

Learning Outcome of Anthropometry Courses in First Year of B.Arch Program, Lucknow, India

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ABSTRACT: Differential view challenge teacher's professionalism and force them to class room managers, technicians or implementers of others ideas. The second semester B. Arch students were introduced through studies in the perception of spaces and for in architectural context. The emphasis was given to the generation, development and representation of ideas using various media. Architectural representation through perception is being the theme of understanding and application of the entire idea of Anthropometric study. The assignments are designed in such a manner that encompasses unique design exercises, analytical study and finally representing the work for appraisal. Introductory design studio to introduce students to architectural design through readings and studio design projects. Intended to develop analytic skills to critique existing media and spaces. Process of analysis used as a generative tool for the students' own design work.

KEYWORDS: Anthropometry, behavioral studies, teaching learning environment

I.INTRODUCTION

Architecture maybe defined as the field of study human dimensions and this piece required by human to perform all specific task. it gives us proportions of the human body and their measurements for designing. The email of this course is to provide a restful movement to person So that he or she is capable to perform a specific task without any obstacle. Anthropometry gives us dimensions and measurements which our further used to calculate the spaces for proper functioning. Design process can be termed as well purposeful human cognitive activity based on Proposed required behaviors which the design must exhibit and meet (Rosenman 1998). Architectural design incorporates human behavior and psychology as well as society and culture in the design direction (Escherick, 1984; Gifford, 2002; Honikman, 1975; Jarrett, 2000; Nicol & Pilling, 2000).

Rosenman and Gero (1998) defined the design process as "a purposeful human cognitive activity" (p. 162) that is based on proposed required behaviors which the design must exhibit and meet. As stated earlier, architectural design influences a large part of human life in several ways. It seems essential therefore, to incorporate concerns related to human behavior and psychology as well as society and culture in design decisions (Escherick, 1984; Gifford, 2002; Honikman, 1975; Jarrett, 2000; Nicol & Pilling, 2000).The visible presence and direct interaction of students with female architects may give them a tremendous sense of possibilities which would go a long way in bridging the gender disparity in both teaching and practice. Introduction to design through analysis of abstract architectural space and form. Emphasis on the design process and principles of representations through architectural drawing and model making.

As summarized by Sullivan(1947) in the dictum *Form Follows Function*, behavioral function Is given priority over the spatial arrangement (Michl, 1995). right across Renaissance and Barouque technicalities where considered subservient to the formalist objectives and functions is the most important quality for building to be considered hey delightful ()The belief was that good architecture and aesthetics automatically achieved if the design process is strictly encompasses logic functionality end economic sustainability. functionalist believed that the form of all objects is the derivative of the intended purpose and designers can find forms relevant to their intended functions (Holgate, 1992).Gifford (2002)Defined personal space as the geographic component of interpersonal relations. personal space means distance between individuals and their relatives orientations at the time of the interaction. Physical environment and settings influence personal space beside personal and social factors. Personal space can provide in formation That can be incorporated in building designs

specifically interior space planning. It can provide important behavioral basis for the humane design of buildings. Hall (1968) define space as a medium of communication Between individual entities end also introduced zones of proximal development do identify boundaries of social interaction and feeling of privacy. proximity zones can be identified based on Relationship between people and objects in a Micro environment.

These zones include: intimate (18" radius), personal (18" to 4'-0" radius), social-close (4'-0" radius), social-far (7'-0" radius), public-close (12'-0" radius), and public-far (25'-0" radius). THOUGH this theory of hall was opposed by De Long (1991), thatHall"s proxemic zones were inconsistent with more recent research on micro spatial analysis. According to him exual orientations of the occupants in a pace should be considered as a primary factor in defining zones. The zones introduced by De Long include Intimate/personal-close, personal-far, social-close, social-far, public-close, separation, privacy, and public far. This theory of personal spaces is reflected in assignment number three.

De Long mentioned that the zones are based on occupants" perception and interpretation of the space, and feelings of relative privacy. De Long (1991) discussed the application of proxemic theories to furniture planning and spatial design. The zones identified by Hall (1968) and De Long are a means of incorporating behavioural studies in the planning and arrangement of microenvironments. These zones may be used to identify the optimum or preferred proportionality of living spaces, furniture arrangement, location of areas relative to the entrance to space, and the perception of relative formality and informality in the space (De Long, 1991). The arrangement and design of spaces with consideration of proxemics will play an important role in predisposing occupants to certain behaviour in the space. The behavioural patterns include individual behaviour as well as social interaction.

