritage of Turkey and modern architectural design projects of Turkish architects-Mimar (Arkitekt). The journal Mimar (Arkitekt) tried to help all positive attempts for publishing architectural heritage documents and new architectural design projects of Turkish architects (Abidin, 1931). The research examines the articles in Mimar (Arkitekt) which explained the architectural design projects of students in design studios of Istanbul Fine Arts Academy in between 1930 and 1940.

The first article is entitled "How students work in the architectural branch of the Academy of Fine Arts?". The article gave information and made comments on educational approaches about the studio works in Istanbul Academy of Fine Arts as follows:

"In the Academy of Fine Arts, there is a big activity played by the late Education deputy. Necati (Minister of Education), making unforgettable favors for the wisdom of the country, also provided many aids to the architectural school. Necati's works in these activities should be pay off. In Turkey, there seems to be a movement for the rise of architecture. You cannot see the classical style of work that has been going on in the (architectural) school. He makes his projects under the influence of numerous records, local, scientific and construction. And a master head, who takes his project, can apply it immediately. He is not obliged to copy classical works into demand. A demanding architect. View and work in the course of Roman, Greek, Egyptian and ancient Turkish architecture (architectural history). But he does not devote his soul to them, nor is he obliged to fulfill their methods of construction and procedures. He is a scholar and a technical seeker who is looking for a way to make a new Turkish architecture (Anon, 1931).

The text continued to explain the mansion project which carried some characteristics of European modernist architectural style, designed by student Edip Hikmet:

When you enter the door in the Ru mansion, you encounter a hallway and a guest room. This is a system that Europeans apply a lot. Kitchen and the dining room are on the side. A snip and the toilet appears. The upstairs bathroom is next to the bedroom. There is also a seating area for guests. Today's architecture is simple and indented. Since it is to escape unnecessary details, this mansion (Edip Hikmet) is the mufti of the mansion (Anon, 1931).



Figure 2. A Mansion project, student; Edip Hikmet, (Anon, 1931)



Figure 3. Ground floor and first floor plans, student: Edip Hikmet, (Anon, 1931)



Figure 4. Guest room and hall, living room, student: Edip Hikmet, (Anon, 1931)

The second article was written by architect Faruk Galip and was entitled "Students' Exhibition of the Academy of Fine Arts". The article started with the general introduction about the content of student exhibition at Academy of Fine Arts as follows:

The Fine Arts Academy closed this year with a student exhibition. The exhibition contained architectural projects, paintings, sculptures, artifacts, women's works, posters and ceramics. The result of a regular and continuous study is a new success for the Academy (Faruk Galip, 1931).

Then the author explained his comments about the students' project presented in the exhibition.

Rather, we want to focus on the works of his student which is the architectural part of us. It is quite clear that the architect Professor Egli has had the opportunity to engage more in this year. We present some of the works of our young friends whoh we will see their effects in the near future. (Faruk Galip, 1931).

The author made a comparison between the projects that he saw in an international exhibition of architectural students' projects and the students' projects of the Academy of Fine Arts.

Last year, I visited the 12th International Architects Congress, which was held in Pashto, and visited the annual exhibitions of the architecture school in Bucharest and the Hungarian branch of the Hungarian Science School. I can happily record that 931 students of architecture in the Istanbul branch of the beautiful Academy of Fine Arts worked with more success. At the same time, the classical treatment, which has a great place both in Bucharest and in Pashto, coincides in our exhibition, at least during the architectural tasks. Then, in the form of sketches, we wish to see more works. We would like to congratulate the director Namik İsmail, professor Egli and the committee for this success (Faruk Galip, 1931).



Figure 5.Summer hotel and rescuing building at Kilyos. Sea facade and ground floor plan, student: Neş'et Hakkı (Anon., 1932).



Figure 6. Bread factory (bakery), student; Affan (Faruk Galip, 1931)



Figure 7. Bread factory (bakery), student: Affan, (Faruk Galip, 1931)



Figure 8. Fine Art Academy, student: A Reşat, (Faruk Galip, 1931)

The third article in Mimar (Arkitekt) was entitled as "Students' Exhibition at Fine Arts Academy". The article introduce six projects designed by Academy students in the architectural design studios. The author also made comment on the projects.

This exhibition will be held at the end of July this year, and internal architectural students Reşat, Bekir İhsan, Ziya, Suat and Nazmin were responsible for the projects of the architecture students. We would like to congratulate our esteemed faculty team for their success in life with our young colleagues who are successful in getting their diploma. We publish some of the architectural works we have received from the exhibition (Anon, 1932).

Leman Cevat was one of the first two women students of Istanbul Fine Arts Academy with Münevver Belen. Student dormitory project by Leman Cevat was published in Mimar journal (Figure 6). Leman Cevat (Tomsu) became a professor of architecture at İstanbul Technical University Faculty of Architecture after her graduation from Istanbul Fine Arts Academy. Prof. Leman Tomsu won many architectural competitions.



Figure 9. Dormitory, student; Leman Cevat, (Anon., 1932).



Figure 10. Leman Cevat Tomsu, (Dostoğlu., Erkarslan, 2013).



Figure 9. Children hospital, Front elevation and floor plan, student: Sezai Hakkı, (Anon., 1932).



Figure 10. Park Hotel Project, Façade and ground floor plan, student: Celal Biçer, (Anon., 1932).

The fourth article in Mimar (Arkitekt) journal was entitled "Annual Works of Architectural Workshop Students" which was dated 1934. The article covered two student projects of famous Turkish academician Professor Hamit Kemali (Söylemezoğlu) while he was attending Fine Arts Academy.

This article also covered another project of Emin Necip whose mansion project published in 1931 first issue of the journal. The article gave explanations on the educational system of the Fine Arts Academy.

The students who pass from preparatory classes to workshops prepare projects for each year. Thanks to these projects, which are prepared under the supervision of the workshop staff, the students apply what they learned from theory and they are successful. We published a few studies that we found original to show the work of our students. The project by Emin Necibin (Weekend House) is a well prepared work according to the characteristics of the program. The projects of the national museums and foreign offices of the Sultan were successful. In particular, the project of the Turkish residence was very beautiful. Among these, Adnan's folk theater is interesting in terms of both plan and common sense (Anon, 1934).



