ABSTRACT

Architecture is much more than a profession. It's a discipline. And it's a discipline in which you have to analyse very complex situations, large and small. We have to understand, discover and then propose a solution. It's a very particular discipline, which could be very efficient for the world, and very efficient for cities. And that's why, when many people today speak about design thinking, I speak about architecture thinking – because it's much more powerful. It's not just about the surface of the thing, and the shape of the thing, or the form – we go deeper inside. For me, architects are very good at that or they could be very good if their studies were very good. Teachers spend far too much time trying to teach what they cannot teach , which is Creativity , and very little time teaching what they can teach ,which is knowledge , skills and sensitivity . But a healthy, engaging, invoking and an inclusive built up environment may foster the learning experience and add up to a better creative output and also can change a student's behaviour. The basic intention is to develop an architectural vocabulary engaging the learning experience and student interface wherein they explore and learn through a sequence of experience thus deriving a hierarchy of spatial configurations. The synchronization of the enclosed spaces and open spaces and the journey through them will actually help the eye to experience and the mind to contemplate. The basic idea is to marry the spatial qualities and the experience through them thereby extracting the form as the resultant of this two factors. It should be a place where they come to learn -- assimilate and evolve-- the process of evolution of the intuitional mind requires a better environment and hence the challenge is to exaggerate the Architecture in shaping the ideas.

Chapter 1

INTRODUCTION

Due to change in social life of people, need of the society with regards to build-environment is changing significantly. As a result we require more houses, public buildings, hospitals, institutions etc. This change demanded more skilled personnel, particularly Architects to design optimally and help implementing the facilities.

1.1 Purpose of Education:

- Education is about civilization and humanity.
- Education is about the dignity of an individual. Through the process of education we impart enthusiasm as much as we relate hard information. The genuine exhilaration of learning forms the basis of the student teacher relationship.
- Education is about entry into a learned community. Education is a process by which we can enhance our capabilities through information. The freedom we gain through knowledge is an inner freedom.

1.2 What is an Educational Institute?

An educational institution is an ensemble of buildings, landscape, and infrastructure used for education. It is a physical expression of various functions such as Academic, Administrative, and recreational. An institution is defined as a self-contained architecture composition of separation university buildings in a park setting with residential accommodation, library, class-room, etc. for a community of student and teachers. Institute is a gathering place or defined area where different generations of our society gather and share their experiences, communicate with each other and from everything from everyone they learn something.

1.3 Objectives of Educational Institutes:

- It should ideally be a quiet, comfortable oasis apart from the normally busy, noisy congested world, more like a residential suburb or park rather than a city.
- Institution ought to be a closely knit, unified cluster of buildings with intimate pedestrian open spaces providing a unique environment for living and studying.
- A good institutional building should provide area where student may congregate informally for discussions and rest or where they can gather in large number to watch or participate in sports and other physical activities.

Chapter 2

SYNOPSIS

2.1 Architectural Education: *an uncertain journey*

Observation being the key generator of creative action, architectural education must unfold the inherent beauty of this phenomenon. To start with, it must help self-observation and discovery of the individual which when extended must be able to understand the society in all its hues.

From the moment young people decide to study architecture they begin a journey. At first it is an uncertain journey guided by glamor, images and hopes. Their experiences in the class room, in the studio, interactions with fellow students and chance meeting with practicing architects begin to set agenda. They begin to hear stories of architects, they see architects' houses and they walk into interesting studios. Slowly they take upon themselves the images seen through the mirror of others. Some have heroes, some are silent, and some are the heroes of their own lives. Gradually these students star drawing realistic pictures of themselves and embark on the journey of meaningful self-discovery. This should be the most beautiful time of their lives.

2.2 PRESENT STATUS OF ARCHITECTURAL EDUCATION IN INDIA:

Indian present pattern of education was basically shaped over 50 years ago in the early forties and only partially evolved with time but in a hesitant and half- heartened manner The public perception of an architect in the forties and fifties was not clear and he was thought to be someone who was called in to dress up structures designed by engineers devoid of aesthetic values and imagination. This perception gradually changed to viewing architects as creators of beautiful buildings. The need of an architect was further strengthened with the emergence of varied building complexes set in a scheduled time frame and financial and space limits. The architectural education tended accordingly, to reflect a bias towards building needs the education has by and large failed to adequately respond to the fast changing needs of the country as a whole.

2.3 THE LEARNING CLIMATE IN SCHOOLS OF ARCHITECTURE:

The knowledge, attitude, skills and values that architectural students acquire during their undergraduate years are formed as much to the social culture of the school and the manner of teaching and learning in that school, as by the specific formal content of their courses. There is

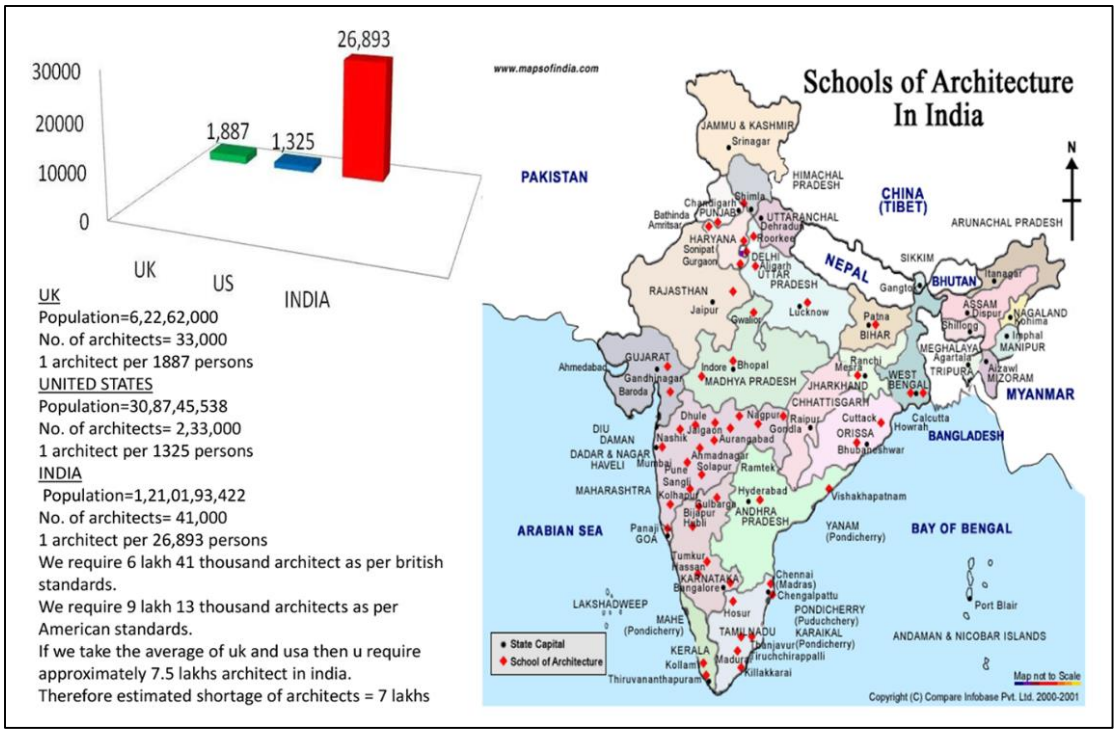
currently a perceived gulf between the learning in architectural schools and the realities of in order to bridge that gulf and to meet the challenges posed by practice and lifelong learning, it may be necessary to reexamine not only the educational processes but also the relationships that exits in the school between learners and learners , learners and teachers. The learning climate may have to be realigned around different relationships those more relevant to the future profession, and in particular those that emphasize the importance of communication, collaboration and self-reliance.

2.4 PRESENT STATUS OF ARCHITECTURAL INSTITUTIONS:

The past pattern of architectural education basically was shaped by the Russians about 40 year ago. They brought knowledge of architecture into our country by starting it from scratch like designing and construction of their own embassy in India. Soon after they designed and constructed much more buildings like telecommunication building in the heart of the city.

- Department of Architecture
- Department of Hydraulic
- Department of Architectural Construction
- Department of Dam Education
- Department of Bridge Technology
- Department of Plumbing, sanitation and Drainage
- Department of Landscape Architecture
- Department of Interior Design

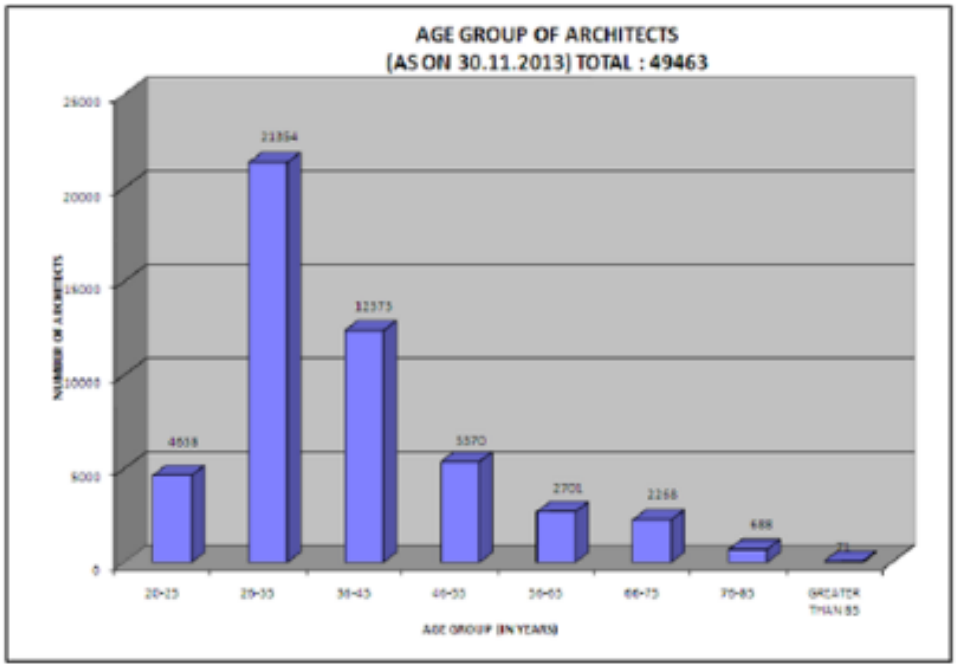
Fig 1



2.5 NEED OF ARCHITECTURE COLLEGE IN PRESENT SCENARIO:

New colleges have to be established so as to impart the education to the young architects of the upcoming generation so that they can dedicate themselves to create a better living environment for people of India. Schools of art and architecture are such institutions which

Fig 2



Mumbai has the largest number of Architects of around **7100**.
Delhi has around **5900** Architects, followed by
Pune has around **3500** Architects,
Bangalore has around **3300** Architects.
Chennai has **2300** odd Architects.
Kolkata has around **1140** Architects.
Nagpur has **1100** Architects.
Thane has **1160** Architects.
Hyderabad has **1450** Architects.
Ahmedabad had around **580** Architects.
Nashik has around **815** Architects.
Lucknow is not far behind with around **700** Architects.

Chandigarh where Le Corbusier left his indelible mark has around **550** Architects.
Kholapur has around **510** Architects .
Jaipur, Aurangabad and Noida have around **260** Architects each.
Bhopal and Gurgaon have around **250** Architects each.
Trivandrum has **210** Architects.
Indore and Surat have around **190** Architects each.
Cochin, Bhubaneshwar, Secunderabad and Solapur have around **170** Architects each.
Ghaziabad and Faridabad have around **140** Architects each.
Pnachkula and Sangli have around **125** Architects each.
Patna and Ankola have around **100** Architects each.
The rest of the cities and towns in India have less than 100 Architects.

Keep alive the evident idea of growth and development and equips mankind in creating a better future for himself and the coming generations. The education imparted in such institutions not only contribute in the development of an individual career but also helps in keeping them abreast with their creative side. **Shortage fuels demand. India has only 50,000 registered architects as against the requirement of 500,000.** "With the current growth of commercial spaces, malls and markets, we are just not producing enough architects," says Vijay Shrikrishna Sohoni, president, Council of Architecture (COA).

"In India, the ratio comes to 5,450 architects per 10 million population," says Mansingh Devadas, dean, School of Planning and Architecture, Anna University.

In the present scenario, the architecture profession needs a multi-pronged approach. People in the profession are also not full-fledged. They have taken it up as a parallel profession, points out Vijay Kishore, principal of city-based School of Planning and Architecture. The reasons for this are quite obvious, says Kishore, as "**Architecture as a subject is not introduced in the curriculum in most of the business schools. Most of them are either part of engineering colleges or is taught as one of the subjects in an engineering course." "It is not just the shortage of colleges, but also about the quality. The architecture education must need the profession, and not the other way round,"** insists Neerja Tiku, head, Department of Architecture, School of Planning and Architecture, New Delhi.

2.6 REASON FOR SELECTION OF PARTICULAR TOPIC :

As an architecture student I feel that the college where an Architecture student spends 5 most valuable years of his life studying has a direct influence on his career.