Undergraduate students coerced with the conservative environment the visible presence and direct interaction of students with the female architects may give the students a tremendous sense of possibilities which would go a long way in bridging the gender disparity in in both teaching and practice. The culture of the studio in most of the architectural schools is decidedly masculine, rewarding competitiveness rather than collaboration and emphasizing the design of singular object-buildings rather than potential context of buildings.The architectural design profession is dominated by male till date. Due to several parameters in the Indian culture women are neither supposed to be outspoken nor to be a decision maker. This reflects in the design studio itself.

The design studio is where a learner learns to design creatively and designing is considered the most vital activity for architects. Basic Design Studio is the most important course in the B. Arch curriculum facilitating the young learners to move to spatial thinking, from numerical, and bare rational. It is an essential activity offering the transformational ability for future architects to become creative designers. Students in Basic Design Studio primarily are taught three aspects of design education; a new spatial language, some new skills such as communication, visualization, and representation leading to architectural design thought process. Design expression is also dependent on the medium of graphical and visual communication. The design traditions use all modes of visual media to represent ideas, thoughts, actions, and moods. Sketches, drawing, paintings and three-dimensional sculptures and models are used extensively in the transformational process. The first year is a period of transition for students. Most of their classroom experiences are conducted in traditional settings, through lecture and seminars. In design studios, students learn by developing projects under the guidance of a design professor.

II. CHALLENGES FOR STUDENTS

When working in two dimensional media, Egyptian artists employed a modular grid. The human figure was divided in to 14 equal parts that corresponded to landmarks on the body. The Egyptians did not incorporate perspective views into their drawings and tended to draw in elevation and overviews. (Pheasant, 1986) Proportions in ancient Greece were not based on the human body. Instead, the Greek pursuit of knowledge created the disciplines from which their proportional systems arose. The Golden Mean is perhaps the best known of all proportional systems. It was defined by Euclid in the 3rd century. (Livio, 2002) He was a mathematician who is largely responsible for the development of geometry. Euclid divided a line in to two sections, whereby the ratio of the smaller section to the larger section is equal to the ratio of the larger section to the whole. It can be expressed using the formula $A/C = AB/BC$. Numerically, it is an irrational number and is rounded to 1.618. It is symbolized by the Greek letter phi Φ . It is also referred to as the Golden Section, the Golden Ratio and the Golden Number. This proportion has garnered so much attention because of the astonishing range of places that it appears. It is

found not only in geometry, but in nature as well. It is seen in the arrangement of apple seeds in a five pointed star, which is composed of triangles with the golden ratio between its long and short sides. Each stage of growth of the nautilus shell can be encompassed by a Golden Rectangle as it grows in a logarithmic spiral. It is The Renaissance interest in classical thought resurrected what has become one of the most famous images of man, Leonardo's Vitruvian Man, which symbolized the desire to integrate perceived perfection as expressed through geometry with the expression of the human form.

III. CHALLENGES FOR TEACHERS

Differential view challenge teacher's professionalism and force them to class room managers, technicians or implementers of others ideas. Teaching materials are not neutral to address the learning outcome (Crawford 2002). When referring to pedagogy and curriculum, "conservative" for my purposes means strict, unwavering adherence to one particular philosophy of what and how to teach. It also indicates a reluctance to even consider, let alone embrace, alternative methods, controversial texts and topics, or the very idea that there may well be more than one way to reach academic and curricular goals.

School systems employ a hyper-conservative approach to curriculum and pedagogy, essentially dictating to teachers precisely what they must teach, and precisely how they must teach it. There is usually an implicit (or, in some cases, explicit) forbiddance of and intolerance for unconventional materials or unorthodox methods, and such an exclusionary mindset tends to be completely arbitrary; teachers who prefer alternative ideas are told simply, "That's not how we do it here." The crucial stages in the design of architectural projects are when the thought process of students is assessed. Design is about teaching the student a new way of seeing the world, teaching them a whole new vocabulary. The most essential part of the studio assessment is when design project is critiqued to enhance the students' evaluation process. However, the best type of critique at any stage of the project should be observed and properly implemented to have best control mechanisms on the design process. It is observed that whenever critiques are issued at the final stage of design, the students display defensive behaviour towards learning, this does not lead to an effective influence over the students' design process. They went further to classify different critique methods that could be implemented in schools of Architecture for architectural design studios into nine, viz.: Individual Critique, Formative Critique, Summative Critique, Peer Critique, Group Critique, Public Critique, Written Critique, Seminars, and Panel Discussions [3]. The focus of this paper is about how students perceive their Panel Discussion mode of assessments.

