The Meaning of Studio Practice Over Shadowed by Technology in Design Process

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ABSTRACT

Design discipline can be defined as it has dynamic, technologic, socio- cultural features and its process changes constantly. The design problems in the design studio are mostly fictional; the virtual user, program and space become concrete by the requirement program that is specified according to research in this process. Although this designed virtual space has potential for construction, it is observed that it remains at conceptual format on paper and doesn't become reality. It is a stubborn fact that both conceptual and construction project provide essential contributions to design discipline and make references to different aspects of design. The final design artifact generated in the light of this information, is beyond being just the perceptions, opinions and technological advancements. It can be defined as the reflection of the *existence* of its designer. In this report it will be emphasized how is design realized, how are the concern of conceptual thinking, analyzing, synthesizing, evaluating and resulting processes attained, where is the place of intelligence in the perception of problems. The importance of intelligence in the solving the problems and the experiences of memory in this process will be represented as well. As a result of this the design process and studio practice can be recognized as an *"experimental"* process and the developments in technology provide various interfaces and data. One of the purposes of this report is the discussion about the advantages and disadvantages of technology in the construction phase, which is the continuation of cognitive process. Beside this, design as an *"interface"* of susceptibility of its designer will be examined whether it reflects the original identities with technological advancements or not. Within the scope of this study, the real-physical environments perceived by an individual and the "perceptional phychology of space" created in individual's mind is compared to the individual's spatial perception experiencing in the virtual environments. The idea of the digital space created by using the VR and AR virtual reality technologies have been researched about to what extent it might be involved with the perception of real human psychology in design education. The effective use of technological visualizing methodologies such as VR and AR will expose a new perspective in design education.

Keywords: design education, studio practice, design process, technology, virtual reality

INTRODUCTION

Design is a phenomenon of the components that make up itself as an abstraction. In a paradoxical structure of life and fluctuating of the time that individuals live, they gain experiences by giving a meaning to the spaces which thanks to the imagination were created in certain forms.

Contribution of this paper to the literature

- This study includes readings about digital visualization, "virtual space", such as Virtual Reality (VR) and Augmented Reality (AR) and reveals the relationship between design education, learning and creating efficiency.
- This study provides guidelines for architects, interior architects, designers and academicians about spatial intelligence and digitizing in spatial design.
- This study deals with the traditional design education, from studio culture point of view and effective use of technology emphasizes that design studio courses and projects should be planned together with Virtual Reality (VR) and Augmented Reality (AR) solutions because of influences in cognitive skills, creativity and spatial perception of person.

Design action as a condition that occurs in the world of images is concerned; during the design process mind works at the level of the duration of the abstraction, the fact that most of the sources of inspiration for non-existent abstract concepts are seen. When we are interested in design, the starting question will be 'how a designer's initial creative idea is transformed into a design product?' In the creativity, the most important point is as a source of inspiration for reality that does not coincide with anything, with the help of vision that is evaluated as imagination to create abstract concepts and visions, differs from conscious activities, to create new sensory or intellectual reflections in human consciousness.

Designing is one of the foundations for change in our society. It exists because the world around us either is unsuited to our needs or can be improved, and the goal of designers is to change the world through the creation of artifacts. Design as a human activity is mainly our conscious action to modify our close environment and try to create an ideal **"artificial"** set up to live in or to experience. They do this by positing functions to be achieved and producing descriptions of artifacts capable of generating those functions. So, the need for designing is driven by a society's view that it can improve or add value to human existence beyond simple subsistence. When simple subsistence is not met, then the need for it drives the need for designing also. As a consequence of designing, the world that we inhabit is increasingly a designed rather than a naturally occurring one.

Thus, designing can be defined as a process of assimilation of the interaction between the ability of not only mind's intellectuality but also the ability to sense an emotion, and a vision. Designing is something that all people can do; which is depend on the ability of **human intelligence**. Design is a key element and outcome of functioning human brain that means process of thinking and solving a problem. The ability to design is widespread between all human, but some of them are better designers than the others according to their awareness, socio-cultural background, experiences and etc. Covering such a kind of action which consists of creativity, questioning, problem solving, thinking, sensitivity, information gathering, analysis and synthesis, may change final result of the design process.