Figure 11. Weekend house at Burgazada, student: Emin Necip, (Anon., 1934).

Hamit Kemali (Söylemezoğlu) told in his memoirs about the entrance exam for academia (Anon, 1995). The examination is in the form of an oral interview and meeting in the room of the academy director who was an important Turkish painter Namik Ismail. Academy Director Namık İsmail, Head of Department Prof. Dr. Ernst Egli and his assistants Sedat Hakkı Eldem, Arif Hikmet Holtay, German interior architecture teacher F. Ginter and Austrian construction teacher Schneer had completed the exam. In the beginning of the examination, prospective student is asked why s/he wants to be an architect, if there were studies in high school, it is asked to show, then the other questions had been asked.

The question asked to Hamit Kemali Söylemezoğlu When it comes to ferry, it is the question of which are the most important buildings on the Asian side of Istanbul. Hamit Kemali Söylemezoğlu answered this question as Selimiye Barracks, Medical Faculty and Haydarpasa Train Station. These buildings were requested to be drawn. At the end of the exam, Hamit Kemali Söylemezoğlu was announced to have won the exam (Anon, 1995). In the 1930-1931, in high architecture department where 13 students were admitted, Hamit Kemali Söylemezoğlu's two projects are followed by the following three figures.



Figure 12. National museum model, student: Hamit Kemali, (Anon, 1934).



Figure 13. National museum facade, student: Hamit Kemali, (Anon, 1934).

Prof. Dr. Hamit Kemali Söylemezoğlu started his academic career as a faculty member at the Istanbul Fine Arts Academy in 1945 and worked for Paul Bonatz at the Istanbul Technical University Faculty of Architecture in 1946.

Graduation project was the last and a special project which was organized to evaluate the abilities of the students who reached the last term with successful results in the previous architectural design studios. This graduation project also was entitled the "Diploma Competition". The article which was entitled "The Graduation Projects of Academy of Fine Arts" had been published in the issue of Mimar (Arkitekt). Teachers of the Academy of Fine Arts assessed last year students with this the graduation projects if they were ready to work as professional architect. Therefore, the other name of this graduation project is diploma competition since the process of projects was established like a project competition. One of the example of graduation project is seen in Figure 15. The subject of graduation project was a library design for 100.000 books.



Figure 14. Manor for foreign affairs, student: Hamit Kemali, (Anon, 1934).



Figure 15. Graduation project, library design, student: Celal Biçer, (Anon, 1934)

The educational reform realized by Prof. Ernst Egli explained in Table 1 with the approaches between 1924 and 1934. As it was listed in the table, there were some items defined in the educational reform like a) entrance examination, b) education period, c) educational system, d) new faculty, e) studios/new architectural approaches, f) seminars, g) added /dropped courses evaluated in two different years. Prof. Egli established modernist and cubic architectural approaches in the studio courses. architectural design. She worked with famous professors Emin Onat and Paul Bonatz. Another student whose project were included in student project examples in this article was Hamit Kemali Söylemezoğlu. He also worked in Istanbul Technical University as one of the professors in architectural design unit.

This research article based on inquiry about student projects architectural design studios of Istanbul Academy of Fine Arts. It was mainly based on

	1924	1934
Entrance	4 years graduates of high schools accepted in the	Free drawing exam and interview covering questions on intention of
exam	entrance exam which covers: Arithmetic, formulas	architecture.
	trigonometry, logarithm, mechanics, chemistry and	Two basic elements assessed: Level of Environmental Perception,
	drawing	Dedication to profession
Extension	Architectural education was 4 years long	The name of the department changed to Master of Architecture
the		Section and took 5 years to complete.
education		
period		
Educational	During 4 years, architectural education covered	Two cycle five years architectural education. First two years
system	theoretical courses and competition were required to	preparatory level education and following three years studios level.
	complete school students got defined points	To pass from preparatory level to studios level students should be
		successful on exam covered scientific, technical, theoretical, and
		practical courses.
New faculty	Studio of Egli cubic (modern) architecture; studio of	While studio of Egli continued to teach modern architecture, studio
	Mongeri European-Latin architecture, and studio of	of Vedat Bey and studio of Mongeri were closed. Egli enrolled new
	Vedat Bey national (Turkish-Ottoman) architecture	faculty who had been educated in Europe.
Studios /	-Classical composition, drawing and copy techniques,	-Formal aesthetic principals of Modernism
new	pen drawing and watercolor painted boards,	-Simple façades, no ornaments
architectural	-Elevations were prior to plans in design solutions.	-Functionalism
approaches		-Production of facades from plans
Seminars		Seminars including conferences and practical work
		-Turkish Architecture Seminars and Aesthetics
		-Interior decoration and decorative arts (interior architecture and
		ornament)
		-Construction
		-Architectural knowledge
		-Practical information on construction and technical excursion to
		constructions
		-Steel and reinforced concrete
		-Painting
		-Practical sculpture for architects
		-City planning
Added /	Theoretical courses (drawing, geometry and history),	Theoretical courses (technical knowledge were more important in
dropped	practice (sketch exam and reports) and 6 piece of	two years preparatory level), practical work (architectural projects in
courses to	competition	different scales), nine pieces of competition, seminars, six pieces of
program		architectural projects (studio work)

Table 1. Evaluation of New Approaches After Educational Reform (Hızlı, Aysel; 2017)

Conclusion:

İstanbul Fine Arts Academy had following departments: Architecture, painting, sculpture, engraving and decorative arts. The total number students who registered the Fine Arts Academy until 1932 was 2091. 145 architects, 88 painters, 6 sculptors, 6 engravers graduated until 1926 according to documents (Anon., 1932a). Many graduates of the Fine Arts Academy worked as university teachers in different schools. One of the first two woman graduates Leman Cevat Tomsu Istanbul Technical worked in University, Department of Architecture was a professor of articles published in Mimar (Arkitekt) journal in between 1930 and 1940. Professor Ernst Egli who realized the educational reform in 1930s at Academy of Fine Arts, had important effects on the student projects those are examined in this article which were drive from published examples of student projects.

