

Colour courses in architectural education and in Yıldız Technical University

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ABSTRACT

Colour is one of the important design parameters in architecture. Because of this, the colours of an architectural product should have effective, aesthetic and meaningful visual appearances. To create such appearances, it is essential for an architect to have basic knowledge on colour that covers both aesthetic and technical aspects. In this context, architect candidates should be equipped in the field of “colour” during their architectural educations.

The aims of this paper are to underline the importance, goals and content of colour courses in architectural education and to present the syllabus of the colour course in the undergraduate program of Architectural Faculty at Yıldız Technical University, Istanbul.

1. INTRODUCTION

Architecture is an interdisciplinary profession, and the main aim of architectural education is to enable students acquire the skills to create designs sufficient both aesthetically and technically. The goals of the undergraduate programme can be summarised as; the information transfer on subjects and problems related to the application of the profession, the acquisition of relevant skills, and information on specialist subjects. Due to this, being the primary determinants in architectural designs; the architects should be equipped in a range of subjects.

In all spaces both outdoor and indoor materials have various colours, and light has vital role in the perception of such material giving characteristic to a space. The first environmental impression that we have when entering into a space is the one produced by light and colour of the surroundings. On the other hand, creating effective, aesthetic and meaningful visual appearances in a space depend on the knowledge of the designer. Because of these, Colour is one of the important design parameters in architecture that every architect has to use, and architects should be educated as designers who have basic knowledge on interior and exterior colour design that related to aesthetic and technical aspects.

This paper aims to explain the importance, goals and content of colour courses in architectural education and to present the colour course in the undergraduate programme of Architectural Faculty at Yıldız Technical University, Istanbul as a sample.

2. RELATIONSHIP BETWEEN ARCHITECTURAL EDUCATION AND COLOUR DESIGN

Architecture is created in a field of tension among reason, emotion and intuition. Architecture is an interdisciplinary field that comprises several major components; humanities, social, physical sciences, technology and creative arts. The basic goal is to develop the architect as a generalist able to resolve potential contradictions between different requirements¹. In other words, architecture is the profession of creating, ambiances, environments and buildings that meet the required functional, physical, social, and environmental conditions. The perfection of architectural products depends on dealing with and resolving all needs as a whole. Solving some problems may require the specialist's care, but the responsibility of an architect is to detect and determine the problems and route them to the correct address.

We live in many colours and they are inseparable elements of our environment. Colour and architecture go hand in hand. If the coloration in architecture is made according to certain design principles; colours will have various important functions beyond the transportation of the naturally coloured environment to the designed environment. These vital functions may be exemplified as evoking aesthetical emotions, creating meaningful/attractive appearances, hiding of some

design/constructional mistakes etc. In other words, architectural colour applications have great importance in terms of aesthetic perception, perfection and expression of the architectural products. Therefore, the goals of architectural colour design are to create effective and pleasant appearances for visual aspect.

The perfection of a colour design is generally evaluated with the detection of whether the relationships among the effective design parameters are appropriate or not. Therefore, the reaction of the user/observer may be either positive or negative depending on the degree of the expectations of the colour application, being met. To achieve such positive expectations, there are interior colour design parameters, an architect should consider; for example, preferences, fashion as well as room function, relations between light and surface colours and so on. While designing façade colours, factors such as the architectural character of the building, the regional climate, the natural and artificial texture, traditional and natural building materials, etc. beside of other parameters play role. During the stage of settlement colour design, different parameters apart from these architectural character of the buildings, such as vernacular colours, social and cultural formation of the society, architectural heritage and so on, should be considered. A designers' role is to determine the parameters of each subject, to establish the relations among the effective parameters and to create appropriate designs/environments for conditions. To perform this role, the designer should have sufficient technical knowledge in the colour field, such as vision, colour perception, colour contrast and basic compositions rules.

It is obvious that, the knowledge on colour subject which is one of the important design parameters of architecture should be taught in the architectural education. The graduation of competent and contemporary architect fully depends on a programme combining sub-disciplines not only in theory but also in practice.

3. COURSE CONTENTS

During the undergraduate education, architect candidates should be equipped with the basic colour knowledge that will enable them to make general decisions to strengthen their architectural style. In addition such knowledge should also enable them to distinguish whether the situation requires a simple solution; a detailed project or special design ^{2, 3}. In other words, an architect should be able,

- to guess the required specialist support on which issue/subject and to what degree.
- to be aware of which profession group or groups can help her/him.
- to realise the optimisation/coordination between various requirements and expertises.

In this context, the main goal of colour education in the undergraduate programme of architectural education can be summarised as to convince the students that colour is one of the design parameters of architecture and it covers technical aspects that all architects are responsible to have the knowledge. It should also be mentioned and proved through exemplification that scientific education on colour would increase the architect's success and architectural products' quality and could reveal a range of new possibilities. In addition to this, it should be stressed that the success of a colour design does not only depend on the designer's intuition/taste of colour, but also on the scientific knowledge of the architect.