Design starts with the questioning and discussion of existence-absence. In this context of this approach we need inspiration source to create or organize our thoughts / ideas and transfer the ideas to a concrete forms according to design problem. But after gaining some experience about to create concept, scenerio and asking specific questions, the designer can reduce to use concrete / existent inspiration sources.

A designer as well as being an inventor who expresses his or her creativity must have an inspiration point or source. Creativity is calling an imaginative force to solve the design problems together with the abilities to expand limitations of ideas and concepts. According to this, for the designer who thinks and designs through analogies and metaphors is easily and possibly reach to the more creative new concepts and contexts thought processes. Creating is only possible by thinking while setting up analogies.

Design affects our context at different levels and its disciplines are closely interrelated but operate at different levels of complexity and scale. Interior architecture is one of these levels of complexity that based on design which use scientific and technical inputs in order to meet user's need and provide the most comfortable environment to give opportunity for creating an aesthetical identity (Celik, 2008). Beside it is a professional design discipline that completes architecture.

There are applicable and theoretical designing courses in interior architecture educational programmes. Among these courses, studio/project courses are primary and compulsory ones because of their content, workload and applicability. In interior architecture education, studio courses are placed on centre of the curriculum which involve practical opportunities. The goal of design education is; make students which original and critical thinking, have aesthetic perception and creative individuals In that sense, studio courses are aimed to foster student's original thinking ability, questioning, analyzing, designing, supplying and criticizing on two and third dimensions with the theoretical information given before.

The aim of this study is to examine the technological approaches over traditional techniques in order to improve both cognitive skills and related techniques to manage and describe designing which is a goal oriented, constrained, decision making, exploration and learning activity.

DESIGN + CREATIVITY

When the organisational purposes, the assumed responsibilities and its mentality are considered, design is one of the basic fact and "conscious activity" that can change the society. Designing consists of creativity, making researches, perception, thinking, analyzing, problem solving and changeable intersections. It is a kind of process not only consists of menthal abilities, but also the combination of sense, sensitivity and imagination.

Design starts with the discussion of existence-absence at the beginning of the process. In this context of this approach there has to be an inspiration source to create or organize the thoughts / ideas according to design problem. But after gaining some experience about to create concept, the designer can reduce to use concrete / existent inspiration sources.

Designing is an act of transformation, and in that sense it is the highest form of adaptation of man made environment. It is also a form of communication in which constructs, concepts, and mental pictures of reality existing in the mind of the designer are transformed into visions of future realities.

On the other hand, by emerge of internet computer has become a main part of our daily life, destruction of limitations cause to transformation of sensitivities of society. This transformations also affects to perspective about design understandings. The product which is emerged at the end of the design process is the specification for that design problem. The most important inference for designing is "learning". In the light of all, the notion of design which is resulted "learning" as inference, is based on aim with the production of extraordinary thoughts and explore new approaches. In other words, designing is identification of relation between users' aim and behavioural system in point of necessities, function and user identity by asking questions and transformation of notions.

The source for human knowledge is senses. Human explores the shapes, structure, and existing qualitative-quantitative features of nature, universe, and finds the rules. Human converts the existing qualitative-quantitative truth of the universe into knowledge which is only the product of human mind and stated through the concepts produced by abstraction (Beşgen et al., 2014).

The basic understanding of design is the sum of different experimental organization methodologies of various elements and principles come together in an coherent way to form part and a whole relationship within the nonignorable requirements to generate integrative design/product. Design as an action which allows asking questions, interrogating, creating concepts and developing thoughts, in other words it uses philosophy of thoughts as an instrument. It is possible for the nature of design education that discusses different methods and experimental approaches to present various alternatives. Design courses in interior architecture education aim at dealing with various concrete-abstract problems as a design problem and to support the designers to produce unique solutions to these problems during the course flow.

The Design education is a way of teaching of cognitive settlement of designer for visual perception-knowledge-opinion and aesthetic realisation, within the process of exploration-inspiration-creation, developing and raising the abilities to coordinate hand-eye-brain, in accordance of dream-imagination-providence (Atalayer, 1994). Therefore, in design education in educating the artistic tendency, capacity and ability of the student, using and controlling the experience and accumulation related to vision and visual perception.