Intelligence, creativity, sensitivity, and a thorough knowledge of the arts and science are essential for achieving distinguished architecture and the College plays a major role in providing the right kind of **ambience** to achieve the above qualities. Thus after being an architecture student for 4 years I felt that there are so many things that we can learn, understand and feel from the structure of the college and environment of the college because we can visualize some examples live in our college, because at the same time our olfactory and visual sense works together when we are in the mood off study. So college can be a good medium for Architecture College. 5 year in an Architecture College is the foundation of an architect. So, the

foundation should be strong enough to stand high in future. We need to understand the Space, environment , belongings clearly ; not only understanding , we have to create a bond with them with us , not only the form of physical bonding ,but also with the eyes , with sound , with senses ,*what is architecture all about* .

Nobody can teach us Creativity or senses or bonding with environment. But a designed space or an environment (architecture) can only inspire us or foster our creative mind, our senses our interests .Thus there arises a need for a college where the students can discover, integrate, articulate and apply knowledge. My aim is to what they exactly want and help them mold themselves in that particular field.

2.7 AIM OF THE PROJECT:

To design an Architecture College and an integrated, meaningful, comprehensive and engaging Campus that compliments the architectural works and foster a better learning experience.

2.8 OBJECTIVES OF THE PROJECT:

- To create an environment or design a journey where students will not be forced to learn Architecture they will automatically absorb it and assimilate it from the created environment.
- To understand the aspects of human movement, their reaction to the observed phenomenon and how architecture plays an important role in supporting it.
- To engage the 5 sense with the learning experiences.
- Understanding the ideology of the School and translating in to the built form.
- To create a place for architecture students where they can better experience the real word and Virtual world.
- To create a 'new man' and design a 'new culture'

2.9 SCOPES OF WORK:

Understanding the design process and role of architecture in the design of education institute.

Understanding the nuances of campus design with respect to Site planning.

Finding the best solution in terms of site and context responsive architecture.

Evolving an Architectural Vocabulary for each Department.

Understanding spatial implications of specialised activity.

Translating the vision of the institute into architectural solution.

Experimenting with new approaches towards architecture-interactivity.

2.10 SCOPES OF THE PROJECT:

The scope of my design would basically concentrate on the overall master planning of the campus of architecture institute.

- Main college Block
- [Undergraduate degree course for Architecture (B.Arch)
- Postgraduate degree course for Architecture *(*M.Arch)]
- Laboratories and studios
- Library
- Garden of 5 sense
- Think tank (a separate place from the all noise zone)
- Sport Facilities (indoor and outdoor)
- Workshops
- Auditorium
- Canteen
- Cafeteria
- Playgrounds
- Hostel blocks
- Staff residence

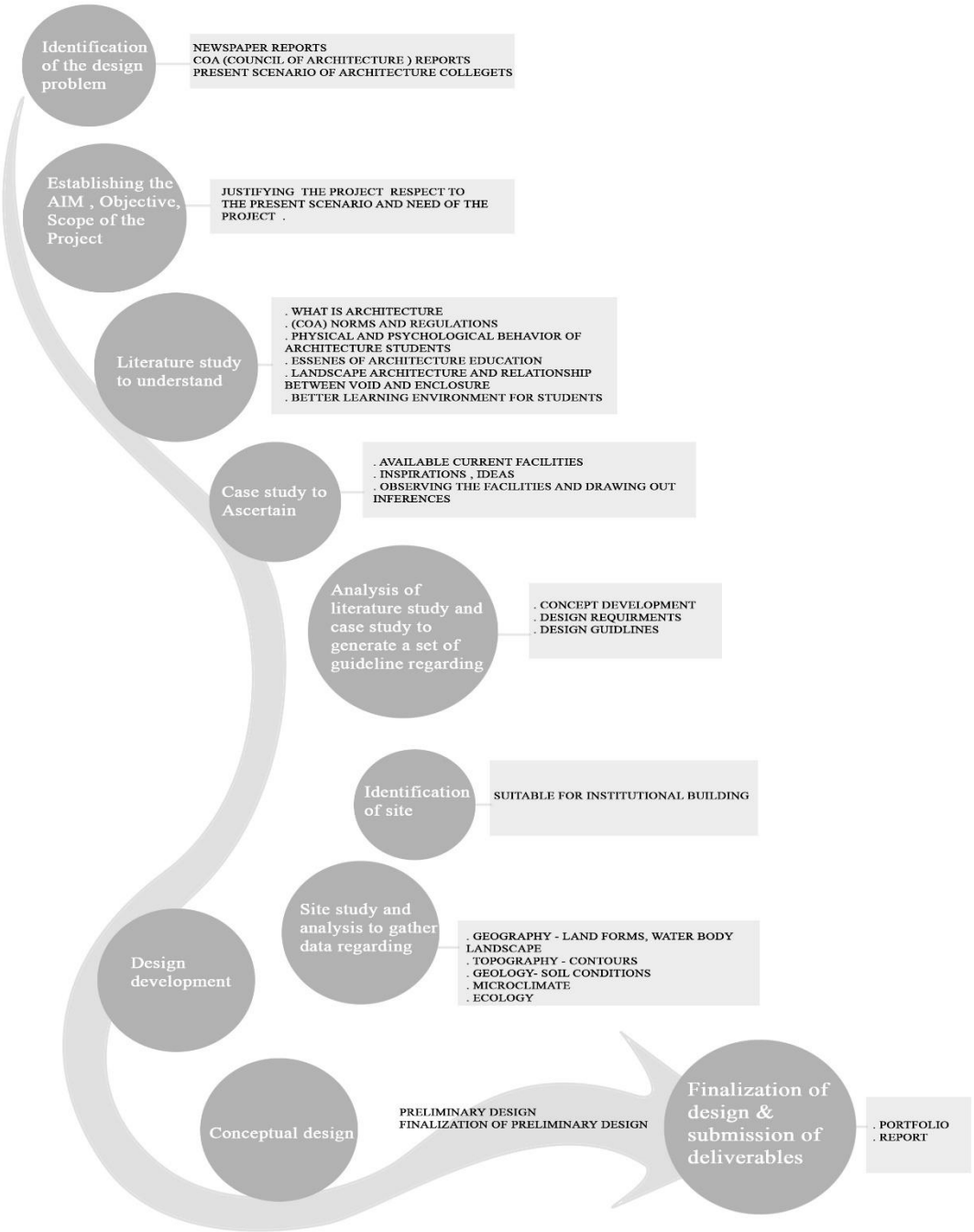
2.11 SCALE OF THE PROJECT:

User group: Students (age group 17-28) **and** Teachers / **No of User:** Approximately 400 people

2.12 LIMITATIONS OF THE PROJECT:

- Planning of hostel blocks and staff residence is not the part of my research.
- Any kind of site respective limitations will be kept on mind during the design development procedure.

2.13 DETAILED METHODOLOGY:



Chapter 3

LITERATURE STUDY

'A campus is a world in itself, a temporary paradise, a pleasant stage in life. '

_ Le Corbusier

3.1 EDUCATION MODEL TYPOLOGIES:

Quality of space and quality of experience are core architectural concept. Approaches to the philosophy and delivery of education are constantly evolving in response to changing attitudes, technologies, and evidence based design. Within this broad scope, however, commonalities exist, all of which may inform the design, construction, and use of college.

3.1.1 CLASSROOM:

The traditional method of educational instruction, characterized by 25-30 students seated in a classroom and taught a standardized curriculum within a fixed timetable.

3.1.2 STUDIO:

Most commonly used at the junior and senior high level, studio setups promote vocational, hands-on learning, often utilizing specialized technologies and equipment within a workplace-like setting.

3.1.3 OFFICE:

Within an open plan layout, students undertake personalized learning at individual workstations, similar to a Standard office environment. Educational agendas and topic based projects incorporate student input and are undertaken individually or in small or large groups.

3.1.4 SCHOOL WITHIN A SCHOOL:

Common in higher education systems, sub-institutions within the overall institution facility are equipped to teach a full curriculum of studies semi autonomously. Ability and attainment indicate how long a student spends at a particular level, while students of varying ages provide cooperative peer support and mentoring.

3.1.5 FACULTY:

Based on specific subject clusters, this model allows individual subject departments to identify and develop specialized curricular, spatial, and visual identity requirements tailored to a particular area of instruction within a larger institution.

3.2 VALUE:

• A institution is a symbol of the community, in built form; functionally it should be extended and promoted as a place of community assembly.

• Good urban design improves the human experience of the city through the thoughtful interplay of buildings, transportation, outdoor public spaces and landscaping to create a vibrant, safe, and pedestrian-oriented environment. As institutions are highly public and highly visible institutions within the community, their architecture should be welcoming and extroverted.

• time invested in understanding where the institution is located, who uses it, and how, establishes the institution as an integral part of the community by reflecting these qualities in built form. A sense of pride, place and identity is strengthened when the community can relate to the buildings within it.

3.3 SITE PLANNING & LANDSCAPING:

• Situate buildings to maximize flexibility for future building and site developments (e.g. modular classrooms, new sports fields, storage buildings).

• Interior building layout should respond to the site and ensure that light and views are enjoyed by inhabited spaces such as classrooms or offices (as opposed to loading or garbage areas).

• Building massing will cast shadows and may negatively affect interior access to light and views. Ensure building massing and geometry is oriented to minimize detrimental effects on quality of interior spaces.

• Provide a balance of hard and soft landscaping, avoid vast expanses of asphalt, concrete or sod (unless required for playing fields). Incorporate low maintenance, drought tolerant and indigenous species: consider xeriscaping in areas where vegetation or maintenance may be impractical.

• Provide a vehicular passenger drop-off area near the main entrance and a separate zone for school buses, to reduce safety concerns and improve traffic flow. Separate students, pedestrians, staff and visitors from vehicular traffic, buses and service areas. Take advantage of landscaping, fencing and building massing to create well-defined human and vehicular zones.

• Continuous fencing around the school yard defines school property and improves the ability of teachers to supervise outdoor areas.

• Provide screening around bins, mechanical equipment, etc. where such elements are visually prominent. Use caution in the design of hidden spaces.

Fig 3



• Seating need not be typical institutional outdoor furniture, selected only for durability and economy. Gathering spaces can utilize landscape features such as boulders, sculpture, benches, covered areas, or stairs as informal seating areas. a simple tree or grassy bowl can be conducive to studying, socializing or eating lunch during breaks.

• Create a variety of outdoor gathering areas for students, to accommodate groups of various sizes. Outdoor spaces should provide seating and make use of opportunities to include local art and sculpture. These areas can double as outdoor teaching spaces during class hours.

3.4 EXPERIENTIAL SPACE PLANNING:

From 1st year to 5th year, a typical student will spend 5 years in the school system. Throughout the span of an entire career, a teacher (and admin/support staff) may spend more Than *thirty* years in the school environment. In the challenge to meet the demands of programme, Schedule, and budget, it is vital to keep in mind that a school is ultimately a place for inspiring *People;* as such, each decision made by the owner and design team can have a profound effect on the daily lives of students, teachers, and the community.

3.5 UNIVERSAL DESIGN:

"The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design".

As with most other public institutions, a school should endeavour to accommodate all users, including those with physical, cognitive, auditory or visual limitations. Originating from Barrier-Free and accessibility principles, Universal Design aims to improve the built environment through the creation of facilities, products and spaces

which are inherently accessible, functional, attractive and equitable to all.

3.5.1 SIZE & SPACE FOR APPROACH & USE:

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Fig 4

3.6 NEAT & ACTIVE DESIGN:

NEAT (Non-Exercise Activity Thermogenesis) is the energy expended by all activities other than sleeping, eating and exercise. Research conducted by the Endocrine Research Unit at the Mayo Clinic has proven that the cumulative effect of seemingly insignificant activities such as getting up from a chair or typing on a keyboard actually contribute meaningfully to caloric mettabolization and health.

3.7 ACTIVE DESIGN:

Active Design strategies relate to how buildings and sites are designed so that elements which encourage activity (e.g. stairs), are designed as preferable and more attractive options than low-energy choices (e.g. elevators). With the growing prevalence of inactivity-related health issues including childhood obesity and type-2 diabetes, it is vital that Active Design principles are integrated into the built environment.

3.8 MATERIALITY:

Materiality refers to the strategic selection and Application of materials in the built environment. Perceived primarily through sight and touch, materials contribute to the experience, function and memory of a space. Other sensory or psychological responses may also be

triggered, such as the smell of cedar wood, or the perception of certain materials as being warm/cold, soft/hard, etc.

3.9 SIGNAGE, GRAPHICS & ART:

When considered with respect to the overall cost and effort of building a school, signage graphics and art are relatively small parts of the building process that are often left out or left to the operators and users after building turnover. When incorporated into the design process, however, these elements can be powerful tools in creating identity, connecting to the community, and improving the first impressions and visual experience of the Architectural school environment.

3.10 SUMMARY:

"To encourage the pursuit of Design Excellence, the Ministry will advocate the value and benefit of architecture and further an understanding of both product and the process of building design."