The inadequacies in the jury system as a means of assessing students' performance as pointed out in articles previously mentioned has begun to increase the doubts the students may have about this system. The way students perceive the jury system should be taken more seriously as it affects the students' attitude and dedication toward the design studio as a course directly. This paper seeks to investigate the students clinically and comprehensively. It seeks to identify problems and also proffer solutions which may in turn improve the jury system or even develop a more effective way of assessing students' performance in the design studio.

Some factors that affect students' perception of jury are (i) fear of defense (ii) physical environmental setting, (iii) Grading standard, (iv) Adherence to mentor's instructions (v) gender/juror bias, (vi) personal preference, (vii) fear of the standard.

IV. STUDIO ASSIGNMENTS

The second semester B. Arch students were introduced through studies in the perception of spaces and for in architectural context. The emphasis was given to the generation, development and representation of ideas using various media. Architectural representation through perception is being the theme of understanding and application of the entire idea of Anthropometric study. The assignments are designed in such a manner that encompasses unique design exercises, analytical study and finally representing the work for appraisal with three main objectives

- Expansion of design consideration to give equal attention to issues of program, site (if applicable) and context
- To frame the analysis of projects in terms of rituals of use site and context revealing clear design strategies embedded in seminal architectural projects
- Execute the comprehensive design that requires accumulation of learnings of the previous semester

Introductory design studio to introduce students to architectural design through readings and studio design projects. Intended to develop analytic skills to critique existing media and spaces. Process of analysis used as a generative tool for the students' own design work.

A. *Anthropometric study of the Vitruvius man*

Vitruvius was a Roman architectural theorist writing around 15 BC. He developed a system of body part ratios based on archaic measurements. (Pheasant, 1986) He was very specific with his proportions of his idealized male figures. These were laid out in his treatise.

1. A palm is the width of four fingers
2. A foot is the width of four palms
3. A cubit is the width of six palms
4. A man's height is four cubits (and thus 24 palms)
5. A pace is four cubits
6. The length of a man's outspread arms is equal to his height
7. The distance from the hairline to the bottom of the chin is one-tenth of a man's height
8. The distance from the top of the head to the bottom of the chin is one-eighth of a man's height
9. The distance from the hairline to the top of the breast is one-seventh of a man's height
10. The distance from the top of the head to the nipples is one-fourth of a man's height
11. The maximum width of the shoulders is one-fourth of a man's height
12. The distance from the elbow to the tip of the hand is one-fifth of a man's height
13. The distance from the elbow to the armpit is one-eighth of a man's height
14. The length of the hand is one-tenth of a man's height
15. The distance from the bottom of the chin to the nose is one-third of the length of the face
16. The distance from the hairline to the eyebrows is one-third of the length of the face
17. The length of the ear is one-third of the length of the face

He justified his dimensions by showing that a man of these proportions would fit perfectly within a square inscribed in a circle. Vitruvius wrote that this system of human body proportions was to be used as a guide in architectural planning.

B. *Measurement and documentation of male and female as a case study and study of different postures*

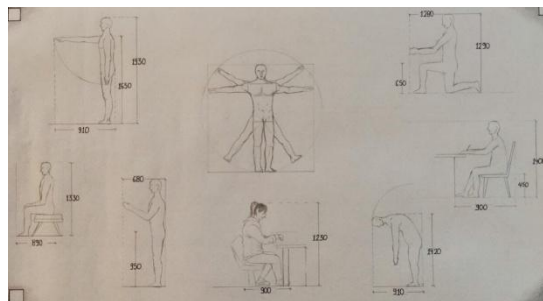


Figure I Students Assignment on criteria B

In this assignment the drawings must be able to dissipate the information about the critical dimension and proportion. The skeletal and muscle structure of the torso, arms legs and head to be discovered. By mode of research of the work of the great artists the drawing can be work as a tool for seeing and depicting form, space and light. While drawing the human figure the following part has to be taken care Chosen media, varying line weight, framing context, directing of incident of light, organization of sketches and drawings, direction and counter-direction of drawing, dynamic sightline, how best the research is interpreted. Students were given reliance to use Xerox of the drawing as a part of collage and finish with medium of their choice charcoal pastel paints. This is supposed to be a piece of beautiful art while record of analysis as

well. The outcome expected is the student to craft out the own voice or technique. The total time given for this assignment is one week.