The basics of design has an important content formed by the information that will help students to adapt themselves into a discipline providing visual education. Students are tried to be provided to have some skills on coordination of different items around our close environment among eye, mind, and hand during the process of installing-animating the image in their mind. According to this process the image that is created in their mind has transferring onto the design media in visual way through the applications towards development of visual perception, visual language, and visual expression. The mental and understanding development of students' visual thinking ability, brings new horizons, new perspectives enrich to critize life and built environment. To support visual thinking ability new techniques such as VR and AR methods can be applied by using specific equipments to realize this close envirenment.

Designing and the design process involve the concept of "creativity". Creativity has been defined in history as 'an illumination', 'a kind of awareness', 'effective surprise', 'the unexpected', 'the extraordinary' by many philisophers, designers and architects. It requires mental activity that in a sense, to be able to think, produce new things, install new relations see objects or situations from different point of views to evaluate and this skill can be gained through studio culture during the design education.

A designer as well as being an inventor who expresses his or her creativity must have an inspiration point or source. Creativity is calling an imaginative force to solve the design problems together with the abilities to expand

limitations of ideas and concepts. To reach to the creative final product, "creativity" is certainly an essential ability that a designer has to reach and internalise to his or her designer identity. An original design has to be specified by the designer's different angled way of thinking and approaches. In design education, there are many different creative methodologies and approaches to reinforce types of skill, sensitivity and quality of works; promoting the creativity of the designer by using traditional and technological methodologies.

Creativity is the ability of an individual to perceive and transfer life experience; to re-synthesize the existing knowledge and proficiency; to reproduce the whole knowledge and to come up with new and creative ideas. In other words, the creative person produces different suggestions and alternatives during the creative process, by using the interaction between a person's thoughts and his/her socio-cultural context, intellectual knowledge, experiences, perceptions and imagination. The essence of creativity lies in the ability to reach the purpose through different paths. In creativity where invention and innovation is the core, all capabilities, thoughts, thinking processes and imagination of the mind interact with each other. The creative action towards invention combines and integrates all pieces of this installation to emphasize the part and a whole relationship.

In the context of interdisciplinary relations established within an academic context, are presented as a teaching/learning strategy, various meaning attributions become prominent. Thoughts originate from certain philosophies, conceptual understandings and unique point of views. As individuals try to perceive life through different point of views and acceptances, they use potentials of creative mentality while questioning and in order to get to the core of the issues.

STUDIO CULTURE

The philosophy of design is similar to all disciplines in terms of establishing hypothesis and proving processes, while the discipline of interior architecture and design remind complex reasoning chains and designers' rational functional solutions. While experiencing design and design process with the assistance of the cognitive instruments, the most significant instrument used by the designers is the mind.

While thinking the relationship between mental activity, philosophy and design, interdisciplinary overlapping points may become prominent during the basic design education. The most significant among these are the design language that is used, design ideas, thoughts and the space that is being represented.

Design education is the effort of expressing the abilities and power of creativity in aesthetic level by transfering ideas, emotions, and impressions of a person. It is the understanding that reinforces the creative design production of person's interests in any kind of design problem. It may offer various alternatives in terms of the definitions, relationships, types, concepts and instruments it uses as inference. These alternatives also contain attitudes encouraging thinking/being able to think about the foundations of comprehension (Law, 2012). Therefore, the imagination is formed, elaborated, and the meaning enlarges, thus all mind depending abilities improve.

Design education is a dynamic process that can change rapidly due to technology and socio-cultural structure of the society and their necessities. In interior architecture education project lessons are hold generally in places named "studio" by instructors can viewing students design directly on desks. Design studios are the basic methodology of the design education because of transfering the design ideas and knowledge. One-to-one meeting and criticizing are basic educational system in designing studio. Studios are anonymous places that designing students spend their most of times (Dikmen, 2011). Because of this studio lecture, involves many inputs and different information, places in center of the education programme like other design based disciplines. Related to this, Donald Schön's (1985) "reflection-in-action" methodology which is based on thinking and gaining knowledge while designing, is a little bit different than other education approaches and very unique (Taşlı, 2008). Interaction between learning and teaching is another factor of these cognitive activities. This interaction supports the awareness and understanding of cognitive activities that have a relationship with creative ideas.