Design Excellence, when applied to school design, enhances the basic architectural and urban planning strategies of a project in order to create a unique, holistic, functional, and attractive community landmark. Long and short term flexibility, careful selection of durable, timeless materials, appropriate use of innovative and sustainable design solutions, and skilful planning and aesthetic treatment results in a high quality building which proves the value of exceptional architectural design. By responding to the context of site, removing barriers, and promoting sustainability, art, and activity, a successful school project creates a welcoming, comfortable and flexible environment with the power to strengthen communities, and inspire its designers, staff, and students.

3.11 UNDERSTANDING CREATIVITY

Meaning of creativity: essentially an "assumption breaking process"

3.11.1 ASPECTS OF CREATIVITY:

Fluency the total no of interpretable, meaningful and relevant ideas generated in response to the stimulus.

Flexibility the number of different categories of relevant response.

Originality the statistical rarity of the response among the test subjects.

Elaboration the amount of detail in the responses.

3.11.2: SOCIAL PERSONALITY APPROACH

- Independence of Judgement
- Self confidence
- Attraction to Complexity
- Aesthetic Orientation
- Risk-taking
- Openness to Experience

3.11.3 ROLE OF MOOD IN CREATIVITY

Positive emotions such as joy broaden a person's available repertoire of cognitions and actions thus enhancing creativity proven by Broaden and build model by Fredrickson.

Particularly strong links have between identified between creativity and mood disorders, particularly manic depressive disorder, proven by Arnold Ludwig of the University of Kentucky.

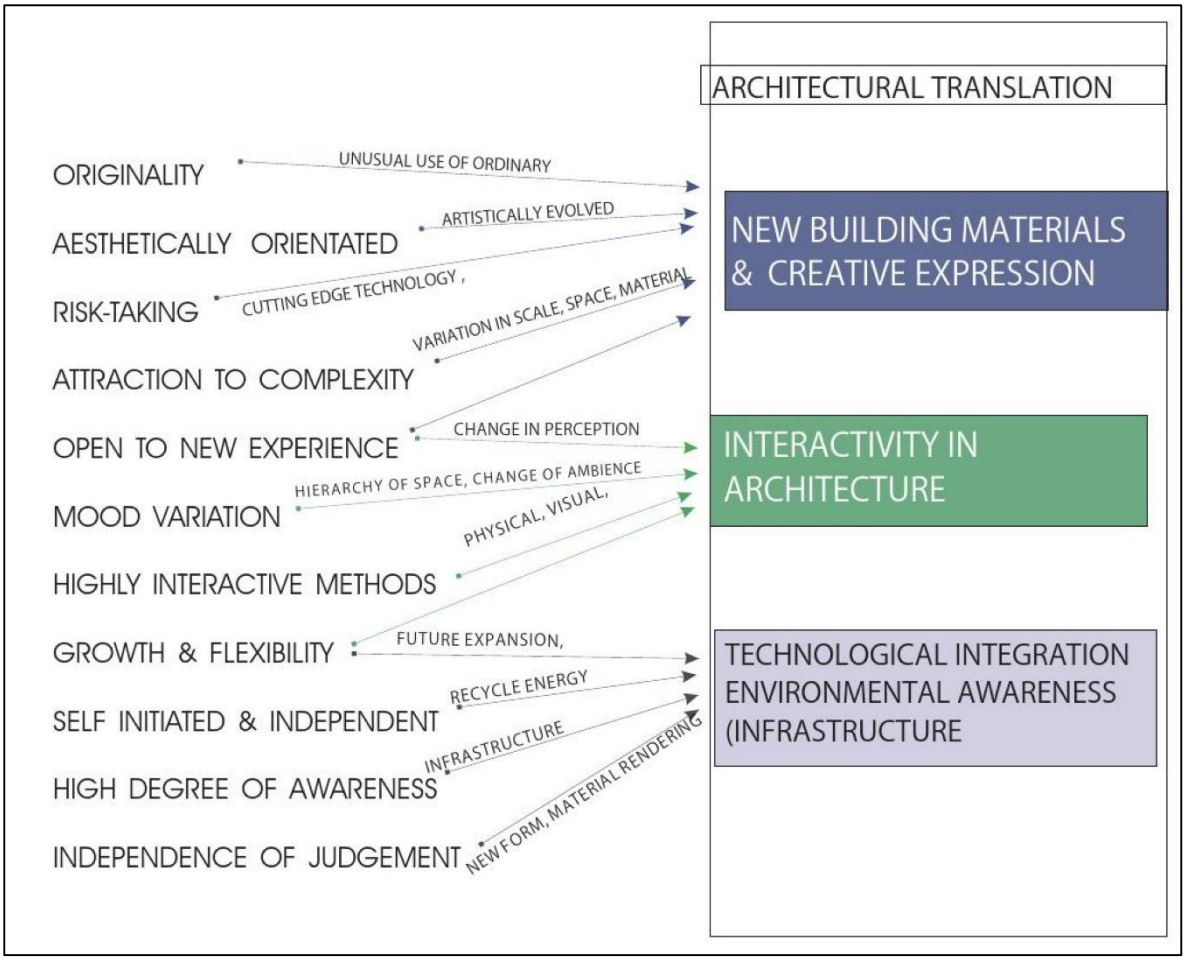
Research has proven that feelings and creative cognition are interwoven in several district ways with in the complex fabric of daily work lives.

Fig 5

3.12 IDENTIFING METAFORS FOR INTERPRITING THE SPIRIT OF THE PROGRAM:

- COMMUNITY OF LERNERS
- TRANSPARENT BODY OF KNOWLEDGE
- ENVIORNMENT FOR MAXIMIZING CREATIVITY
- LEARNING PLATFORM

Fig 6

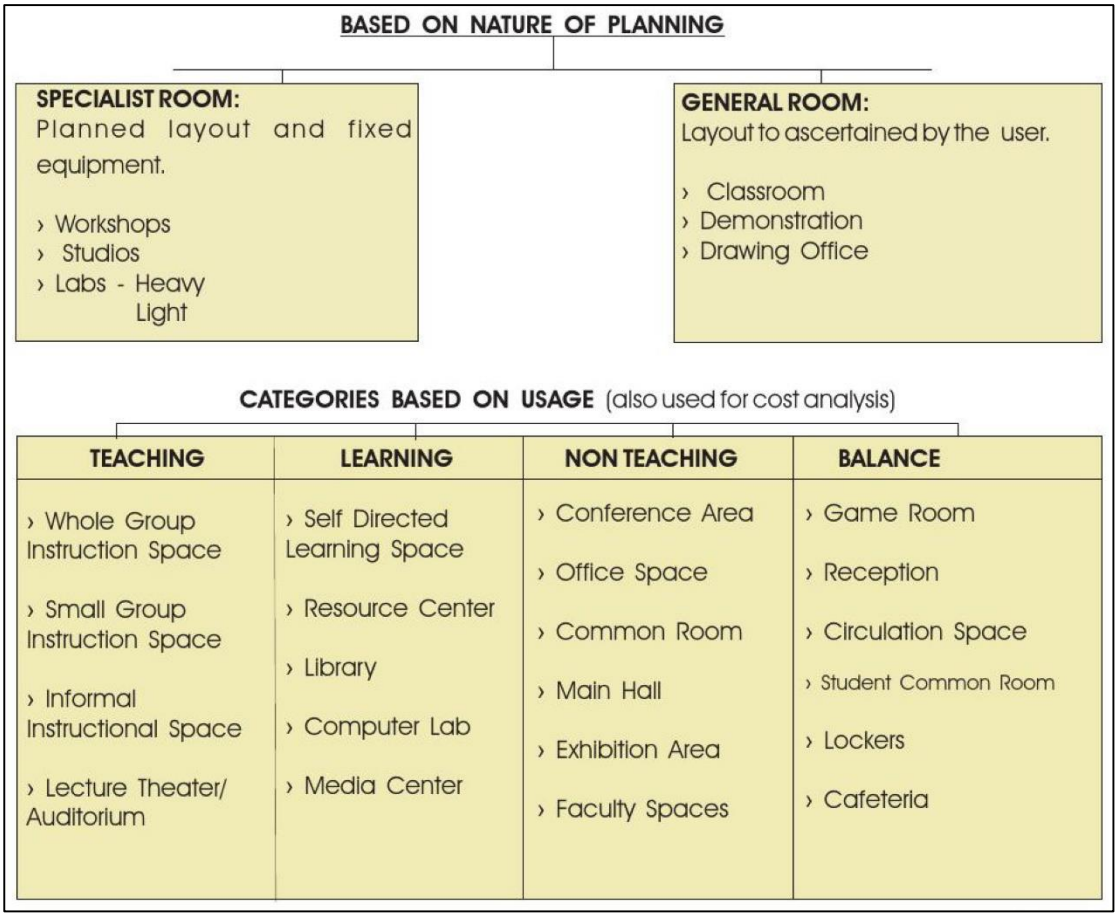


3.13 FUNCTIONAL COMPONENTS:

Architectural progress of educational building does not imply quantitative massification. It implies more robust, flexible, adaptable buildings for diversified range of courses. The success of such a step depends on the balance between the managerial and physical combinations.

KEYWORD: PLIABILITY NOT ANONYMITY

Fig 7



3.14 CAMPUS PLANNING AND URBAN DESIGN THEORY:

3.14.1 TYPES OF CAMPUS

When a new university or polytechnic is to be built, a development (or master) plan is drawn up, showing how it is intended for the institution to cope with the expected expansion over the years to come. Expansion usually occurs by increasing the sizes of existing departments, rather than by the establishment of many new ones (although some new departments may be set up). There are three ways in which a department can expand:

- Extension to its existing buildings externally, for which space must be available
- Displacement of adjoining departments, for which the buildings must have been designed with flexibility in mind and

- Fragmentation over a series of separated buildings, which is normally deplored.

3.14.2 FORMS OF DEVELOPMENT

The form of the initial development of the campus will reflect the decision on methods of expansion. The common forms are

- Molecular, where departments and facilities are in widely separated buildings, leaving ample space for expansion. The disadvantage of this scheme is that there are long distances to be covered between facilities, and some minor functions such as parking, lavatories and refreshments have to be repeated at each 'nucleus'.
- Linear, which is designed with three strips containing residential, general and academic accommodation respectively. These strips can be extended at either end, and the academic accommodation is designed for easy conversion, enabling displacement to be facilitated
- Radial, where expansion takes place all round.

URBAN DESIGN THEORIES

While engaged in campus planning and design work, Lorn led a subcommittee on open space. One of four key subcommittees of the whole (buildings, infrastructure, parking and circulation were the others).Here follows a summary of key theory employed by the open space committee, as presented in overheads at one of its meetings.

(ROGER TRANCIK, 1986. FINDING LOST SPACE, NEW YORK: VNR, pp. 9798.)

3.14.3 FIGURE-GROUND THEORY:

From a highly regarded Urban Designer's perspective, there are three key theories to apply to campus planning and design projects; the first of which is founded on study of relative land coverage of buildings as solid mass ("figure") to open voids ("ground") Yields two-dimensional plan views black and white graphic images shows existing patterns of mass void relationships that should be recognized, including continuity of void spaces (circulation) and a sense of scale ("fine grain to coarse grain") involves manipulation, addition, subtraction of physical geometry has the objective to clarify spatial structure by establishing a hierarchy of spaces individually enclosed but ordered directionally in relation to each other values a predominant "field" of solids and voids that create the urban (campus) pattern, often called the "fabric," punctuated by object buildings and spaces, such as major landmarks and open spaces that provide focal points and sub centers within the field.

3.14.4 LINKAGE THEORY:

The second theory:
Is derived from "lines" connecting one element to another
Involves lines that are formed by streets, pedestrian ways, linear open spaces, or other linking elements that physically connect parts of the city (campus)
Goal is to organize systems of connections, network, establishing functional structure for ordering spaces emphasizes the circulation diagram rather than the spatial diagram.
Could include discussions on appropriate technology movement systems, efficiency of infrastructure, functional relationships take precedence over patterns of defined outdoor space.

3.14.5 PLACE THEORY:

The third theory:
Addresses human needs, including conviviality goal is to respond to cultural, historical and natural contexts provide richness, articulation of place character, by incorporating unique forms and details indigenous to the setting carefully consider time and fit between new design and existing conditions social and cultural values are prized; Visual perceptions of users, and an individual's control over the immediate public environment are as important as principles of lateral enclosure and linkage.

3.14.6 SUMMARY:

Each of these approaches has its own value, but the optimum is one that draws on all three:

- Giving structure to the solids and voids,
- Organizing the links between the parts, and
- Responding to the human needs and unique elements of the particular environment.

3.15 LEARNING SPACE DESIGN THEORY:

Malcolm Brown ("Learning Spaces," chapter 12)
EDUCAUSE Review, vol. 40, no. 4 (July/August 2005)

Perhaps for as long as academicians have been conducting research, a challenge has been how to take the harvest from research and apply it in practice. This bridging (or perhaps mapping) of learning theory to practice is still the key for any department or institution that is striving to design or redesign its learning spaces. It is vital to give coherence and consistency to the design of learning spaces by balancing learning theory, faculty and student culture, institutional goals, and resources, all in the face of a rapidly changing digital environment.