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Contemporary Mosques: Conventional and Innovative Approach in Mosque Design at Turkey

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Abstract: Mosques are spaces that are prepared to be proper for praying and worshipping they are one of the most repeated building types in Muslim countries and consist to be potentially a visual attraction and a landmark in metropolitans. Turkey is rich in term of the mosque design and had its own unique linkage with the ottoman mosque design, on the other hand in the main time the innovation produced can be observed for various architectural forms that immerge to mosque design to create innovative mosque styles that are new interpretation or abstraction of the conventional mosque's architectural elements. Moreover, the traditional imitated mosques are using different constructional technologies and building materials that separated them to be within the classification of the traditional ones. In order to classify the styles of the mosques based on a coherent style expression which were distinguished into looking for two main distances from traditional wise to modern wise.

This article aims to define the contemporary mosques and represent the critic's attempts to create a classification for the contemporary mosque's expressions based on the style. And based on the approach followed in the mosque design. The paper is qualitative analytical based, demonstrate the appropriate classification for the mosque expressions by looking to the traditional and modernity dimensions. And the categorization of the innovative approach and the conventional ones. Analyze the sorting of prominent designs of contemporary mosque architecture in turkey and introduce a contemporary case study. In order to lead for classification and evaluation of the contemporary styles expression and approaches based on the architectural values.

Keywords: Mosque design, style expression, Contemporary mosque, Innovative mosque, Innovative approach,

1.Introduction

Mosques are spaces that are prepared to be proper for praying and worshipping they are one of the most repeated building types in Muslim countries and consist to be potentially a visual attraction and landmark in metropolitans. Turkey is rich in term of the mosque design and had its own unique linkage with the ottoman mosque design. On the other hand, in main time the innovation produced can be observed for a various architectural form that immerge to mosque design to creates innovative mosque styles that have new forms and shapes, or a new interpretation or abstraction of the traditional mosque architectural elements, or imitating the original mosques using the new technologies and materials.

After the political changes the 1950s the development and established on the traditional places transformed through time toward contemporary and modern approaches in architecture (Turan, 2014). In last 50 years at the

20th century, a number of architectural achievements gave the opportunity to critically evaluate and classify the contemporary mosque architecture (Okuyucu, 2016). In order to define the contemporary mosques and merge to well-structured classification, the scholars were considering the essential distance of tradition and modernity. Subsequently to analysis for the prominent designs the contemporary mosque architecture lead to having four classifications of styles expression based on the architectural values.

2. Methodology:

The method of the paper is basically a descriptive analytical method on two theoretical bases. First is the tradition and modernity in mosque design. The second is the contemporary approaches. The paper reviewed the scholars' classification of the style's expression based on the tradition and modernity and based on the utilized approaches. These classifications assist to formulate the base to show

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examples of the contemporary mosque architecture expression for them. Generally, it gets its reputation in the late of 20th century. After the second world



Figure 1. Framework for Methodology

3. Tradition and modernity:

The contemporary mosque implements a variety of used styles in one cultural environment is obvious from region to region. To be more precise, the different view in contemporary mosques should be looking for two essential distance traditions and modernity. The opinion derived from the clergy and was accepted as well by some architects, that mosques need to be maintaining the traditional architectural features of the old schools of regional architecture in order to be recognizable. Some architects tried to create a mixture between the "new" and "old" and merge the "tradition" with "modernity" and this style is called "panislamic". The modernity is not linked to the international and universal formal principles of the internationalism and not necessarily related to the advanced materials. in other words, we can see two contemporary mosques one of them is built in traditional style using contemporary materials and technologies and the other is modern using the traditional material. Khan had asked "in order to understand the building as a traditional or modern on account of how they appear or on how they produced.

4. Contemporary mosque:

The contemporary mosque is a trend that appeared in the Islamic society and resembles a specific

war when mainly after a large part of the Islamic world gained its independence. The contemporary mosques are very different from the old monumental mosques. They resemble different social classes and groups from such the government to individuals. The contemporary mosques hide in its essence a pronounced spiritual symbolic message and a background. traditional In accordance to (Serageldin, 1990) in his book the architecture of the contemporary mosque, "contemporary mosques raised the critical discussion in defining and giving an expression for them" the reason is that the mosques have highly symbolism which makes it so like scrutinized by the critics as well as the users. The second 50 years from the 20th-century increases in the different approaches in style including numerous forms, construction symbols, ecologies and types of decoration. Hence, the derived approaches implementation so far raised the question that most of the researchers are trying to answer it today: what is the most approach for mosque architecture that is reflecting the contemporary world? Based on expressions of Islam in buildings, (Salam, 1990). When Ismail Serageldin was doing a seminar for the contemporary expressions of Islam in buildings: the religious and secular, he classified the architecture of the contemporary mosque into (vernacular or popular, Traditional, populist, adaptive modern, modernist). Furthermore, a several stylistic expressions were identified based on analysis conducted on a number of prominent mosque design, whose are presented in the following order based on the integral architectural values: (vernacular architecture – historicism architecture – regionalism as a modern approach to creation- innovative approach or modern expression) as a modern approach or modern expression. Although these classifications had some deficiencies and limitations. Because some of the existed mosques show more or less from the defined expressions or have a mixture between two of them or more.

Several authors were concerned in the classifications of the contemporary mosque architecture, their definitions where somewhat vary between the range of the conventional - contemporary and innovative mosque. Fethi's "conventional/conservative" approach (Fethi, 1985: 55-57), Serageldin described a" traditional" and" modern adaptive approach" (Serageldin, 1990: 19-20;.), while Khan's call it "contemporary classic" (Khan, 1990: 124).

4.1.Vernacular architecture:

The vernacular approach in contemporary mosque designs is connected with the regions that still maintains their rural lives and didn't get affected by the recent societal technologies and styles. These mosques are consisting to be constructed with single architects and local masons and the indigenous vocabulary. This type can be noticeably founded in some region of Africa such as Algeria-Tunisia-Egypt. furthermore, it could be in contemporary regions that implement the vernacular architecture, A good implementation for this approach is the New Gourna village in Luxor, Egypt.