In fact, the design studio can be regarded as a cognitive learning process or as a cognitive function of the mind, and, inevitably, the role of the cognitive content of design and design thinking can be described as the basis of architectural design education. So, design education is a teaching of cognitive settlement of designer for visual perception, knowledge, opinion and aesthetic realisation, within the process of exploration-inspiration-creation, developing and raising the abilities to coordinate hand-eye-brain, in accordance of dream-imagination-providence (Atalayer, 1994). Therefore, in design education in educating the artistic tendency, capacity and ability of the student, using and controlling the experience and accumulation related to vision and visual perception. When the studios are considered such a practice environment during the education process, it is expecting that the knowledge which are gained at the theoretical lectures, are synthesized with the creative thoughts and tranfered into design. In that sense, the most important issues and possible problems for the studio environment are the potentials of students, the knowledge of the studio instructors, their interests, ability of working and possibilities of producing together (**Figure 1**).

Figure 1. Studio environment

In the light of these, designing and studio culture is experienced as "experimental" process and the improvement in technology can provide some inputs to that process by using some interfaces. Therefore, the generative potentials of the design problem's context is based on the qualities of mental and perceptual processes of the student's performance during the analyzing. It's known that the advantages and disadvantages are provided by technology in "production" which is the continuity of "mental" process in design action. So, the design product is a kind of abstract concept that is created in mind and based on the interrelations of ingredients. According to the concept, the principles and the elements to install the end product completes its abstract journey initiated within the mind by transforming into a concrete product. Thus, design has its physical/plastic form that can be decoded and identified by its concrete characteristics in which is created through design elements and principles.

Design studios, which place particular emphasis on the issue of abstraction assist in developing the skills that allow for expressing thoughts through linear representations. Abstraction is a cognitive process, therefore architecture abstraction points to a perceptive situation that exists throughout the design process (Gibson, 1968). Design education, which gives priority to abstraction, perception and thought, requires overlapping with other disciplines.

Design is not merely teaching of skills and techniques, but expression of the designer him/herself and understanding in relation to the problem. Design education is required to enable individuals to think, analyze, define, relate, synthesize and apply their knowledge to change the environment. The designer should learn to wonder, imagine, observe, search and evaluate available hints to be able to find alternative solutions and approach problems with a criticizing and creative manner.

The American Institute of Architecture Students (AIAS) describes this feature as "the experiences, habits, and patterns found within the architecture design studio that make up what we have termed studio culture. They declared, in the report of AIAS Studio Culture Task Force, that to design a healthy studio culture five essential values need to be considered: optimism, respect, sharing, engagement, and innovation. Every school has its own qualities and needs that will ultimately govern how it creates a more successful studio culture (AIAS Studio Culture Task Force, 2016).

Studio culture, the students are generaly directed to reveal metaphors in their creative approaches by gathering inspiration sources, concepts from environmental information or expected to transform analogies into their design decisions. In general sense of studio culture consists that a form of learning in which the individuals' knowledge, skills, and habits are transferred from conceptual approach to the concrete communication ways, both in visual and verbal. Design studios, which place particular emphasis on the issue of abstraction assist in developing the skills that allow for expressing thoughts through linear representations. The students in design education and studio culture are encouraged to enter into a dialogue with the context of the everything that is related with their subject and try to produce some feelings towards this topic. This dialogue is aimed at discovering all the phenomenons about the topic; and, at the end of this discovery the students are expected to transform a metaphor they derived from the context of the topic into a final product. Abstraction is a cognitive process, therefore architecture abstraction points to a perceptive situation that exists throughout the design process (Gibson, 1968). Design education, which gives priority to abstraction, perception and thought, requires overlapping with other disciplines.

The most important stage of the process in studio culture that leads students from abstract concept to concrete product by emphasizing the relational potential of design by considering usage of analogies/metaphors. Thinking and designing by analogies through metaphors can be a powerful path finder in undiscovered concepts and inspiration sources.

THE EFFECTS OF TECHNOLOGY IN DESIGN PROCESS

Computer is very effective tool in design field such other disciplines. Technology which is indisputable fact that its powerful existence can be felt deeply in every object and space that we experience in our daily life. The rapid change in computer and digital communication technology, like in every field of our daily life, cause to redefine and change the identity of some concepts, purposes and convert understanding of giving form to the "space" in design field.