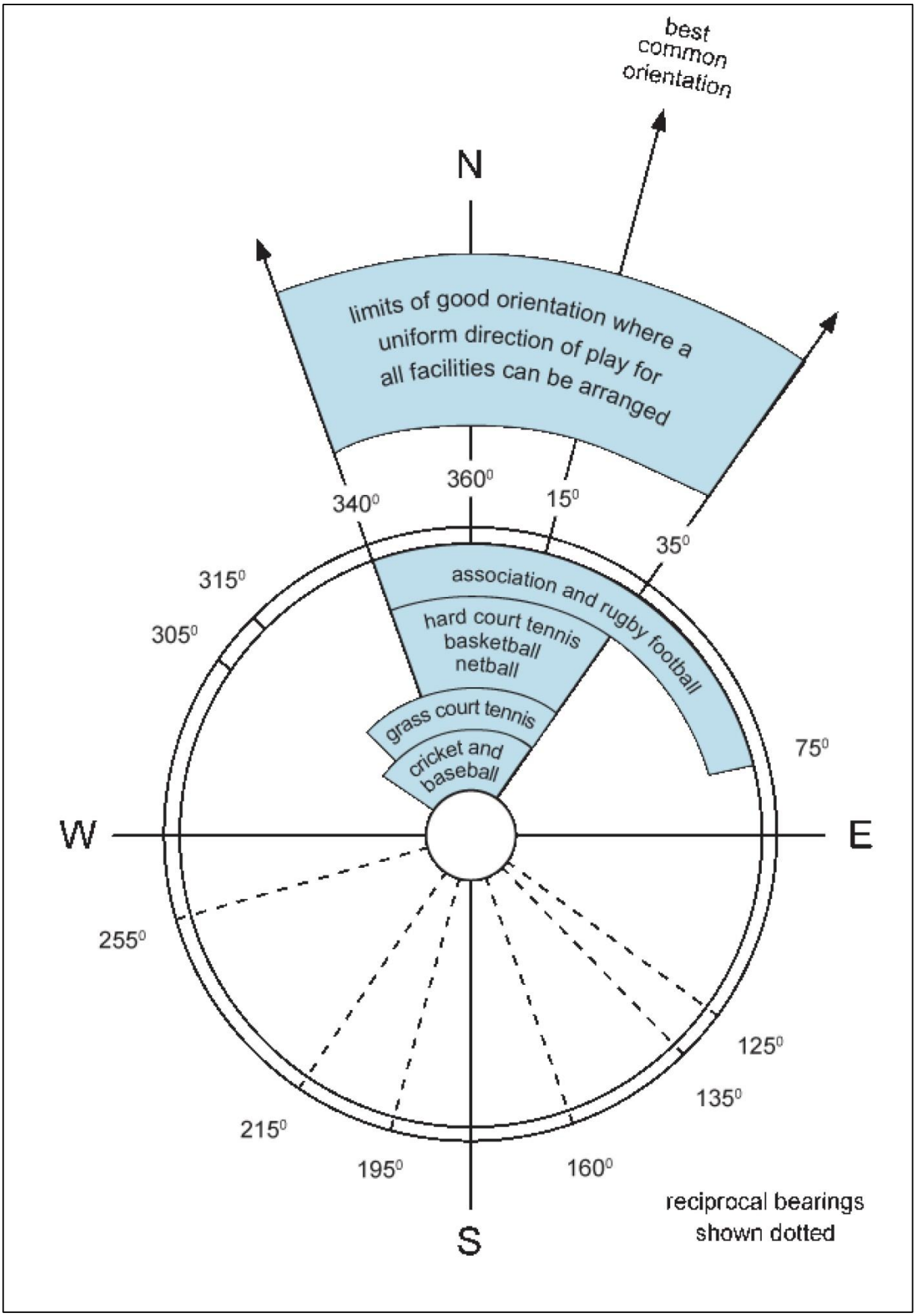
LEARING THERORIE PRINCIPLES	NET GEN TRAIT	LEARNING SPACE APPLICATION
COLLABORATIVE ,CO-OPERATIVE,SUPPORTIVE (SHARED/JOINT)	GROUP ACTIVITY ORIENTED	SMALL GROUP WORK SPACE
META COGNITION & FORMATIVE ASSESSMENT (PERCEPTION)	GOAL AND ACHIVMENT ORIENTED	ACCESS TO TUTORS, CONSULTENTS AND FACULTY IN LEARNING SPACE
ACTIVE	MULT TASK	TABLE SPACE FOR A VARIETY OF TOOLS
MULTIPLE LERNING PATHS	EXPERIMENTAL AND ERROR LEARNING	INTEGRATED LAB FACILITIES
ENCOURAGING AND DISCOVERY	PRAGMATIC AND INDUCTIVE	
COMPELLING AND CHALLANGING MATERIAL	INTERACTIVE	WORKGROUP FACILITATION; ACCESS TO EXPERTS

Jhon Henry Newman observed in 1845 in the idea of a University , "*Where students gather ,keep open hearted, sympathetic and observant and freely mix with each other, they are sure to learn from one another , even if there be no one to teach them .*"

3.16 ORIENTATION OF OUTDOOR PLAYING AREAS:

The time of day (early morning or late afternoon) as well as the time of year (winter or summer) has a bearing on optimum orientation.
The aim however is to share between opposing participants the advantages and/or disadvantages of the sun's direction and other natural factors such as breezes. It is generally recommended that playing areas are orientated approximately in a north south direction to minimise the effect of a setting sun on players. The best common Orientation is 15° east of north.

Fig 8


best common orientation
N
limits of good orientation where a uniform direction of play for all facilities can be arranged
340⁰
360⁰
15⁰
35⁰
315⁰
305⁰
association and rugby football
hard court tennis basketball netball
grass court tennis
cricket and baseball
75⁰
W
E
255⁰
125⁰
135⁰
215⁰
195⁰
160⁰
S
reciprocal bearings shown dotted

3.17 DATA COLLECTION:'

COUNCIL OF ARCHITECTURE

(Statutory Body of Govt. of India under the Architects Act, 1972)
MINIMUM STANDARDS OF ARCHITECTURAL EDUCATION REGULATIONS, 2015

STAFF REQUIREMENT: (Strength of full time-faculty based on sanctioned intake)

FULL TIME TEACHING STAFF :

Year	I				II				III				IV				V				Total
Intake	Prin	Prof	Asso	Asst	Prin	Prof	Asso	Asst	Prin	Prof	Asso	Asst	Prin	Prof	Asso	Asst	Prin	Prof	Asso	Asst	
40	1	0	1	2	1	0	2	4	1	1	3	5	1	1	4	7	1	1	4	7	13
80	1	0	2	4	1	1	3	8	1	2	5	11	1	3	7	14	1	3	7	14	25
120*	1	1	2	6	1	2	5	11	1	4	8	15	1	5	10	21	1	5	10	21	37

NON TEACHING STAFF

Sr	Position	Intake									Remarks
	Intake	40			80			120			
	Year of operation	I	II	III	I	II	III	I	II	III	
1	Librarian	1	1	1	1	1	1	1	1	1	Qualifications As per UGC
2.	Assistant Librarian	-	-	-	-	-	-	-	-	1	Desirable
3	Lab / Workshop Technician	-	1	2	-	1	2	1	2	2	Min one for computer centre
4	Administrative and Accounts personnel	1 1	2 1	2 2	2 1	3 1	4 2	3 2	3 3	4 4	
5	Class IV employees	As required									

Notes:
1) Minimum 50 % Teaching Faculty on cadre wise Regular basis is must. Balance, up to 50% can be Faculty on cadre wise Tenure basis.
2) Only candidates registered with Council of Architecture (COA) under the provisions of the Architects Act, 1972 shall be eligible for the above posts subject to
Minimum qualifications and experience as prescribed by COA.
3) In addition to above, approximately 25% of the teaching load should be allotted to the Visiting faculty drawn from profession.
4) In addition to above full time faculty institute may recruit qualified faculty in the field of Engineering / Fine Arts / Humanities, etc. depending on actual
Requirements, on full time / part time basis. The qualifications, pay scales and service conditions of full-time faculty members other than Architects shall be as
Per UGC Norms.
5) For intake exceeding 80, the faculty requirement shall be calculated progressively in the multiples of intake of 40.
6) Maximum One Professor can be appointed as Professor Design chair per intake of 40.
7) Professor Design Chair and other faculty members appointed on tenure basis cannot be considered as Head of the Institution / Principal / Director.
8) Up to 50% of the faculty members other than professors can be on tenure basis.

INFRASTRUCTURE REQUIREMENTS

A: SPACE

S. N.o.	Year of Operation ⟶	1st Year			2nd Year			3rd Year			4th Year			5th Year			Remarks
	Sanctioned Intake ⟶	40	80	120	40	80	120	40	80	120	40	80	120	40	80	120	
	Activity Spaces (Carpet Area)																
1.	**Studio** - 120 sq. m each	1	2	3	2	4	6	3	6	9	4	8	12	4	8	12	Flexibilty in terms of studio spaces can be based on local conditions, provided that area of 3 Sq. M. per student of sanctioned intake is made available.
2.	**Class room** - 60* sq. m each	1	2	3	1	2	3	2	3	4	2	3	4	2	3	4	*- Maximum 2 class rooms can be combined together to cater to theory class of maximum 80 students i.e. 120 sq.m. Provided with digital projection facilities and sound amplifier system.
3.	**Labs and Workshops** - 40 sq.m each	1	1	1	2	2	2	2	3	3	2	3	3	2	3	3	Workshop, Material Museum etc.,
4.	**Computer Centre** - 60 sq. m	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	
5	**Library**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Library should have 0.6 Sq.M. per Student upto total sanctioned strength of 200 and 0.3 Sq.M. for every additional Student beyond Sanctioned strength of 200.
6.	**Principal's Cabin** - 30 sq.m	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	with waiting lobby
7.	**Administrative Office** - 30 sq. m 60 sq.m	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	
8.	**Staff Rooms / Cabins** - Professor- 12 sq. m each Associate Professor- 8 sq. m each Assistant Professor- 6 sq. m each																As per the COA faculty norms in the yearly progressive fashion

9.	**Staff Lounge** 30 sq. m 60 sq.m				1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	1 -	- 1	- 1	
10.	**Construction Yard** - 200 sq. m																Open space activity from second year onwards

Note: Depending on local conditions, the areas mentioned above may vary by upto 20%.

Desirable Activity Spaces:

1. Canteen
2. Stationary Shop
3. Reprography Section
4. Open air theatre with stage
5. Permanent Exhibition space
6. Provision for outdoor sports facility
7. Girls Common Room.
8. Resource Center.
9. Submission and Exam Room.

Desirable Labs:

1. Climatology / Environment*
2. Surveying*
3. Materials Testing
4. Electrical / Lighting / Illumination

5. Plumbing and Sanitation

6. Acoustics

7. Material Museum.*

Recommended Workshops

1. Model making*

2. Carpentry*

3. Metal craft

*Note: Labs / workshops with * are mandatory.*

B: LIBRARY FACILITIES

1. Minimum 300 books on subjects of Architecture shall be available in the library for the intake of 40 (including minimum 100 titles) at the time of 1st Inspection.

2. Add 150 books on subjects of Architecture (including minimum 50 titles) for every additional intake of 40.

3. From second year onwards, minimum 120 books on subjects of Architecture (including minimum 40 titles) for every year per intake of 40.

4. Library of old schools, having more than 5000 Titles; should acquire minimum 30 titles on subjects of Architecture per intake of 40 every year.

5. Journals and Periodicals of architectural relevance as below -

Intake/ Year	I		II		III		IV		V	
	International (INT)	National (NAT)	(INT)	(NAT)	(INT)	(NAT)	(INT)	(NAT)	(INT)	(NAT)
40	1	4	1	4	2	6	2	8	2	8
80 and above	1	4	2	5	2	8	4	10	4	10

Desirable: e-books and e-journals along with computer terminal with net facility for reference.
At least 2 Refereed journals (Min. 1 international) per intake of 40 shall be subscribed.

COMPUTER CENTER

Intake/ Year	I	II	III	IV	V
40/ 80/ 120	10	20	40	40	40

Requisite licensed software and peripherals such as printers, plotters, scanners, etc. shall be available at the computer center.
Upgrading of systems (hardware and software) shall be done every three years. Computers more than three years old shall not be counted as part of lab.
Broadband internet connectivity of appropriate bandwidth shall be available to all computers.

Desirable:

All faculty and staff shall be provided with individual/ personal computers in addition to above the computer center requirements.
Wifi connectivity throughout the campus freely accessible to faculty and students.