Figure 2. H. Fathy: Damija, Nova Gourna, Luxor, 1946. Source: by Roland Unger

4.2 Historicisms

The revivalism of the monumental historic styles for the contemporary mosque design drives from medieval Islamic styles. Sometimes this approach involves being mixed between the individual approach and the literal interpretation of the regional architecture (hassan, 2008). Some mosques show a mixture of two or more designs. The form and the external wall are the main constraints of the historicism type of mosques. Although seeking inspiration for new mosque designs within the traditional styles don't refer to any Islamic values and rules, or strict by Islamic sacral architecture, the historicism expression type still compromises to be most frequently used in the contemporary mosques rather than any other building type. A good replicant for this style can be seen in the works of the architect Abdel Wahed El-Wakil, Island Mosque, Jeddah, KSA. The mosque shows elements from the Ottoman, Suljuk, Mamluk and Rasulid architecture.



Figure 3. Island Mosque on the left, Plan and section on the right, Jeddah, KSA source: (Salam, 1990) and http://middleeast-business.com

4.3. Regionalism

This form gives attention to the specific local features and both physical and cultural context in a specific region. But also, with the consideration to use the contemporary technologies and concepts of form. A result of an interpreted and abstracted form from traditional in a modern manner can be obvious. The key element to fulfill this expression is that the architect's awareness of the indigenous building values and to interpret these values in the contemporary techniques.

An obvious paradigm can be found in the mosque of Imam Turki bin Abdullah Mosque in Riyad.



Figure 4. İmam Turki bin Abdullah Mosque in Riyad, source: Getty images

4.4 Modern expression

This approach comprises to use the pure geometric and abstract shapes and the implementation of the new technologies. The architectural modern expression or innovative approach requires quitting the traditional forms, decoration, and symbolism. On the other hand, they tend to meet the basic functional and ritual requirements such as decoration, Minbar, Mihrab, and Minaret but release their forms. The prayer hall shape and span are shaped in accordance with the modern methods.



Figure 5. A.Noe'man: Damija, Salman Mosque, Bandung, 1972.

The historical development in the mosque forms and expression of the building defines the differentiation between the contemporary mosque to be observed as using an innovative approach or conventional approach. Classifying for contemporary mosques approaches in conjunction with the style expression was conducted. These conventional approaches have been defined based on the used materials and the technology "original and conventional materials". That can be implemented on the



expression styles of (Vernacular, Historicisms, Regionalism). And the innovative approach mainly displays three features which demonstrate mosques: pure geometric and abstraction for the shape that can obviously detect in the layout composition. It is quitting the traditional forms, decorations, and symbolism but they tend to regard the functional and ritual elements (mihrab, minbar etc.) of the mosque but by using a free form. Lastly, shapes and planning the prayer hall using the modern methods of



construction. The innovative is based on using the modern materials and technologies applied to the styles expression of Vernacular, Historicisms, Regionalism and modern expression). In other words, mosques with historical expression style and uses of the traditional materials can be defined as "contemporary mosque with the conventional approach", while mosque represents the same expression of historical style but with the usage of the modern materials can be defined as a

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contemporary mosque with the innovative approach". They might be similar in their appearance while their approach is deferred

Tradition to Modernity mosque in Turkey

Through observing the changes that occurs on the mosque architectural elements from traditional to the modern days, such as Mosques domes, layout, and minaret. To have a clear classification for the contemporary mosque's expression and approach in turkey. The dome as a dominant feature to abstract, Although the dome is not considered as a ritual requirement, but it is one of the most dominant and basic symbols in the architecture of the Ottoman mosques (if not all mosques). The large lead-covered dome form of mosque is a strong cognitive image for the users. It has a significant meaning of power and a focal point of assembly. During the Ottoman era, the traditional mosques were using the domes seeking for a strong structural element to support the space. The presentation of dome (complete dome or half dome) were connected with the layout topology. and for the innovative layout it remains associated with the layout shape, but the employment was different. It shows more abstraction and escapes from its fundamental function to become a symbol for the innovation. Minaret is the distinctive architectural feature of the mosque, which is principally used for the call to prayer (adhan) (Creswell 1926). A modification occurred in the function and the form of the minaret. Although it is originally designed for the call for prayer, the minaret is not maintained its functionally today due to the developer in the amplifier's technology. Previously, the Adhan used to called by the muezzin from a small balcony surrounding the minaret shaft. while recently, it is called inside the mosque and transferred to amplifiers in the minaret. For the minaret form for the conventional mosque, were at least one pointed minaret attached to the mosque. Ability to erect more than one minaret is eligible only for the sultans. The contemporary mosque is preserving this mosque element for aesthetic and spiritual presentation. Therefore, many forms of the minaret emerged to the contemporary mosques.

Contemporary mosques in Turkey and innovative approach

The contemporary mosque architecture in turkey can be expressed after the 19th century until this day. Although the stereotype still appears in the some of the contemporary examples in main time, the innovation produced can be observed for various architectural forms immerge to mosque design. Creating innovative mosque styles that are new interpretation or abstraction of the traditional and historical mosque architectural elements. Moreover, the traditional imitated mosques are presents, they are special for using different constructional technologies and building materials that separated them from the classification of the traditional mosques and either the innovative ones. This appearance of expression and approach results after a several of ideological changes and effects on the (social-cultural and politics) of the region. The most appeared styles of expression in the contemporary mosques in turkey are (Historicism and modern expression) the other two type can rarely be founded. A study was conducted by (Celik and Kalayci, 2014) on the "Public's Judgment on Contemporary Mosque Design Approaches" determined that the young Turkish users preferred the contemporary mosques which use modern and innovative approaches that show a "modern expression" rather than that those mosques that are imitating the historical form and figures "historicism".

Contemporary mosques in Turkey:

Based on the revision of the scholars' classification for the contemporary stylistic expressions, some of the notable examples in turkey were presented in the Table 1 which are classified either innovative approach or conventional approach based on the previous review of the scholars' classification. First example is Küçük Çamlıca Mescidi represent the vernacular architecture, through the used materials and the way its been approached is a conventional approach. Second example is Mimar sinan mosque in Istanbul, the international style expression is historicisms, the mosque is monumental, and it is a way of reviving the ottoman architecture by imitating it. It uses an innovative approach and new building technologies in order to revive the historical style. Similar method has been applied to third example Kocatepe mosque in Ankara. Fourth example is Etimesgut h.i.b.k. mosque in Ankara which represent the regionalism as a modern approach to creation. In fact, the international style expression is regionalism the innovative approach for the construction shared the third classification (regionalism) for it style and the fourth classification (modern approach) for its constructing method. Fifth example is Yeşilvadi mosque in Istanbul which is the case analyzed in the next part, and it is demonstrating the modern stylistic expression and uses an innovative approach. The sixth example is the Grand National Assembly mosque in Ankara, and it is classified under the modern expression while it is interpreting some tradition and regional elements in modern expression by using an innovative approach. Last sample in the table is Sancaklar mosque, reflecting the modern expression and implements the innovative approach.