Subjects of architectural colour design can be summarised into two main groups as follows:

- Interior/indoor colour design
- Exterior/outdoor colour design
 - Settlement colour design, urban colour design
 - Façade colour design

There are different design parameters for each group. Architectural colour design parameters can be cited as:

- Objective parameters; colour features of light sources, colours of the surfaces, colour vision and perception properties of the observers, area of the surfaces, contrasts among the colours, etc.
- Subjective parameters; users' features (education, interest sphere, age, sex, and individual preferences etc.), social and cultural phenomena (culture, tradition, religious, fashion etc.),

local and geographical conditions, properties of the natural and artificial environment, etc.

Therefore, in the undergraduate education, while forming the colour courses content, two main groups and related parameters mentioned above should be taken into consideration.

We should not forget that the success of education is dependent on many factors; the overall goals, methods and resources; engagement and competence of the lecturers; the quality of the teaching materials and other educational media: as well as the students' own personal resourcefulness, interest and motivation; all these factors combine to play a decisive role in pedagogical accomplishments^{4,5}.

On the other hand, it is obvious that, the cultural background of the society, the major objectives of the architecture school and the total time allocated to education directly influence the course content in such a programme. General results of an investigation on content of the colour courses in the architectural schools can be summarised as follows^{6,7}:

- Colour subjects are not in the curriculum as compulsory lectures.
- In the first semesters of the education, simple information and practice on colour and colour composition are placed in compulsory courses, such as basic design, graphic communication, design graphics etc.
- In some institutions, as a part of compulsory courses, such as environmental control, building physics, environmental science, light colour and colour perception are included.
- There are only a few faculties offering elective courses on colour.

4. COLOUR COURSE IN YILDIZ TECHNICAL UNIVERSITY

One of the faculties around the world offering elective course on colour is Architectural Faculty in Yıldız Technical University. The length of the elective course is 3 hours per week for undergraduate education and there are 14 weeks in a semester. This course can be selected after the first year of the architectural education.

The aim of the colour course is to educate the candidates of architect who are able to understand the differences between colour elements and features besides being able to use colours appropriately and accurately. With in this context, at the beginning of colour course, the priority of colour in terms of visual perception stress out, and architectural colour design should not be done by pure intuition, taste and preference. Other basic topics of the course could be stated as follows:

- Every architect should be able to differentiate elements of colour as a design parameter and be able to perceive colour other than its features such as texture, form and shape. In other words, s/he should able to see, recognize and describe the colours as the other architectural material such as brick, glass, etc.
- Every building component or finishing material has colour, thus every architectural design should also be evaluated according to the colour composition applied.
- To create positive visual effects, colours should be used in a designed arrangement.
- Effective parameters of colour design for two dimensional media such as picture, perspective, graphics etc. are less than the interior and exterior colouring. For example, visual/colour perception, lighting conditions and interaction of colour and light should consider altogether for interior colour design process. Outdoor and building facade colours should be designed considering the relation between the features of the natural and artificial environment and the specifications of the building.

The content of this course, which is planned according to the above subjects, can be explained into two groups:

1. Basic theory/knowledge and practice on colour elements and colour arrangements
 - The physiological and psychological effects of colour, and importance of colour in architecture.
 - Fundamental knowledge on the colour perception parameters (light, surface, visual organ) and relations among the parameters.
 - Colour systems and introduction of the colour elements (hue, value, chroma); the effects, and features of the colour contrasts.
 - Colour arrangements and general rules on colour usage.
2. Technical knowledge teaching and practice about colour designs in three dimensional spaces

- Light and colour relation in interiors, colour interaction and changes on the colours.
- Effective parameters on colour design of interiors and basic principles. Similarities and differences between the two and three dimensional colour design.
- Effective parameters on facade colour and exterior colour design and basic principles. Similarities and differences between interior and exterior colour design.
- Usage of software in architectural colour design.

It is known that, repetition reinforces knowledge learned and therefore audio-visually (demonstrations, experimental studio studies and computer simulations) supported courses will be more attractive and fruitful^{8, 9}. For this reason, the theoretical knowledge in the content above mentioned is enriched by practical exercises with colour books and paintings, and experimental studies in Building Physics Laboratory. Aims of such lectures can be exemplified as:

- To enable students to learn the elements of surface colour (hue, value, chroma):
 - Visual exercises with colour books based on the different colour systems.
 - Painting and Photoshop exercises for different values and chromas of a hue.
- To help students to understand the relations between light and colour in an interior, and effects of the interreflected light on the internal surfaces:
 - Painting and Photoshop exercises for an interior having different colour compositions.
 - Experiments on scaled models of an interior having different colour compositions.

4. CONCLUSION

As good colour design, is one of the significant architectural requirements, colour education in architectural education is a must. Every future architect should have some basic knowledge on colour. Architect candidates should be equipped in the field of colour just as they are in other relevant subjects, and they should be able to understand the differences among the colour elements and features besides being able to use colour arrangements appropriately and accurately.

On the other hand, colour is an interdisciplinary science and covers different subjects such as, phenomenology, physiology, physics, psychophysics, psychology, philosophy and aesthetics⁵. However, it should be noted that, it may not possible to thoroughly cover every aspect of such a vast field during an undergraduate programme. Thus, architect need to be aware of the fact that “colour design” is a profession. Solving some problems on colour design may require a specialist’s care, and the responsibility of an architect should be to detect and determine the problems and to direct them to the correct specialist. The course content and knowledge on architectural colour education presented above may shed light to some educators and inspire them to add this field as a course to their programmes.

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