The constant development of these digital technologies allows new models of information, expands new horizons for imagination and requires user's skills improvement to manage all type of information in digital environments. These types of skills are often referred to as "digital literacy" (Pool, 1997), and define a new type of user called "digital natives", people who have been exposed to such technology almost from birth (Prensky, 2001). Also computer aided design provides to force the limitations or style of designing to create new solutions for geometric relations. Computer usage provides to explore new forms and simplicity in many respects such as line qualities, colors, mathematically presentations of different forms to the designer. By using computers, the design process is become much more clear and increase the awareness of the user to observe and record the process.

Currently, the use of new technologies in education is an influential and rapidly evolving factor that can be felt the most in design education. When the institutions which are related with design education, are examined it has to be mentioned that most of them provide computer usage. In that context, computer aided design affects design analysis, synthesis, giving a form in different kind of aspects.

Computer aided design education is continuously examined and discussed. In 1990's 3D modelling, animation, visual reality bring a new dimension to presentations and allow the designers to design their thoughts in virtual reality. By this developments, computers take a part and play important roles in design studios and related fields. It provides some important advantages to the design education are increase the potentials of creativity, representations of design knowledge in different manners, to improve new systematic approaches to design and management of design.

The most well known advantages of computer using in design education are easy to produce, gaining time during drawing, to improve creativity by specific programmes, to represent design ideas by using different alternatives. To obtain a better education performance, especially in use of visual information such as the visualization of interactive 3D models, spatial analysis or new 3D mobile interactions using augmented reality in architecture and interior architecture education, and in any other areas that related to, advanced computer skills are required (Redondo et al., 2012).

In the learning process, new teaching approaches are focus on more user-friendly visualization and presentation techniques of architectural models in 3D an educational strategy that allows for the replacing of traditional lectures. Changing computer technology and correspondingly changes in the other fields supply to destruct the limitations, virtual realm is identified as "virtual space" to use in architecture and interior architecture.

Design is the main issue of embodying creative thougts. Designing means to construct the indicator of the idea, not the thing in itself. On the other hand virtuality, identified as not the thing in itself but has impression or power as it is real (Baykan, 2002). The notion of physical space, that is equipped with electronic and visual information, which is first confessed by Manovich and called Augmented Space (Manovich, 2002). It represents different spatial perception and experiences by the transformation of mobility of human. Manovich emphasized that this new recognition of space can transform by human factors and represents different spatial perceptions, experiences.

Digitizing in spatial design and perception can be observed as Virtual Reality (VR) and Augmented Reality (AR) in visualization in many aspects in design field. In last 20 years, the important changes in computer technologies require to understand and apply to use the communication tools and media in all design disciplines. These technologies allow the term of spatial intelligence. Spatial intelligence consists spatial relations, spatial visualization and spatial orientation, represents the knowledge, intellectual predispositions and abilities which allow the human mind to comprehend and work with the concept of space. Problem solving and decision making based on the application of spatial thinking that occurs abstract concepts (space, scale, direction), the ability to work with them using coded means of representation (plans to scale, for instance) (Bowman and Hodges, 1999).

Before the examination of Virtual Reality (VR) or Augmented Reality (AR) notions, it is necessary to clarify the content of "reality". According to Lacan, the notion of reality is the situation that occurs between symbolical-imaginative-reality, can not be symbolized (Lacan, 1977).

"Visual Reality" inherently presents virtual space that unembodied subject is experienced and seperated from its physical environment. Actually, this virtual space behaves like an interface that represents an experience for human existence and real space (**Figure 2**). By the new understanding which is experienced by virtue of Visual reality and Augmented Reality, these two notions are interlocked when the limitations are disappeared between the form and content.

Figure 2. Virtual space as an interface

Figure 3. IKEA Virtual experience

Figure 4. Using mobile devices for visualizing

Altough Virtual Reality (VR) and Augmented Reality (AR) are conceived in the same classification, they are different from each other (Bound vd., 1999). In Augmented reality media can be defined as the integration of virtual elements in a real environment at the same time period. Augmented reality is a kind of attractive technology which offers the necessary tools for the creation of attractive teaching content and the development of spatial skills for the users. According to researches there are 3 specific characteristics of AR: a) Representable in 3rd Dimension b) be interactive in real time c) the combination of real time and virtual elements (Kaufmann, 2003; Zhou vd., 2008; Billinghurst, 2008).