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		U		
International Stylistic Expressions	The mosque	Exterior	Interior	Approach
Vernacular architecture (Indigenous)	Küçük Çamlıca Mescidi, Istanbul		-	Conventional approach
Historicisms (Monumental- Ottoman Revival – Imitational)	Mimar sinan mosque, Istanbul			Innovative approach (historical revival)
	Kocatepe mosque, Ankara			Innovative approach (historical revival)
Regionalism as a modern approach to creation	Etimesgut h.i.b.k. mosque, Ankara			Innovative approach (Regionalism)
Modern expression	Yeşilvadi mosque, Istanbul			Innovative approach (modern expression)
	Grand national assembly mosque, Ankara			Innovative approach (modern interpretation for regionalism and historicism)
	Sancaklar mosque			Innovative approach (modern expression)



Figure 6. on the left The Minaret. source: <u>http://istanbul.for91days.com/</u> marble Subdivisions at the entrance source :Sahir Ugur Eren

Case study for modern expression mosque using innovative approach:

Yesilvadi mosque is an interpretation of the traditional domed mosque. The main prayer hall has a semi-circle shape in the plan and have two intersect domes different in size. Spatially, this arrangement increases the spatial quality, creates a feeling of infinite space and forms a strong experience of centralized space. Moreover, the quality of the space increased by the direct daylight coming from between the two domes intersection. Although semicircular layout shows a new composition that is not used in the traditional approach and the historical expression, the volumetric spatial is a clear interpretation that represents the dome in the traditional mosque. The mezzanine floor which is planned over the entrance and can be reached by two spiral staircases is considered as the "women's Mahfil" in the traditional mosque had the same criteria of being at the top. Interpretation and innovation in the minaret by using the galvanized Metal pipes represent an abstraction of the "mugarnas" which were used to decorate the minaret balcony, the galvanized metal pipes have an additional function to hide the light sources and the loudspeakers inside it.

The interpretation of mihrab is the dominant feature in the mosque because it determines its location from outside and inside by its prominence projection outside the Qibla wall as identifying the mihrab mass in the qibla wall. Moreover, the mihrab is defined also by the entered light from the sides allows illuminating all the mihrab sides. The interior space is efficiently lightened by the big opening between the semi-domes and the small windows around the prayer hall, moreover, the circle windows above the windows provide more scattered daylight to the mosque. The inner space is less decorated and ornamented to expose the main structure and not to hide any element.

Conclusion:

This paper provides a classification for the contemporary mosque design upon both perspectives the style expression and the used approach. The classification of the style expression is a consequence of both dimensions of the tradition and modernity, writers who were concerned in the categorization of the mosque were moving around these two terminologies consist to have mainly four divisions (vernacular, historical, regionalism and modern expression), the second concern was looking for the categorization by the used approach in the constructions (the materials and construction methods). In turkey these variations in the contemporary mosques are obvious. And somehow some expression is apparently more than others. A brief classification of some well-known contemporary mosques can show the trendy expressions and approaches utilized in contemporary mosques in turkey. this classification can provide a further taxonomy for contemporary mosques for researchers.

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Obsolete? Relevance of the Architect's Role and the Changing Nature of the Architectural Profession

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Abstract: This paper uses an exploratory approach and literature analysis as strategies of inquiry to report on the general state of the architectural profession in selected developed and developing countries. Through review of published articles on the architectural profession, architects' roles and their workplaces/practices, a research strategy is developed, starting with a comparative analysis in the evaluation of the profession in regard to past, present and future relevance. A similar comparative analysis is used in investigating strategies employed in maintaining the position of the architect, where four key strategies adapted from the literature are discussed with respect to both developing and developed countries.

The findings reveal growing concerns towards the relevance of the architect's role and the profession in general, both in developed and developing nations. The study further discusses strategies recommended from the literature to be put under consideration to ensure the sustained relevance of the profession.

Keywords: Architectural profession, communication, architectural education, architectural design process, architects role, user involvement, innovation, knowledge management

Introduction:

Cuff (1991) argues that over the past century, the architectural profession to a great extent marginalized itself by maintaining an elitist social distinction and through creating 'silent boundaries', such as during the '*avant-garde*' movement, where the architect's social obligation towards users was considered secondary.

Consequently, architecture (at levels of both professional practice and ideology) continues to undergo a narrowed professional jurisdiction resulting from weakened authority over contractors and clients, as well as due to increased jurisdictional competition in the construction industry from other occupations such as client representatives, developers, construction and project managers. (Faoro & Merrill, 1990; Pinnington & Morris, 2002)

The inception of the architectural profession dates back to the 19th century, arising out of demand to satisfy requirements of the industrial age such as specialised buildings like industries, train stations and housing. Increased complexity in construction consequently created need for regulation, at a time where builders had low literacy levels thereby turning architects into disseminators of information and a crucial link between clients and contractors (Saint, 1983; Gutman, 1988). While the architectural profession and the contribution of architects in the AEC industry have remained relevant over the centuries and will continue to do so, it has to a given extent faced disruption, with significant encroachment from disciplines such as engineering and construction management (RIBA, 2007). In a number of western industrialised countries, the role of the architect appears to be eroding as evidenced by the diminishing volume of construction in which architects have direct input, with a possible explanation being a mismatch between society's expectation from architects and they are actually willing and able to offer (Faoro and Merrill, 1990; Wagner, 2004).

This structure of this study is exploratory, using an interpretative approach in which both primary and secondary sources of literature are critically analysed and classified to ascertain whether (and to what extent), the architect's role as the orchestrator around whom the building process once centred, and whose responsibilities entailed creating the building's design and producing construction documents still holds, and the extent to which it is being threatened by related disciplines. This paper comprises a literature review section covering the past and current state of the architectural profession while the section presents strategies second and recommendations for the profession's continued relevance. The final section comprises a discussion and limitations of the study.