LAND REQUIREMENTS:

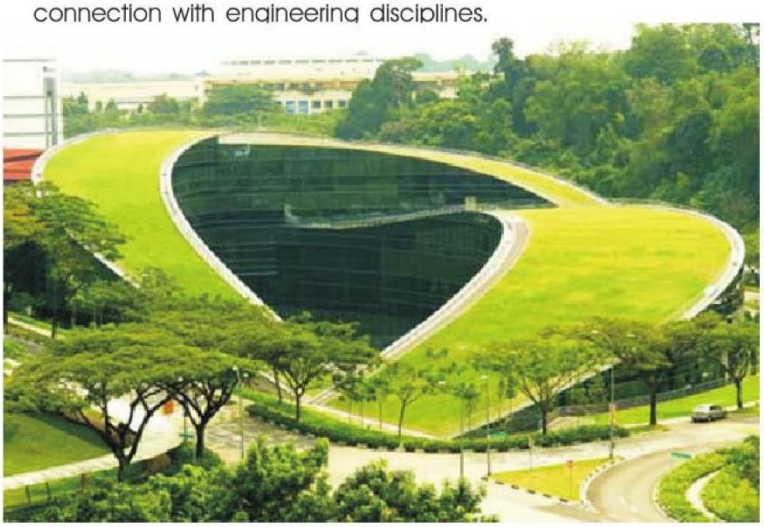
Minimum 8000 Sq. M. or Independent or undivided and contiguous share of land adequate enough to provide for built floor space of 2,000 Sq.M. for Intake of 40,
3,000 Sq.M. for intake of 80 and 4,000 Sq.M. for intake of 120 in B.Arch. course; provided further that the built space should be contiguous. Further, the Institution should also have sufficient space for sports, co-curricular activities and hostel, canteen and other facilities.
The land where the building of the institution is located/built must be institutional land and must be owned or availed on long lease (more than 33 years with Provision of renewal) by the trust / society / company.

Chapter 4

PROTOTYPE STUDY

4.1 NANYANG SCHOOL OF ART, DESIGN & MEDIA, SINGAPORE

The school curriculum is developed around interdisciplinary learning in Design & Media and offers majors in - Visual Communication; Product Design, Interactive Media; Digital Filmmakir Digital Photography and Imaging; Emotive Robotics and Digital Animation. Students are encouraged to explore and inter-disciplinary experience across multiple domains even in connection with engineering disciplines.



Aerial view of the school

+ The 5 story facility sweeps a wooded corner of the campus with an organic, vegetated form that blends landscape and structure, nature and high-tech and symbolizes the creativity it houses.

+ The curving green roofs distinguish the building from among the other structures; the line between landscape and building is blurred.

+ The roofs serve as informal gathering spaces challenging linear ideas and stirring perception.

+ The roofs create open space, insulate the building, cool the surrounding air and harvest rainwater for landscaping irrigation.

+ Planted grasses mix with native greenery to colonize the building and bind it to the setting.

Plan

This design seems to offer a new experience at every elevation or perspective fulfilling the intent that a "school for art should inspire creativity."

Glass Façade:
+ high performance building envelope
+ reduces solar gain and heat load
+ allows the benefits of natural views and daylight into creative spaces.

The glass walls provide a visual exchange between indoors and out allowing students and teachers to experience the building, the surrounding landscape and the interior plaza as fluid spaces.

+ Diffused natural daylight is abundant throughout studios and classrooms, filtered through the surrounding foliage.

+ Finishes are intentionally raw to act as a backdrop for the art, media and design projects. Concrete walls and columns, cement-sand screeded floors, timber railings and a neutral palette define the interior spaces which vary in shape and size.

The vison of the School 'to change rigid perception' has been translated directly into a form with ever changing perspectives. The form becomes the metaphor of change as if to facilitate the flow of creative ideas.

4.2 MAHINDRA UNITED WORLD COLLEGE, PUNE

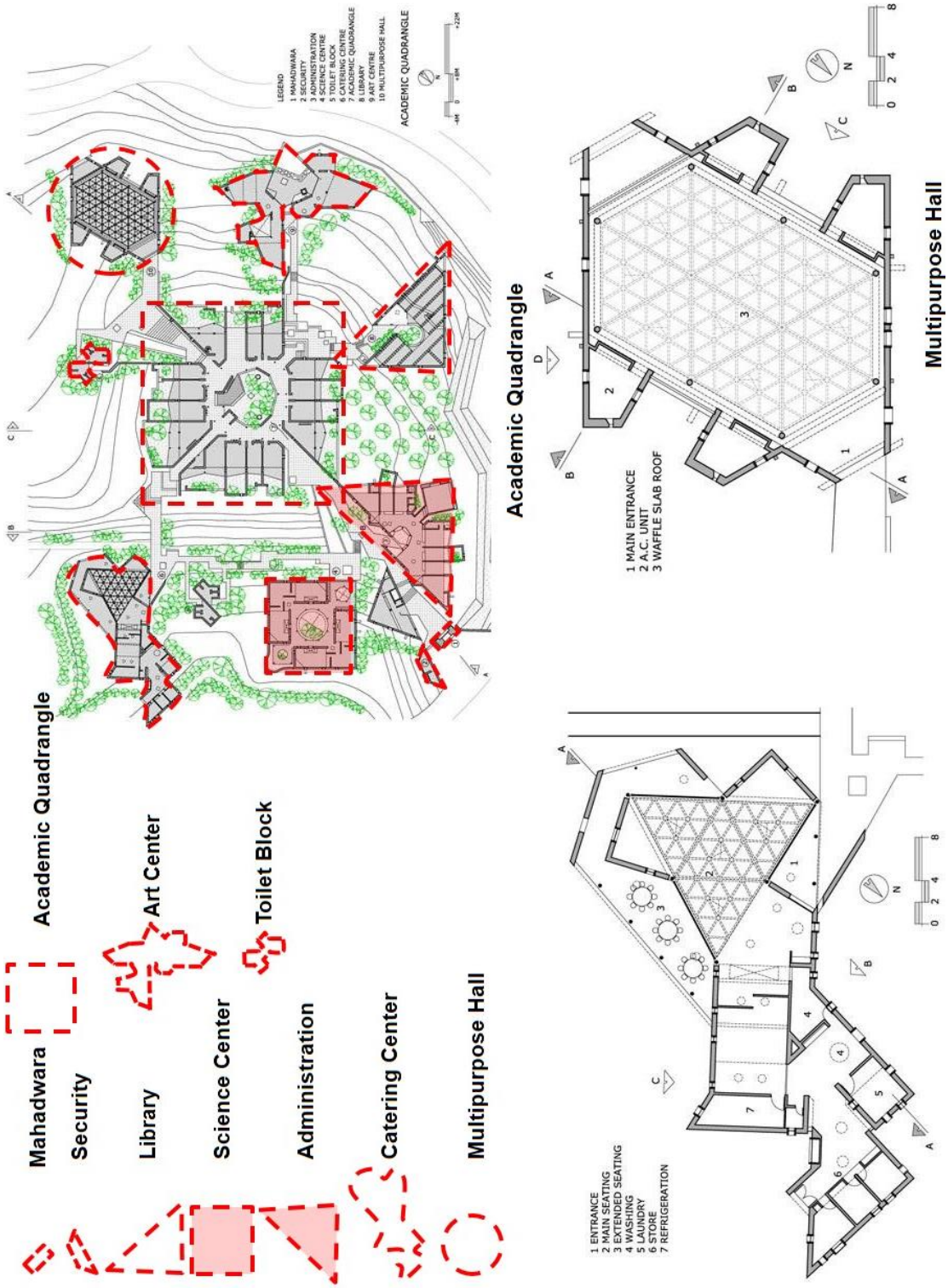
4.2.1 INTRODUCTION

UWC Mahindra College is truly an international community: students come from around 50 different countries and from widely diverse backgrounds. The campus is a living and learning experience, with the classroom being only the starting point. The goal is to enable students to learn a positive but critical approach to problem solving, and to think globally while acting locally. They are a community built on trust and respect, and they believe that the best way to learn personal responsibility is by learning to handle freedom. Students in UWC Mahindra College represent many different nationalities. Austria, Bangladesh, Belarus, Belgium, Bahrain, Bhutan, Botswana, Brazil, Cameroon, Canada, China, Colombia, Costa Rica, Czech Republic, Denmark, Ecuador, Finland, France, Germany, Guatemala, Hong Kong SAR, Hungary, India, Indonesia, Israel, Japan, Kenya, Lesotho, Malaysia, Maldives, Mauritius, Mexico, Mongolia, Nepal, Netherlands, Nigeria, Norway, Poland, Portugal, Saudi Arabia, South Africa, South Korea, Slovakia, Spain, Swaziland, Sweden, Switzerland, Tibet, Turkey, UAE, UK, USA, Venezuela, Vietnam, Zambia, Zimbabwe. And most of them are scholars which take scholarship from their country and come to India for study.

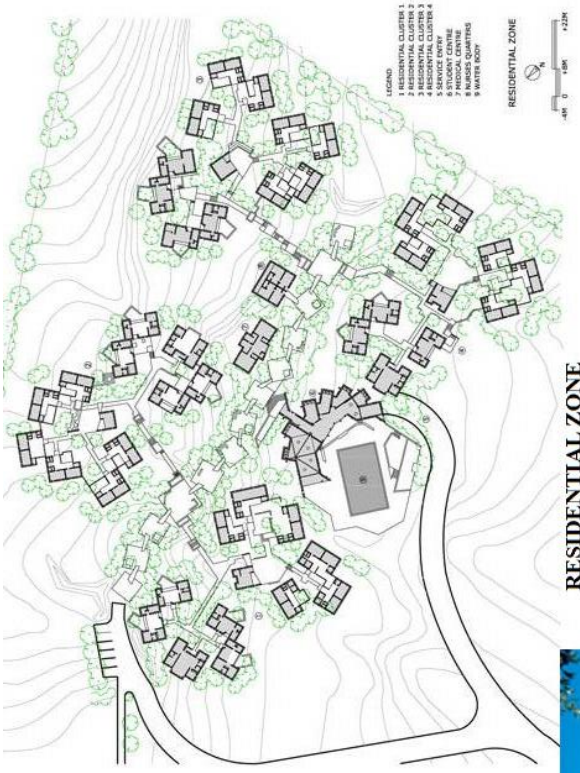
Fig 9

4.2.2 DESIGN FEATURES:

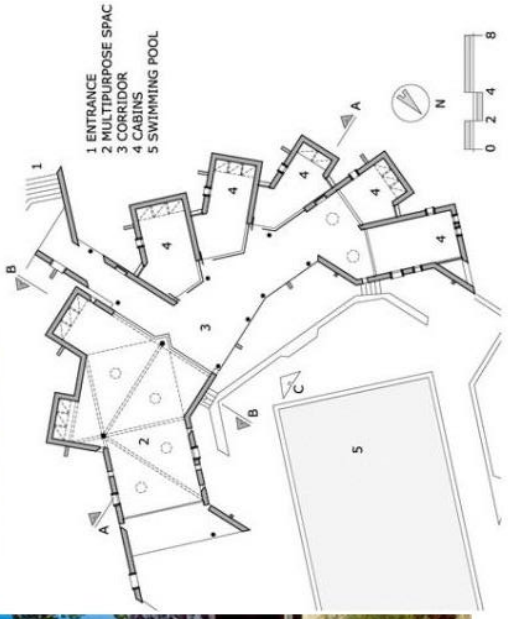
The college's 170-acre campus is nestled in the Sahayadri Hills, between two river valleys: the Mula and the Pauna. And college educational part is totally separated from the residential and hostels thus, there is also separate guest houses for the visiting faculties and parents and the design of the campus is as such that it gives diversity and increases its aesthetic with the surrounded fauna and flora . The interconnectivity of each block is well maintained by the architect.