C. Design of an enclosure



Fig 2 Students, Assignment on criteria C

Introduction to design through analysis of abstract architectural space and form. Emphasis on the design process and principles of representations through architectural drawing and model making. Architectural design and project development within design constraints including architectural program and site. Students engage the design process through various two-dimensional and three-dimensional media. Working directly with representational and model making techniques, students gain experience in the conceptual, formal, spatial and material aspects of architecture. Instruction and practice in oral and written communication provided. The studio builds upon the foundational design skills with more complex constraints and context and integrates aspects of architectural theory, building technology, and computation into the design process.

D. Interpretation of a movie/book in the context of Anthropometric study for the protagonist character



Fig 3 Students assignment on Criteria D

The everyday city is captured in this assignment. A consummate example as portrayed in a

movie/novel of everyday life in a contemporary city is the backdrop for the investigation framed within the studio. Framing the development of the design skills through a close examination varied characteristic of the contemporary city around us. The student has to study and interpret within a framework to work within and to operate on its numerous pieces. The design studio which is a core subject and taught by two instructors and one coordinator. Review process was reviewing students work or the works of groups of two or three; or exchanged between instructors at the end of an exercise a comprehensive review after three projects by the coordinator. Few of the projects was to speak for itself that meant no verbal communication. Review structures changes with the assignment and the same was communicated with the students beforehand. During the peer review process students acquainted themselves with how to criticize a work. The structure of the juries become an informative integrated part of studio culture

E. Design an item of furniture (Seat/Couch/Chair) for two persons with multi-utility

Design Across Scales and Disciplines - This joint subject with Media Arts and Sciences explores the reciprocal relationships between design, science, and technology. It covers a wide range of topics, such as industrial design, architecture, visualization/perception, design computation, material ecology, environmental design and environmental

sustainability. Students examine how transformations in science and technology have influenced design thinking and vice versa, and develop methodologies for design research by collaboration on design solutions to interdisciplinary problems.

F. Design for the optimum space to fit that furniture in

Select a place, neither in your living quarters, (nor in someone else's), in which to read this essay and write a one page paper. It should be something in the public realm, but not a commercial environment (i.e. not Starbucks). It should be a place in which you feel you will be comfortable for 1-2 hours. It should offer the degree of privacy necessary to read and write. It can be in a living group common area, a library, the student center, etc. Once you have found this place, read the essay, then: Critique the place you chose to read. Write about both the positive attributes of the place you chose, and on what is negative about it. Consider the following topics for each: Why did you choose that place; what drew you to it? What is the nature of the light? The space? The room? The privacy? What are the materials? Are you comfortable? Is it an exposed place? Is it enclosed? What are the views? What can you see? What can you hear? How well does it facilitate what you are doing? Please answer in architectural/spatial terms, with particular reference to what you are doing there, and the positive and negative impact on your task (i.e reading and writing). Discuss dimension, space, light, material, spatial zones, etc.



Fig 4 Students' assignment on criteria F

G. Design of a spaceship themed Children bedroom

How can an architectural intervention, through its execution and position, raise awareness in the Institute of the need to focus more on art, the creation of art and on the significance of the artist in the community? How can the needs of artists be met while respecting the ongoing Institute around us? How can the intervention become woven into the existing fabric of our academic community? Does the intervention take on social perspective, or alter our current social perspective? Does the intervention have a component of exhibition, is it highly visible or transparent? Is the intervention parasitic, pulling from existing fabric and infrastructure for support, or is it self-contained? What is the manner of deployment? Is it a permanent construction, or a temporary one? How can an architectural intervention respond to the needs of the program while addressing the political implications such an intervention would have? Proposals should consider the following spatial needs and requirements and should suggest others that support the student's individual attitude toward site, program, and concept

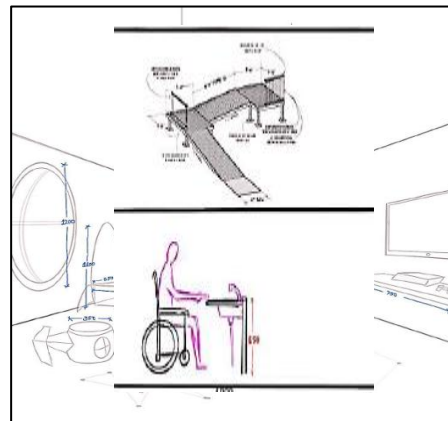


Fig 5 Students' assignment on criteria G

H. Universal design

How does design operate in our lives? What is our design culture? In this course, we explore the many scales of design in contemporary culture -- from graphic design to architecture to urban design to global, interactive, and digital design. The format of this course moves between lectures, discussions, collaborative design work and field trips in order to engage in the topic through texts and experiences.