2 Literature review

A number of debates amongst scholars have indicated how the roles and influences of architects, and the architectural profession have eroded with time, with the key challenge that the profession has had to continually navigate being an ideological shift of emphasis from creativity (the profession's primary legitimizing principle) towards more complex business models and competence development programmes in a bid to streamline workflows (Pinnington & Morris, 2002; Spencer, 2014; Styhre, 2009). According to Winch and Schneider (1993), the reluctance of architectural practices to adopt a diversified threefold structure in which they can efficiently and concurrently operate as a professional organization, a service organization and a creative organization can be attributed to one of the primary reasons for their hindered growth. The concentration on singular roles, such as on creative aspects like the aesthetics of design continues to put the profession in a weakened position, despite the rewards associated with design such as social status, specialized technical skills or cultural benefits (Gutman, 1988).

Furthermore, the weakened position also results from architectural practices preferring design excellence through creating distinctive original projects at the expense of the economic rewards associated with coherent strategic organization. Pinnington & Morris (2002) refer to this adoption of managerial and bureaucratic ideals as managerialism and includes strategies like more formalized reporting and control mechanisms devised in response to an eroding client base, power heightened client and intensified jurisdictional competition (Reed, 1996; Blau, 1984). Reduced economic gain to architectural practices has been documented in different contexts and periods, such as in the United Kingdom in the 1990s (RIBA, 1992; RIBA, 1993)

As indicated earlier, the jurisdictional competition faced by the profession can be attributed to its lack of autonomy, unlike professional fields like legal and medical services. While professions are considered

occupations characterised by specialised knowledge attained through an extensive education and a practicing licence, and should consequently guarantee autonomy, the architectural profession does not enjoy such autonomy from external control. Autonomy is further associated with control of knowledge and unlike the medical field, where complexity means challenges to the medical profession mostly come from within the profession, architecture is considered a permeable profession (or having a permeable periphery) where its abstract knowledge is challenged both from within and without (Fisher, 1994). Permeability arises from architecture sharing jurisdictions with quasiprofessions like property developers (home builders), real estate agents and construction managers, with each of these profession taking a toll on its autonomy. This lack of autonomy is captured by Brain in his 1991work

The autonomy of the architect is hemmed in on all sides: The client controls the budget; building technology is controlled by builders, engineers, and the industries that produce materials and equipment ... and it is particularly sensitive to economic conditions.... Architecture operates on terrain that can be easily contested. Its legitimating principles are stubbornly cultural rather than convincingly scientific, and issues of style are particularly salient Brain (1991, 263-265)

Blau (1984) highlights how the various stakeholders involved in the construction of buildings all have strong opinions about how buildings ought to function and look, and are often never in agreement. In addition, architects are excluded from the making of their artefacts, whereby despite their role as designers, they rarely 'make' buildings, a role executed by contractors. Frimpong's study (2016) notes increasingly negative perceptions and attitudes amongst clients towards professional services such as architecture while the Royal Institute of British Architects [RIBA] in its study (2011) found a disconnect between architects and clients with regard to their perceptions of each other in architectclient relationships, with the revelation that a big number of clients felt dissatisfied with architects' management of building projects, arrogance, imposing nature and focus on their personal ideologies rather than client needs. The influence of technologies such as BIM in reshaping the conventional design process from its clearly specified five stages (preparation, design, preconstruction, construction and usage) could also have had an impact on the architects relevance with the creation of new key positions in the construction industry (RIBA, 2007).

Fisher (1994) illustrates the situation by referring to architectural design practice as a subtractive process

in which the architect once had control over the entire 'ball of wax', from which pieces were peeled off for other consultants but has since turned into an additive process in which the architect's role is simply another of the many small bits assembled together by the numerous construction coordinators.

The architectural profession also suffers from proper lack of direction, in the sense that unlike engineering disciplines which draw on a scientific body of knowledge, architecture is regarded by architects themselves as an artistic and creative field, in which case creativity remains an ambiguous term. (Williams & Askland, 2010). Creativity, according to Blau (1987), is built on the romanticized concept of individual talent and genius rather than on the architect's ability to objectively demonstrate value in the projects they design, as well as on the fact that architecture is an inherently collaborative endeavour. Architecture schools are singled out as culprits for educating students with the notion that each graduate architect will be tasked with individually designing an entire project. (Seidel et al, 2006; Gray, 2014). This mismatch in direction and ideals has further held back the practice of architecture.

To further highlight how the internal structural conflict between school and practice holds back the architectural profession, a National Institute for Architectural Education report presented its findings (NIAE, 1999, 6)

There is serious dissatisfaction in architecture over the widening gap between theoretical and practical knowledge and the conflicting objectives of academic preparation and professional practice. Practitioners complain that recently graduated architects are not well prepared to function in today's office environment, with new intern architects lacking skills and the necessary sensibility to the real world environment of professional practice. Similarly, educators complain that architectural offices are so immersed in the pragmatics of practice to grasp the connection between architecture and cultural evolution.

Several studies have attempted to capture the extent of the threat to the relevance of the architectural profession in the global context (both in developed and developing countries), and are discussed in this section. Faoro and Merrill's study (1990) conducted with 35 leading American architects over a two year period revealed that the architect's leadership role was getting replaced with other non-architect personnel such as construction managers and contractors, with a number of architectural practices either on the brink of failure or filing for bankruptcy (p.183). Their review of architects' contract documents also revealed an undesirable transition of architects from an overseer of the construction process, to an observer and to an extent having no role to play in the construction process.

Similar research from Seidel et al (2006) revealed a similar trait with respect to four developed countries of United Kingdom, Australia, New Zealand and the United States, where the 1614 respondents acknowledged the fact that an architect's work, even when functionally and aesthetically unique, can no longer be regarded as irreplaceable creations. In the developing world, Young-Pugh (2005) notes deficiencies in the South african local market for architectural services results in mobility of both graduate and practicing architects to overseas markets, especially to Commonwealth countries.