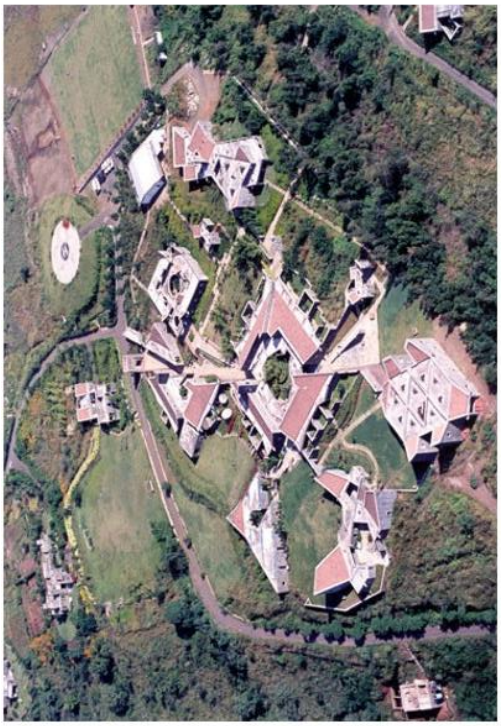

Mahadwara
Academic Quadrangle
Security
Library
Art Center
Science Center
Toilet Block
Administration
Catering Center
Multipurpose Hall
LEGEND
1 MAHADWARA
2 SECURITY
3 ADMINISTRATION
4 SCIENCE CENTRE
5 TOILET BLOCK
6 CATERING CENTRE
7 ACADEMIC QUADRANGLE
8 LIBRARY
9 ART CENTRE
10 MULTIPURPOSE HALL
ACADEMIC QUADRANGLE
Academic Quadrangle
1 MAIN ENTRANCE
2 A.C. UNIT
3 WAFFLE SLAB ROOF
Multipurpose Hall
1 ENTRANCE
2 MAIN SEATING
3 EXTENDED SEATING
4 WASHING
5 LAUNDRY
6 STORE
7 REFRIGERATION

1 CLASSROOMS
2 CENTRAL COURT
3 WATER BODY
4 COURTS
ACADEMIC QUADRANGLE
North facing studio windows provide Light and views in the art center
View of the Mahadwara from the administrative building
1 ENTRANCE
2 CENTRAL COURT
3 STACKING AREA
4 READING AREA
LIBRARY
1 ENTRANCE
2 INDIVIDUAL CABINS
3 CONFERENCE
4 COURTS
5 BANK
ADMINISTRATION
1 ENTRANCE
2 OPEN SPACE
3 STUDIOS
4 STORE ROOM
SECTION CC
ART CENTER



RESIDENTIAL ZONE





AERIAL VIEW OF THE ACADEMIC AREA

STEPS AT THE COMMON ROOM AT THE RESIDENTIAL CLUSTER

The library twists a light atrium into the Center of the structure

The administrative building reflects the Architectural language of the campus

Academic quadrangle reflecting the Gigantic mountains at the backdrop

Interior view of the administrative Building enveloping the outdoor garden

Primordial beings swallow other beings In the student center ceiling murals

Coffered triangles span the six Thousand square feet multipurpose

Three wings of the Art

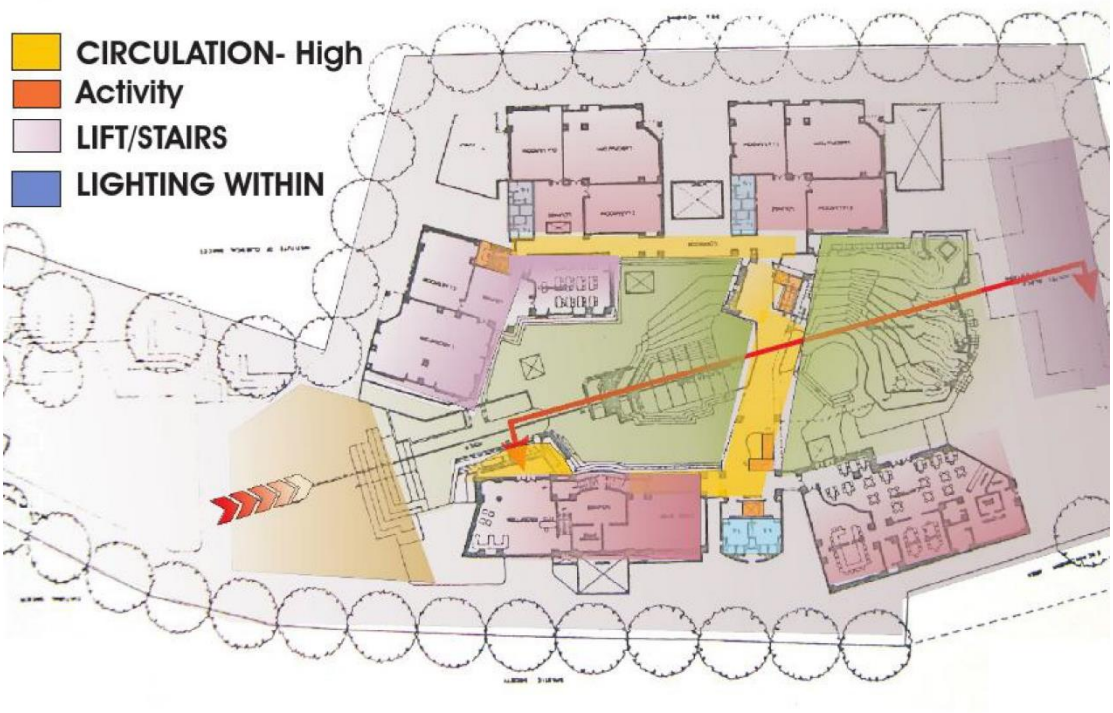
The Academic quadrangle is penetrated at its four cardinal quadrants by portals

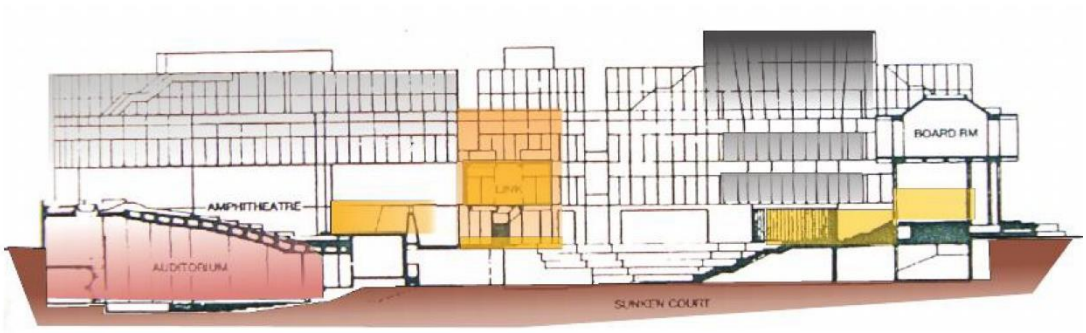
4.3 NIFT, NEW DELHI

Designed by Ar B V Doshi, NIFT campus is buzzing with activity.

REASONS FOR SELECTION -

- Reputed design Institute in Capital city
- To study relation of Indoor with the outdoor spaces.
- To see how culture is reflected in building usage
- To understand complication in a compact design with functions for textile and craft department





CIRCULATION WITHIN THE CAMPUS

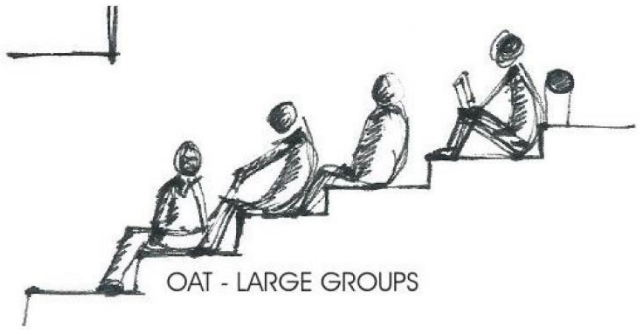
- Walkways
- Staircase
- Bridge connecting administration and academic blocks

INFERENCES:

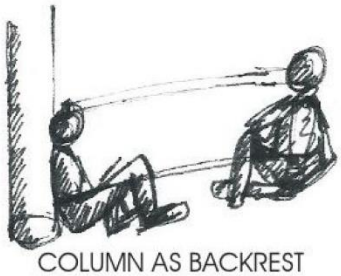
QUESTION

Where is it that students like to sit?

What makes a space suitable to be occupied, 'informally?



OAT - LARGE GROUPS



COLUMN AS BACKREST

ESSENTIALS OF THE INFORMAL SPACE -

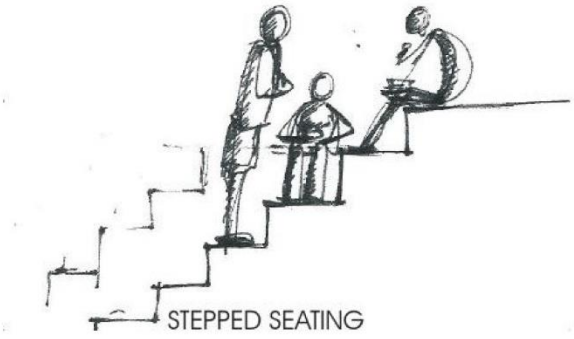
- Suitable for physical/postural improvisation
- Shaded
- View - people watching- lookout point with less probability of being noticed
- Distanced from passerby- undisturbed, away from earshot
- Usually in a 4 feet dia for interaction- steps.

The **JUNCTION** of two different spaces - an edge

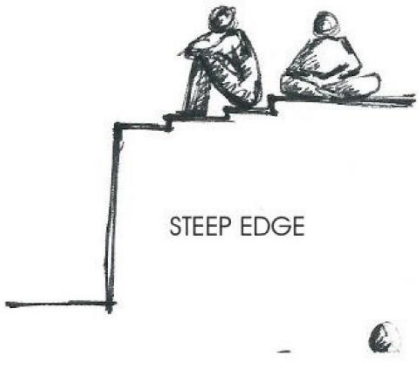
- Can be a **physical edge** like the 'cliff edge' where there is a change of leve

- Can be a **sun and shade edge**

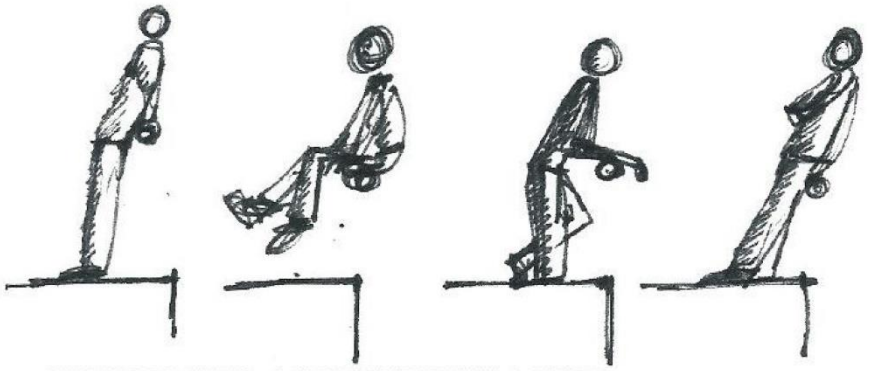
- Can be a **doorway**- change of nature of space- indoor vs outdoors



STEPPED SEATING

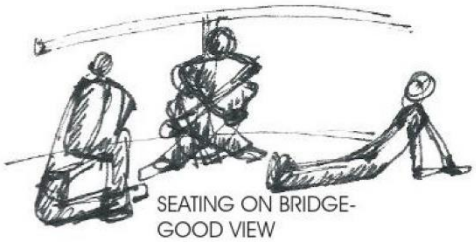


STEEP EDGE

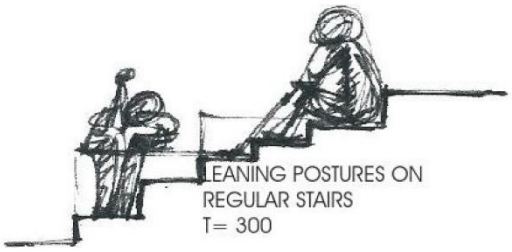


LEANING POSTURES - IMPROVISATIONS WITH A RAILING

LEANING POSTURES ON
REGULAR STAIRS T= 230

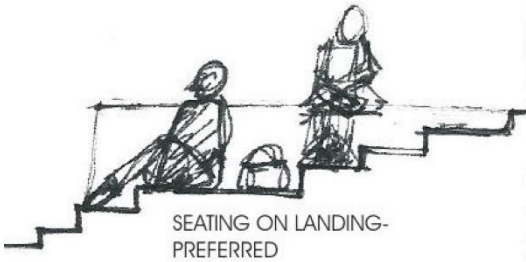


SEATING ON BRIDGE-
GOOD VIEW



LEANING POSTURES ON
REGULAR STAIRS
T= 300

POSTURE ON LANDING-
MUCH PREFERRED

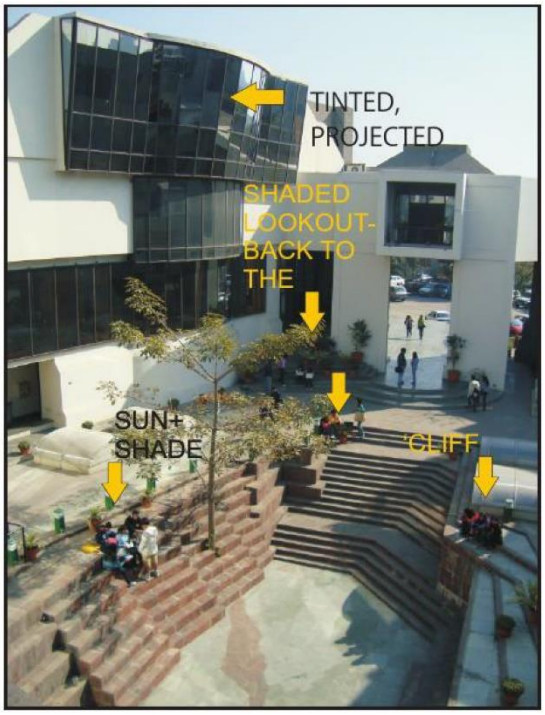


SEATING ON LANDING-
PREFERRED

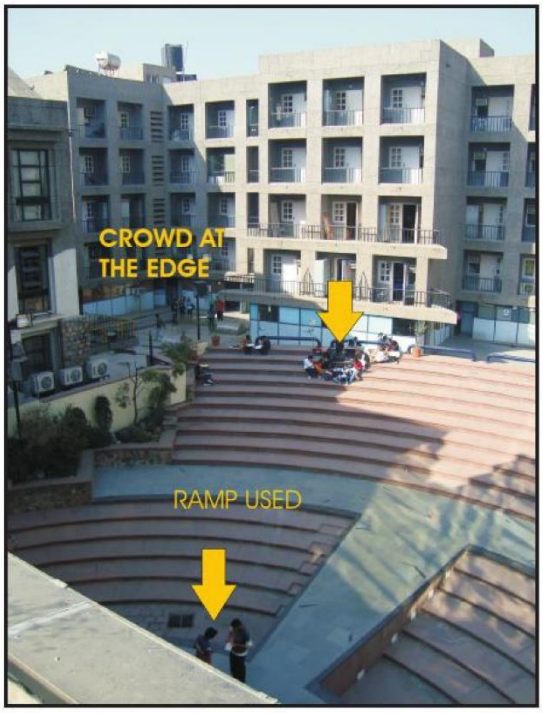
OCCUPANCY OF **STEPS, PORCH, DOORWAYS, EDGES** Seems random because these are not really meant to be used/ occupied.