Virtual Reality (VR) based environments allow a participant to be immersed in an artificial, constructed world, which may or may not resemble the real-world environment. A VR space may have nothing in common with a physical reality "by creating a world in which the physical laws governing gravity, time and material properties no longer hold" (Milgram et al., 1994). Virtual Reality refers to a set of technologies based on "3D computer graphics, real time simulation techniques, and a wide array of input and output devices to create illusions of being in a virtual environment." (**Figure 3**, **4**).

Figure 5. Virtual reality simulations

Figure 6. Virtual reality simulations with audio-visual equipments

Augmented Reality (AR) is the combination of real-world and computer-generated information so that computer generated objects are blended into a real-time view of the physical world. VR can completely immerse a user inside an artificial environment, disconnecting him/her from the real world around him or her. In contrast, AR allows the user to continue to see the real world, enriched with extra information and virtual objects.

Augmented Reality is a precisely defined technology which requires a process to: 1) combine real and virtual; 2) be interactive in real time; 3) be registered in 3-D (Azuma, 1997). AR also provides a kind of user interface in which the user naturally interacts with the reality, i.e. it is his or her behavior or movement that triggers enhanced views of the reality. AR technology also allows for collaborative work by means of AR augmented and tangible surfaces.

The relationship between space-time is very important to perceieve virtual space as "real" space environment (Özen, 2004). There has to be a development of two important technologies as neccesity to get impression of virtual spaces such as real spaces. They are photorealistic 3 dimesional visual modelling and virtual reality systems. By using the virtual reality simulations in design, spaces are experienced to become "real" according to their real space-time interaction, audio-visual perception and able to visit inside purposes.

The pscyhology of spatial perception in real physical space is related to the user's location in space and solve the spatial relationships. It is based on memory that is related to person's experience and amount of time that he/she spent in that space. The person who has an experience in interface of computer try to solve the relations between the spaces and the location to perceive the virtual space as the real one. First of all, space perceieved as sensual and then perceieved as mentally according to the amount of time that spend in that space (Waterworth, 1997).

In visual reality, user has to feel the control of able to go wherever he/she wants in this computer created media. It is constructed on an approach which is about the user feels like a part of experienced space that is created by using graphics, colors, animation and audio by computer. In visual reality, the most important target is to provide user's authority and be a part of media that he/she experienced (Eryalçın, 1994; Türker, 2004). This can be only possible by interference. VR applications require VR glasses for users to decide interactively where they can go and where they look at (**Figure 7**). This proofs that the most importance factor is human in Visual Reality researches.

Figure 7. VR applications require specific technological devices

Figure 8. 2D/3D modelling as transformation of visualization

With the use of computers in design process, although traditional expression tools are not left, digital technologies are used as additional tools in visualization of design. For this reason, a hybrid training process with a combination of traditional and digital technologies can be experienced. Teaching and learning the art of traditional design can benefit from Virtual Reality and Augmented/Mixed Reality which provides 2D/3D model manipulation and transformation of spatial visualization (**Figure 8**).

As a part of design education the workshop on "The Behavioral and Perceptual Reflections of The Space Notion to The Memory by Mediating The Realization of Thoughts" a combination of traditional and digital technologies is try to be experienced. Every participant was asked to research from different inspiration sources and as a result of this research they analysed their findings within the scope of form, texture, material, function, and structure. The design process is formed by subject descriptions, literature research for collecting informations, analysis of these information, inspection and argument to establish the hypothesis, finalize the process by the product of design and its presentation (Sánchez, 2000).

Therefore, participants are directed to consider the product they will design in relation to their conceptual and abstract characteristics in addition to the concrete characteristics of the concept they are working with. Depending on the metaphor that is used to generated by every participant interprets the final product with a different understanding, is related to the context and the requirement of a setup.

After workshop process, different designs were produced, depending on each participant's level of abilities and perception. The designs were presented in the studio and discuss with the other participants to understand the relationship between form-content by using Visual Reality technology. The participants' different point of views about the design and concept vary while designing according to the interaction between the Space and Time.

In this context, participants' awareness were focused on how they should look at space and time, evaluate experience, how they can observe the solutions by using VR and AR googles to realize, and how they could adapt

those technologies in their designs. That approach reminds metaphorically the book of John Berger namely "The Way of Seeing" where the difference between looking and seeing is emphasized.