In their study focusing on client needs and expectations, Dansoh and Frimpong (2006) revealed a reluctance by clients in Ghana to commission clients for housing projects where the law does not mandate as such, resulting in the exclusion of architects from a big number of private housing projects. While majority of clients acknowledged the importance of architectural services, they felt no obligation to source a professional licensed architect due to concerns such as reduced autonomy and the over reliance by architects on complicated paperwork and documentation to justify high consulting fees

(1992)Bristol investigated architectural professionals and paraprofessionals in four Chinese cities (Shanghai, Nanjing, Beijing and Hong Kong), three Indonesian cities (Denpasar, Pengastulan, and Jakarta), Philippines (Manila), Thailand (Bangkok) and Mexico city over a two year period with an intention of finding the level of professional participation in design work, with results highlighting the need for self-built housing especially for low income earners that eliminates the need for architectural services. This section can therefore deduce that the architect's role and the profession, both in developing and developed countries are facing marginalization and are under threat for various reasons including competition from non-architect consultants, changing client perceptions and competition with peers for already declining work

3 Strategies to keep the profession relevant Having discussed the various threats the profession is undergoing, a number of strategies are proposed from literature on how architects can continue to renegotiate the ever changing boundaries (of what is, and what is not) that define the profession thereby helping to maintain their relevance and continuity.

3.1 Innovation

Innovation from an AEC perspective is defined by Toole (1998) as the application of technology that is new to an organization that improves design and construction through decreasing installed cost and increasing installed performance. Given the challenges the architectural profession has faced over the last decades, que0stions arise whether architects are innovating enough with regard to executing new knowledge, learning, materials, skills and technologies to achieve client satisfaction and remain competitive

Innovation of architectural practices in developing countries was investigated for countries including Malaysia (Lai et al, 2016) where interviews with 151 Malaysian architects revealed that local architects valued innovation-leaning practices such as originality in expression, continued learning, teamwork and freedom of expression in their architectural practices so as to remain competitive. Additionally, a study executed in Turkey by Erbil et al (2013) revealed partners of 13 leading Turkish architectural practices expressed the need for innovation in their work, in addition to acknowledging the significant role that clients (especially those with higher technical competence) play in encouraging innovation by their willingness to share risks.

In the developed world, innovation based research include Renier and Volker's study (2008) investigated drivers of innovation in four Dutch architectural practices and found that all firms considered themselves innovators since they initiated development of new unique solutions to different problems and that the main driver for innovation was strong ambitions shared by both architects and clients to push to new boundaries. Innovation was further investigated as part of Nobre and Faria's study (2017) investigating the extent of marketing efforts amongst Portuguese architectural service firms. From the 24 in-depth semi-structured with both architects and clients, it was revealed that majority of studied firms implemented innovative practices through both marketing as well as offering customised and diversified services to get around the economic downturn in the Portuguese economy, to navigate the challenge of little awareness amongst the general public of the importance of architectural services as well as against the strong competition from peer firms. Similarly, a study conducted by Rivard (2000) revealed majority of Canadian AEC firms as early as the late 1990s had or were in the process of adopting innovative practices especially with regard to Information Technology (IT), computerisation of design information workflows and adoption of integrated project deliveries, also referred to as 'integrated practice', which refers to contract structures where there is integration of traditional design phases of design, build and maintain (Jansen & Sijpersma, 2007). In such integrated deliveries, both the design and the realization of projects is covered under a single contract.

3.2 Communication and user involvement

A number of studies suggest the ability to effectively guide and communicate decisions to clients, as well as collaborative participation between clients and architects at all phases of the increasingly complex architectural design process as part of the most fundamental skills required of architects. (Norouzi et al, 2015), (Bogers et al, 2008), (Weytjens et al, 2009) and (Emmitt et al, 2009). Efficient communication should involve transactional models where information is simultaneously sent and received, starting when a client defines their needs to an architect through idea generation up to presentation of the design solution (Norouzi et al, 2015)



Figures 1 and 2: Simplified and detailed communication models between architects and clients (Source: Norouzi et al, 2015; Graell-Colas, 2009)

Communication and user involvement should not be limited to the mid and later design stages but as well to the briefing process in the pre-design phases (before production of drawings), when clients are defining the program of needs, budgets, and aspirations. (Bogers et al, 2008). Communication strategies should be devised for briefing problems such as architects' concerns that briefing documents are at times inadequate and limit creativity, as well

as clients' impressions that their briefs are poorly interpreted and ignored by architects (Brown, 2001; Bogers et al, 2008). A study investigating 18 Dutch architects' roles in briefing and perceptions towards briefing documents was conducted by Bogers et al, (2008) which revealed majority of architects found design briefs to be vital documents without which design commencement would be impossible. Dissatisfaction was however noted by architects regarding the state of briefing documents with issues such as containing generic information already known, incomplete or too detailed, lack a precise document structure/format, and usually have inconsistencies and contradictions (Bogers et al, 2008, p.111). Majority of the architects preferred to complete all briefing information before the design process began (to limit new requirements and changes in the middle of design/construction) over the opinion of briefing as a continuous process that interacts with the design process.

Improved ways of communication (using advances in technology) were also investigated in developed countries, with Weytjens et al (2009) studying use of design support tools, (DSTs) by 319 Belgian architects for collaborating and communicating ideas to clients in the architectural design process. Having classified DSTs into 6 categories (communication tools, knowledge-based tools, evaluation & analysis tools, presentation tools, modelling tools and structuring tools), results showed architects mainly used 2D CAD software, sketches and photos (over 70%) followed by books, journals, databases like Neufert-Architects Data and other standards/regulations literature while few architects used simulation, evaluation tools, case based reasoning and post occupancy evaluations (Weytjens et al, 2009, p.293)



Figure 3: Use of DSTs by Belgian architects. (Source: Weytjens et al, 2009)

3.3 Knowledge Management (KM)

Knowledge is defined by Davenport et al (1998) as a combination of information, experience, context, interpretation and reflection that is applicable in everyday decision making process. The complex

nature of the architectural design process and the construction industry in general, whereby each project is unique calls for continuous accumulation of knowledge since one project's knowledge may not be applicable in another project. The construction industry therefore requires systematic procedures for managing the enormous amount of embedded information/knowledge, to the extent that the architectural and construction consultancies that adopt adequate management systems eventually secure improved productivity and a competitive advantage through improved employee workflows and decreased project durations. (Kayacetin and Tanyer, 2009).