Students prefer to occupy 'unofficial' places, where 'faculty is not expected to interrupt.'

THESE AREAS HAVE TO BE DESIGNED FOR THIS PURPOSE AS WELL.

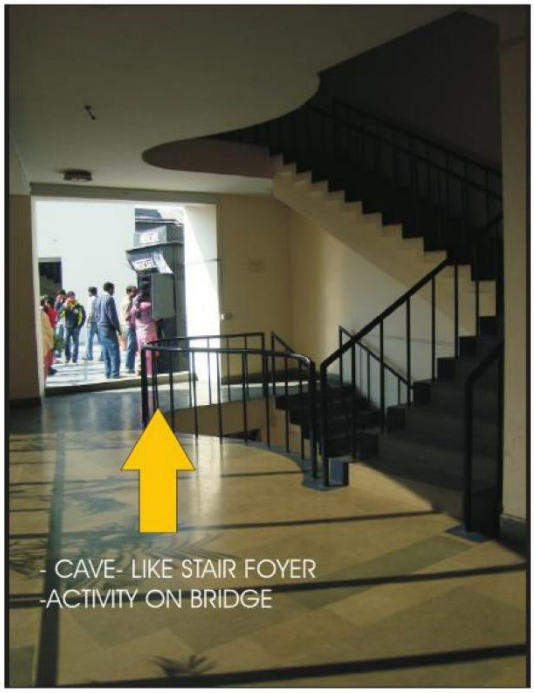


OCCUPANCY in the kund



OCCUPANCY in formal OAT

OCCUPANCY on the bridge



Chapter 5

CASE STUDY

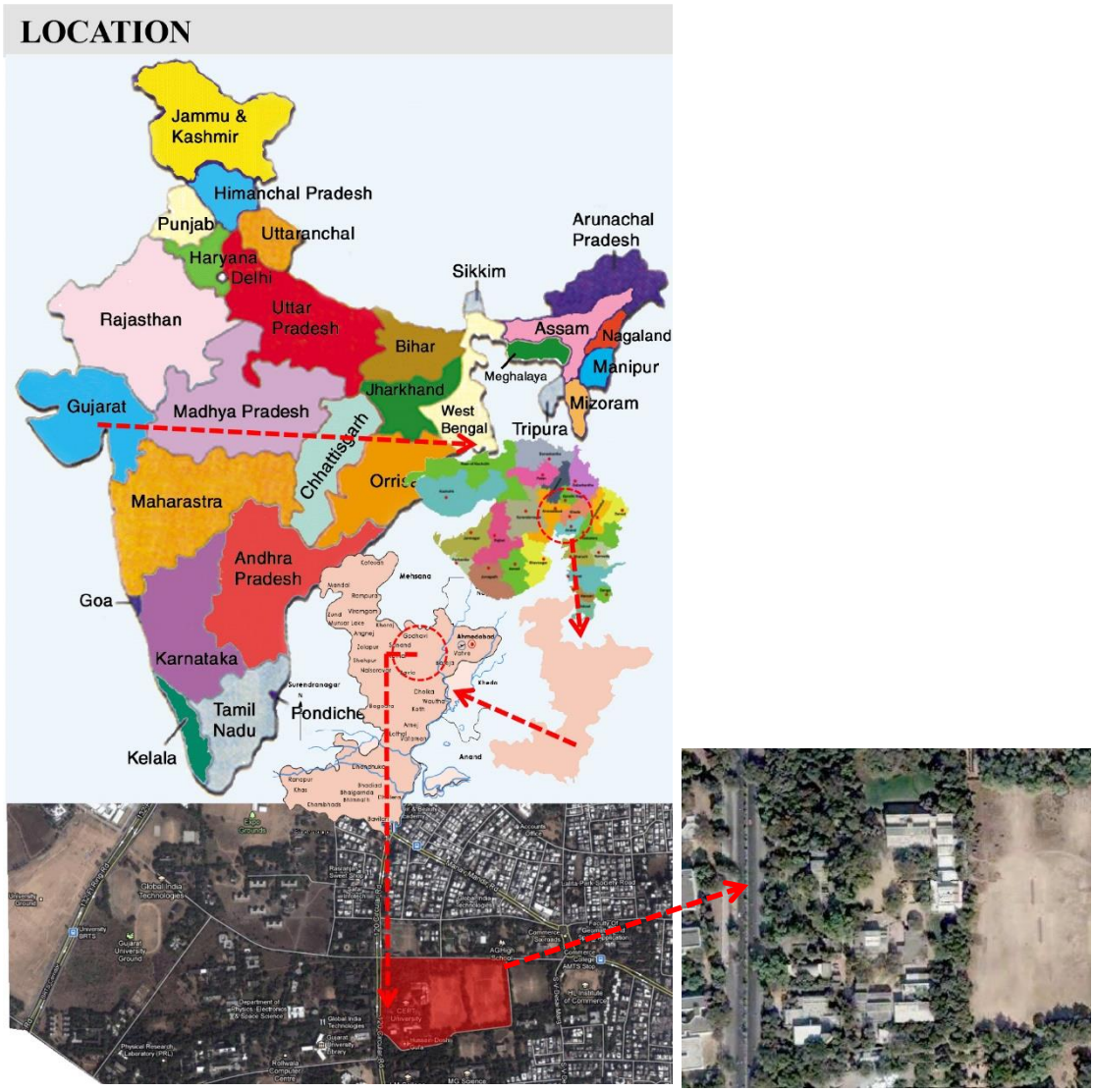
5.1 CENTRE FOR ENVIRONMENTAL PLANNING AND TECHNOLOGY UNIVERSITY

(CEPT UNIVERSITY) AHMEDABAD, GUJARAT

5.1.1 INTRODUCTION:

LOCATION: AHMEDABAD
YEAR OF CONSTRUCTION: 1961
BUILDING TYPE: EDUCATIONAL INSTITUTE
CONSTRUCTION TYPE: EXPOSED BRICK AND CONCRETE
CLIMATE: TROPICAL, HOT AND DRY IN SUMMER

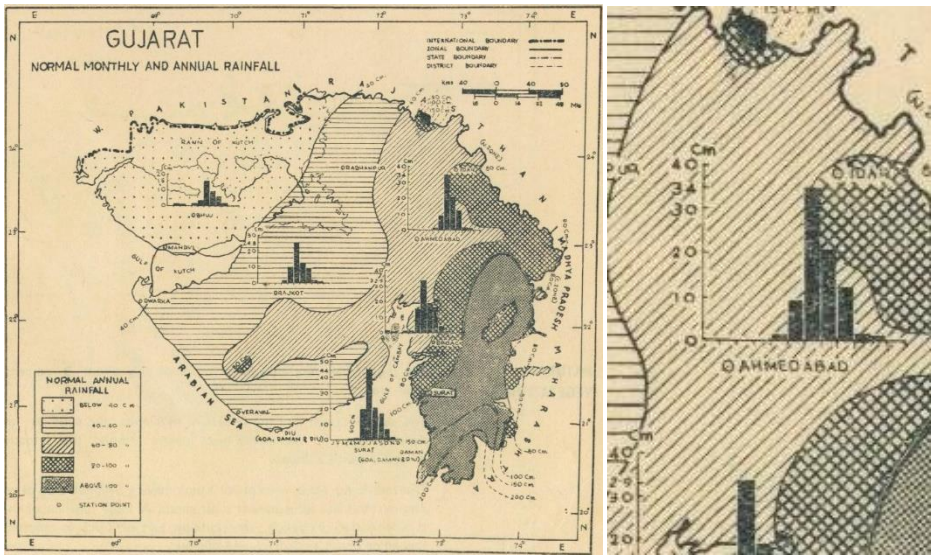
Fig 10



5.1.2 AHMEDABAD CLIMATE:

- Ahmedabad lies in warm-humid climatic zone.
- Annually mean max. Temperature: 40.7˚c.
- Annually mean min. temperature: 11.9˚c.
- Normal annual rainfall is about 60-80 cm.
- Max. rainfall in July-august about 35-40 cm

Fig 11



School of architecture was established in 1962 for teaching undergraduate programs by **Professor B.V. Doshi**. Thoughts came to develop a campus for offering programs related to planning, building and construction technology, interior design, landscape architecture, and environmental issues. School of planning was established in 1972 and offering programs related to urban, regional planning & environmental planning. School of building science and technology was developed in 1982. School of interior design in 1991.Programs such as urban design, landscape architecture, construction, project management, and structural design according to the need were added to the schedule. Cept (center for environmental planning and technology) was established by Ahmedabad education and it was registered in 1994 as a separate public charitable trust.

5.1.3 HISTORY:

The Ahmedabad education society (AES), a premier educational body started in 1962 with the starting of school of architecture. The school of planning was established in 1972 with financial support from the governments of India (MHRD) and Gujarat and ford foundation. The

school of building science and Technology and school of Interior Design were established in 1982 and 1991 respectively with grant-in-aid from the government of Gujarat. The state government also supports the school of architecture through grant-in-aid. Initially CEPT was established and run by Ahmedabad education society. In 1994, a separate trust and a society CEPT society was formed. CEPT is registered as a society and public charitable trust.

Since inception CEPT operated as an autonomous academic institution free to develop its academic programs and award its own diplomas at the end of programs of study recognized by the state of Gujarat and the all India Council of Technical Education (AICTE). From 2002 to 2005, CEPT had been affiliated to the Hemachandracharya north Gujarat University at Patan. Consequently, the students completing programs at CEPT were awarded bachelors and master's degree. CEPT became a university by the Gujarat state legislature act of 2005 with effect from April 12, 2005. It has been recognized by the university grants commission under section 2(f) of the UGC act, 1956 in February 2007. The university is recognized as scientific and industrial research organization by the department of scientific and industrial research.

5.1.4 AIM OF THE PROJECT:

To design an integrated, meaningful, comprehensive and engaging environment that foster a better learning experience.

5.1.5 OBJECTIVE OF THE PROJECT:

- To become a resource centre in the service of the state, industry and society.
- To synergize and facilitate work/study environment for students and the faculty.
- To encourage inter-institutional collaborations in India and abroad.
- To create an environment for creativity and innovations.

5.1.6 SCOPE OF THE PROJECT:

CENTERS OF STUDIES

- CENTRE FOR SUSTAINABLE ENVIRONMENT & ENERGY
- CENTRE FOR EXCELLENCE IN URBAN TRANSPORT
- CENTRE FOR INDUSTRIAL AREA PLANNING & MANAGEMENT
- CENTRE FOR URBAN EQUITY
- CENTRE FOR COMMUNICATION & HOLISTIC DEVELOPMENT
- CENTRE FOR TRAINING & DEVELOPMENT
- CLIMATE CHANGE ADAPTATION & RESOURCE CENTRE
- CENTRE FOR CONSERVATION STUDIES

- DESIGN INNOVATION AND CRAFT RESOURCE CENTRE (DICRC)
- CENTRE FOR RESEARCH, DEVELOPMENT AND CONSULTANCY

VARIOUS FUNCTIONAL DEPARTMENTS AT CEPT

- FACULTY OF ARCHITECTURE
- FACULTY OF TECHNOLOGY
- FACULTY OF TECHNOLOGY MANAGEMENT
- FACULTY OF DESIGN
- FACULTY OF ARTS AND HUMANITIES
- FACULTY OF PLANNING AND PUBLIC POLICY
- FACULTY OF GEOMETRICS AND SPACE APPLICATIONS
- FACULTY OF APPLIED MANAGEMENT
- FACULTY OF INFRASTRUCTURE SYSTEMS
- FACULTY OF SUSTAINABLE ENVIRONMENT
- FACULTY OF DOCTORAL STUDIES
- FACULTY OF LANDSCAPE STUDIES

SCHOOLS IN CEPT

- SCHOOL OF PLANNING
- SCHOOL OF ARCHITECTURE
- SCHOOL OF BUILDING SCIENCE AND TECHNOLOGY
- SCHOOL OF INTERIOR DESIGN

SCHOOLS IN CEPT

- SCHOOL OF PLANNING
- SCHOOL OF ARCHITECTURE
- SCHOOL OF BUILDING SCIENCE AND TECHNOLOGY
- SCHOOL OF INTERIOR DESIGN

5.1.7 ARCHITECT'S PHILOSOPHY

"It is an effort, each step of the ladder is different but with each step we gain a new perspective.