CONCLUSION

In design education system, there has to be a necessity of understanding which uses imagination as impulse and contains to critisize the relation between form-content. Design education is not a learning process, it is a process of creation, experience and research. In that sense, the priority of education is to educate a person who is questioning, thinking flexible, able to create different alternatives for the same problem. It can be said that analogies between things/objects by generating metaphors is also a method of expression/creation in design education and it's practice as in all design practices. The meaning of thinking and designing through analogies and metaphors is multi layered and complex.

Today, space is become to perceieve mentally from whole over the world by short time audio-visual sensetivities. This situation emphasize that a new spatial approach is going to occur that is interacted by virtual reality and augmented reality. By the technologies and the notion of visual reality, daily life occurs at the interface of computers. These technologies make different space and time perception is possible. Visual reality affects to the existence of human and the relation between the space in both perceptually and physically.

In spatial design, digital visualization techniques are used both in training and application. However, today since digital revolution is not yet completed; educators have not yet mastered these technologies, programs fully based on digital technology are not available and necessary infrastructure for hardware and software could not yet be produced in faculties ofarchitecture, a mixed program which combined traditional methods and digital methods is used in training. It was observed that after the completion of these deficiencies, in near future, each stage of design process from planning to production will be performed in digital media.

In digital media, production and modifications of visuals are performed in a shorter time than traditional methods. When compared to traditional methods, more alternatives can be produced with less effort in digital methods. With the same model produced in a computer; two-dimensional drawings, photorealistic images, animations and walking simulations can be produced. Digital visualization techniques give more successful results in expression of inputs such as three-dimensional expression, spatial perception, scale, fabric, shadow and light, where traditional methods lag behind. In digital models, more advanced models like drawing or models are more easily produced than traditional methods and ensure interactive sharing of more information.

Teaching and learning traditional design in virtual or mixed spaces can benefit from spatial perception and exploration. Students can understand and apply concepts, perceive proposed models and artefacts or create their own in an interactive and stimulating environment. The actual teaching for spatial intelligence requires sensetive guidance and supervision of students as they progress from beginner to advanced spatial thinkers relies heavily on abstract notions and exercises, and thinking *in*, *of* and *with* space as a conceptual, geometrically affair. Spatial intelligence should be complemented by a spatial awareness and sensibility derived from the experience of the body in space. Spatial sensibility can guide students towards creating spaces as embodied experiences, rather than abstract constructions.

During workshop process the certain aesthetic principles and design elements are considered. This activity converts into a more effective, creative structure and expresses itself and enriching the methodolgy. The specifications to identify the spaces by using Visual Reality and Augmented Reality are: *flexibility*, *easy accessibility*, *interactivity*, *extensibility*, *re-usability*, *maintainability*, *adaptability*, *reliability*, *modularity*, *scalabilty*, *interoperability*. During the workshop process, five aspects are examined: material effectiveness, content efficiency, technology efficiency, satisfaction and opinions. The results show that all participants/students expressed a highly positive attitude to the content. Overall appreciation of the teaching approach was good to excellent, and most students considered it very useful, very interesting and were satisfied with the technology and the methodology.

One of the most important purposes of design education is to teach seeing, hearing, touching, and tasting. It is assumed that in design courses, which constitute a gradual process, learning knowledge of not only nature but also close environment by exploration, analyzing this knowledge, making accurate determinations, and transforming knowledge of environment into design knowledge by making connections will increase the creativity of design students. Creative design education can provide to gain the awareness, sensitivity, and consciousness necessary to produce more sustainable designs. A student can gain awareness of nature and transform some specific properties, formations in nature and biological expressions into design knowledge if education programs are focused in a way that enables the student to comprehend how these events occur in nature.

In conclusion, using VR spaces, students and instructors can work in an artificial re-created world in which understanding is mediated through an immersive multi-sensorial exploration. Alternatively, AR displays views with almost imperceptible line between reality and the created world, providing a different kind of immersion. The common aims of Visual Reality and Augmented Reality are: 1) to constitute effective decision making processes, to

understand spatial problems totally and rapidly 2) for innovative filexible and economical solutions, to improve and use new spatial standarts 3) to integrate the technologies about spatial informations and to organize, to manage, to analyze, to visualize them.

Teachers should personally design and evaluate classes within existing open environments, or become involved in the more difficult task of designing their own educational environments, based on their ability to create 3D spaces and models.

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