Figure 4: Various kinds of knowledge/information in the architectural design process that require systematic management (Source: Kayacetin & Tanyer, 2009)

In developing countries, Kayacetin and Tanyer's research investigated knowledge management methods (such as sharing, storing and deployment), benefits and barriers of knowledge management in 15 architectural practices in Çankaya District Ankara-Turkey. The study revealed sampled Turkish architects mainly used the internet, clients, seminars and peers as the main sources of knowledge, preferred to share this knowledge through electronic means (email) and social communication (say through training new staff on office standards) while also preferring to store it in digital archives and servers over paper archives. Barriers to knowledge were identified as the unique nature of each project and the lack of standardized methodologies for managing knowledge specific for the architectural industry while benefits included increased productivity in offices, enhanced employee satisfaction and efficiency, decreased wasted design efforts/work errors even without actual translation into profit (Kayacetin and Tanyer, 2009)

In addition, Lasode and Ogunsola's (2018) study involving 104 architects in Ibadan city, Nigeria revealed strength of social interactions/relationships

amongst partners and staff in architectural practices was correlated with knowledge sharing efforts. It was also observed that respondents' satisfaction resulting from sharing knowledge with other team members increased the actual frequency of knowledge sharing efforts in offices and in comparison to Kayacetin and Tanyer's study (2009) in Ankara. Nigerian architects similarly demonstrated a high level of ICT usage was relied on for managing, storing, retrieval and sharing knowledge. In developed countries, Kamara et al (2002) investigated trends and practices in the management of industry knowledge/information (i.e. statutory regulations and procedures, technical information like materials, specification and technologies, suppliers and subcontractor information as well as client information) in 15 architecture and engineering practices in the United Kingdom. The study focused on among other things organizational drivers of project knowledge that included improving efficiency, minimizing waste through mitigating duplication of design efforts and repetition of design errors. The processes identified in Knowledge Management included use of ICT tools in managing and sharing knowledge, knowledge accumulation and transfer of professionals to new jurisdictions as the main avenue to transfer knowledge to new places, capturing lessons learnt during projects and turning them into best practice procedures for the future,

Emmitt et al (2009) also investigated knowledge management efforts in a British architectural practice through an action-research methodology beginning with problem identification, implementation of a new action plan followed by a monitoring and evaluation period. The new proposed recommendations were able to improve the practice's capacity with regard to managing knowledge and design effort by the end of the 6 month implementation period. With regard to knowledge management, there are efforts being made by architectural practices both in developed and developing to strengthen the architect's position as leader of the construction process.

3.4 Architectural training & education as a strategy

Earlier sections of this paper captured the conflict and disconnect between architectural education and practice. However, architectural schools, with the right reforms present a viable potential tool for helping sustain the profession. (Gray, 2014). Several studies since Cuff's study (1991) have sought to demystify the preconceived presumptions that architectural education fundamentally differs from 'standard' (non-design based) education models and disciplines (Seidel et al, 2016; Williams & Askland, 2010; Blau, 1987).

Based on challenges faced by the profession, attention equally turns towards the adequacy of architectural education in equipping graduates with the quantity and quality of training/skills to remain relevant. In a study conducted with 1614 respondents in four developed countries (US, UK, Australia and New Zealand), Seidel et al (2006) highlighted practitioners in all four countries felt their education gave them competence in the skills of urban design/planning, structural design, schematic design and building technology. However, Australian/New Zealand architects expressed less confidence in their training in brief preparation, American architects felt more confident about the urban planning skills and least confident about codes and specification, British architects felt better equipped with interior design skills.



Figure 5: Mean scores of training received vs training required. (Source: Seidel et al, 2006)

Throughout all countries, there was deficiency in business, management and computer related matters. The key observation revealed how knowledge needs of architects are greater when compared to the level of training received, with the architects believing they were 'under-served by the education' (Seidel et al, 2016, p.202)

In other cases of developed countries, research conducted by Svetoft (edited in Emmitt et al, 2009) at Sweden's three top architecture schools, (KTH-University of Stockholm, Chalmers & Lund University) it was revealed how none amongst the three schools emphasized a pedagogical role of user involvement and communication skills in the design process.

Gaps were reported between third year students' theoretical and practical skills, implying that professional based curriculum was deficient in their study programmes.

There are similar findings from developing countries such as in South Africa where Young-Pugh (2005) reveals how educational focus of South African architecture schools has undergone transformations over the last twenty five years, with priorities "turning to engagement with ethical, contextual, social, and environmental issues rather than idiosyncratic formal and spatial expression" (2005, p.36) so as to deal with South Africa's escalating problems as well as equip students with an awareness of the fragility of the local and global environment.

Similarly, Dua and Chahal's study (2004) on architectural education in India found attempts at standardization of curriculum by universities and the council of architecture were only limited to defining contact hours in design studios and defining studentteacher ratios, a scenario they liken to creating byelaws for control and regulation of housing construction, irrespective of whether the laws ensure a good quality of architecture. Indian architectural education also faces a dilemma with educational institutions becoming answerable to the Council of Architecture rather than to their university authorities. This section is also able to highlight how despite efforts of schools of architecture in producing all rounded graduates,

4 Discussion and conclusion

The premise of this paper was to discuss the past, present and future of the architectural profession. From the literature, there is an indication of confirmation that the autonomy of architects is under threat and this can be attributed to competition faced by architects due to the evolving nature of the construction process and consequently the architectural design process. These evolutions consequently result in changes in available technology and in client perceptions. Other factors include availability of quasi-professionals capable of delivering architectural services and consequently weakening its professional jurisdiction, the profession's inability to adopt managerial practices for optimum performance as well as the structural deficiencies that exist between architectural education and practice

Three major strategies (innovation, communication and user involvement, knowledge management and streamlined education) are presented from literature as guidelines that architects can adopt (or adjust their practices towards) so as to maintain their relevance. This is discussed in the context of both developing and developed countries. Some limitations of this paper relate to its scope, whereby while there is an attempt to address both developed and developed countries, representativeness is not achieved since case studies are limited to those available in the literature. Hence the study suffers from a limited scope that falls short of a global/exhaustive picture of architectural practices around the world.

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