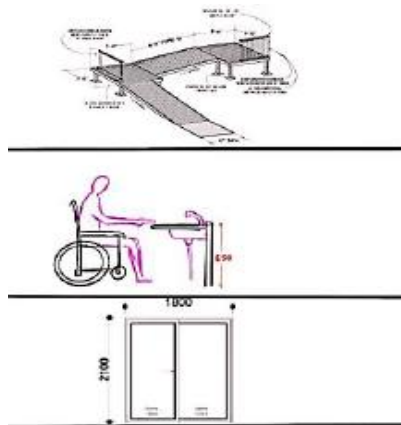


Fig 6 Universal design concept

I. Design of a Public Toilet

Public Bathrooms in Public Spaces Design synthesizes the studies and drawings you have done so far and reconsider them based on the criteria outlined in the preliminary assignment. Those details were reconsidered before the final review of this project. Consider carefully all the program elements that you wish to include and their relationship to one another. What is the relationship between the sexes and the spaces required by each? What type of fixtures will you use (off the shelf or custom designed)? What other items are required of the program (toilet paper dispensers, paper towels, garbage receptacles, mirrors, condom and sanitary napkin dispensers, etc.)? Is there something about the shape, form, and organization of your structure which identifies itself with a Public Bathroom Toilet “Typology”? Public / Private The separation between the public and private realm in our society is continually challenged. The gradation of most public spaces to most private spaces has dissipated in our culture.

V.EVALUATION

Tests/examinations/assignments must be written/submitted at the time specified. Requests for adjustments to that schedule must be made before the test/exam/assignment date to the faculty member. Failure to do so will result in a mark of “0” unless an illness/emergency can be proven with appropriate documentation at no cost to the College. The passing grade for all courses is 50%, or a letter grade of P (Pass) or S (Satisfactory) unless otherwise noted below. The passing weighted average for promotion through each semester of a program is 60% and is a requirement to graduate.

Students are expected to attend all classes, field trips and lectures; and to do TWO hours of homework for each hour of classroom time. It is the responsibility of students to be prepared for each class with the necessary materials and equipment. The course is delivered as in-class demonstrations and/or lectures; therefore, any missed classes result in missed information and/or loss of continuity. The instructor reserves the right to refuse to mark work not seen in progress. An explanation of the evaluation criteria and the weighting of marks will be given for each assignment. Students will be advised of their progress approximately every four weeks. Two of these evaluations will be formal (at mid-semester and end-of-semester). Projects will be returned within a reasonable time but may be retained until the end of the school year for display or promotional purposes. A minimum final grade of 50% is required to pass this course. The final grade will be calculated as follows:

All projects and assignments are due at the beginning of class on the assigned due date. Late submissions within five school days of the assigned due date will be penalized 15% of the full grade. Late submissions between five and ten school days of the assigned due date will be penalized an additional 15% of the full grade. Projects and assignments will not be accepted after ten school days of the assigned due date and a zero grade will be assigned.

VI.CONCLUSION

In assessing the students’ understanding of the theory and application of anthropometry and ergonomic, collected data were analysed. The design studio is where a learner learns to design creatively and designing is considered the most vital activity for architects. Basic Design Studio is the most important course in the B. Arch curriculum facilitating the young learners to move to spatial thinking, from numerical, and bare rational. It is an essential activity offering the transformational ability for future architects to become creative designers. Students in Basic Design Studio primarily are taught three aspects of design education; a new spatial language, some new skills such as communication, visualization, and representation leading to architectural design thought process. Design expression is also dependent on the medium of graphical and visual communication. The design traditions use all modes of visual media to represent ideas, thoughts, actions, and moods. Sketches, drawing, paintings and three-dimensional sculptures and models are used extensively in the transformational process. The first year is a period of transition for students. Most of their classroom experiences are conducted in traditional settings, through lecture and seminars. In design studios, students learn by developing projects under the guidance of a design professor.

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