Experience come first, form much letter. Create a bond a sense of belonging. Not just with the physical form but with eyes, with sounds, with senses and then the landscape will begin to appear." _ B.V Doshi

5.1.8 ARCHITECTURAL DESIGN FEATURES:

- No restriction on exchange of ideas and thoughts through informal environment
- Provision for flexible spaces which can be used in a multifunctional manner

- Strong connectivity between spaces making the school as an open space with no doors at all providing working environment which ease for faculty and student to teach, learn, and interact.
- Local materials have been used, essentially to reduce the installation and maintenance costs.

5.1.9 PLANNING FEATURES:

- All buildings are oriented in the north-south direction.
- Open spaces on the north & south side respectively allow fresh air to ventilate the built structure.
- The open spaces and the shaded once merge with the undulating landscape.
- The open spaces is linked to the office and library area, workshop and canteen. These areas are very lively and dynamic

Fig 12

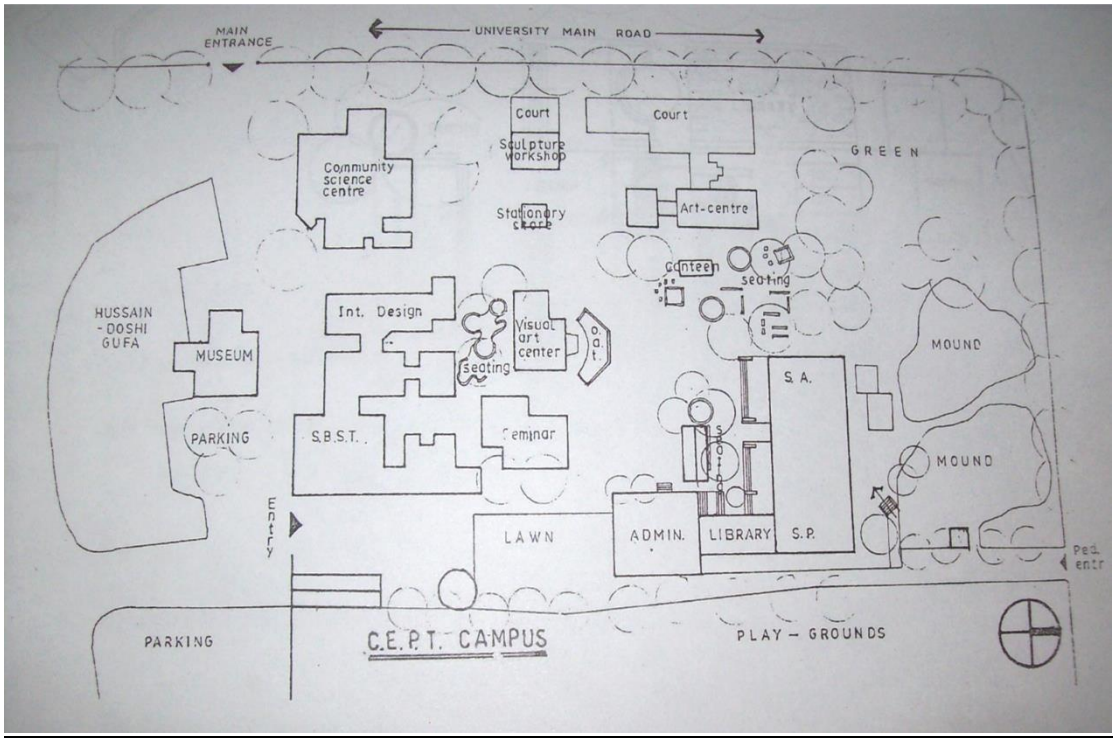
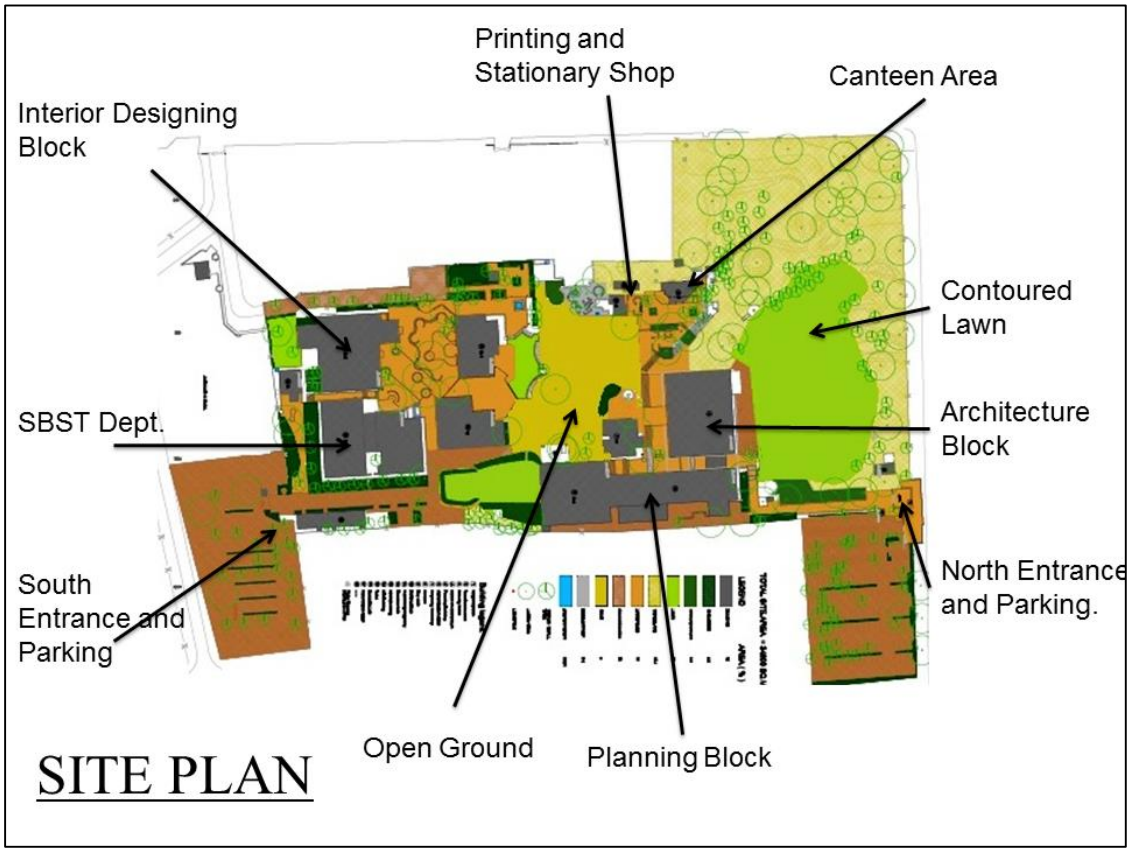


Fig 13



5.1.10 TOPOGRAPHY:

- Latitude: 23˚ 04'n
- Longitude: 72˚ 38'e
- Altitude: 55 meters above mean sea level.
- Annually mean max. Relative
- Humidity: 64.2 %.
- Annually mean min. relative
- Humidity: 36.8%.
- Max. Relative humidity
- Lies in period of
  - ✓ july-86%
  - ✓ august-84%
  - ✓ september-80%

5.1.11 TYPOLOGY AND BUILDING STRUCTURE:

- The primary concept for the school of architecture (CEPT) was that it should be, 'an open place with hardly any doors'.
- To use such accessibility not for only academic freedom, but also for environment responsiveness.
- Architect decided a simple structure of parallel brick walls, concrete beams and floors,
- A system that was extendable and easy to maintain.
- Architect also wished to maximize the flow of air while cutting down the impact of sun,
- Decided upon a north south orientation.
- The building structure based on I-shaped configuration.
- L-shaped configuration based on four parallel load bearing walls.
- In a structure, overhanging slabs and verandahs on a concrete cantilevers is used.
- The structure is a multi-functional design for sun protection and exposure to the breeze.
- Angled windows assures that maximum light reaches the interiors, which giving a
- Feeling of airiness and space.
- The recesses created by concrete frames give shade to the
- Building and provide protection from the sun.

Fig 14

5.1.12 OPEN AND CLOSE AREA RELATIONSHIP:

- B. V. Doshi's seeks the sense of freedom in his design of school of architecture (CEPT).
- The design was stressed on the concept of ,"an open place with hardly any doors"
- So the close areas of the design kept semi-open so that it can fully relate to the actual open spaces of the surroundings.

- Open and close areas are related tremendously which creates, "free scope to teach and learn anywhere".
- Spaces between open and close area develops with the variety of steps and the platforms.
- Both inside and outside spaces treated as a educational space.
- large openings are provided
- In the studios which gives the visual access from inside to outside and vice-versa.

Fig 15

5.1.13 SITE PLAN :

The **5** acre campus stands on the site in the middle of Gujarat University and can be approached from all sides. The overall planning has been done around the central court with built masses on sides and Green on one side which gives the campus noise protection from traffic.

Architect has included uneven contours into the plan transforming a drawback into a delightful Experience of space. Architectural building based on L-shaped configuration.

There are 3 entrances for the site:

- North facing connecting architecture department.
- West facing connecting community science centre.
- South facing connecting SBST department.

Architecture block has two entrances:

- North facing
- South facing

The main approach for the

- Architecture block is from south
- Facing entrance.

Fig 16 : SITE PLAN

- **BUILT UP AREA: 8000 SQ.M**
- **SITE AREA: 36421.70 SQ.M**

Infrastructure and Functioning:

ACADEMIC

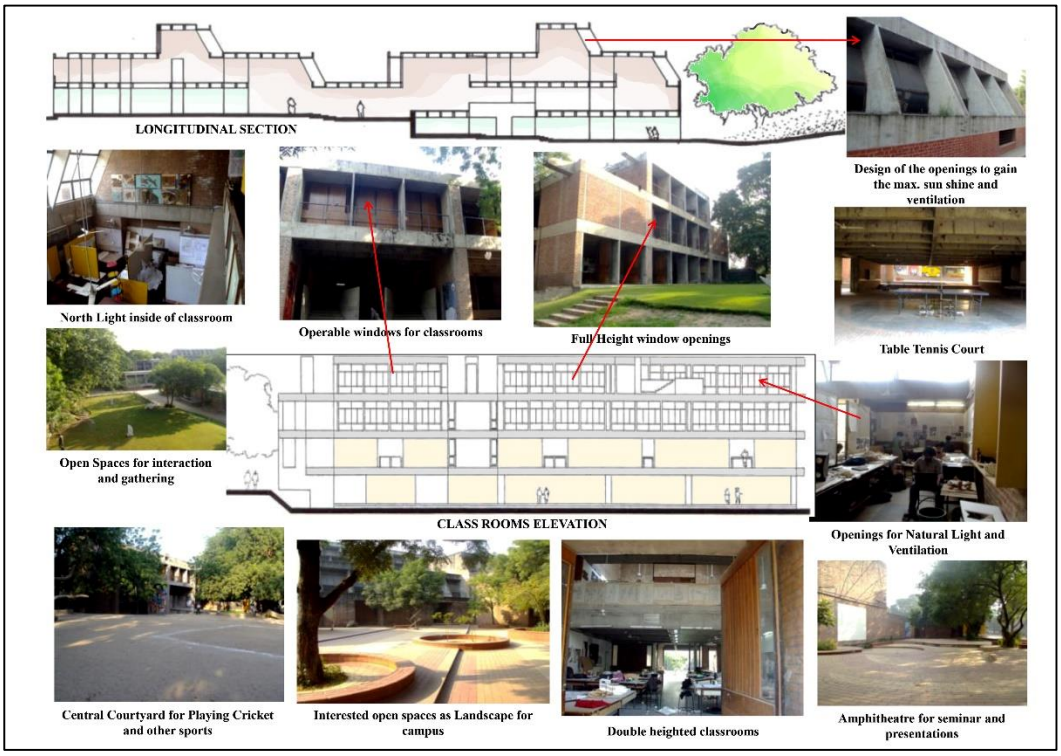
- Classroom
- Design studios
- Building science & construction laboratory
- Computer laboratories
- Structural laboratory
- Environmental science laboratory
- The photography and documentation laboratory

- Material museum and display
- Modelling workshop
- Printing and reprographic facilities

ADMINISTRATIVE

- Office
- Head of dept.
- Meeting room
- Staff

Fig 17



5.1.14 PARKING & ENTRANCE

Parking facility has been provided adjacent to the entry by the provision of an open space.
Two wheeler parking is also provided near the Doshi gufa. The entry to school of architecture
Is through a split staircase which leads to the second level of the building.

Fig 18

5.1.15 BASEMENT

The basement has been designed as a multipurpose space. it is a very active space of the campus. On one side of the basement you can see the rising contours, and on the other side steps unto the central courtyard. Thus the north and south walls have been avoided.

Fig 19

5.1.15 CENTRAL COURTYARD

The central court is a combination of paved and unpaved areas, shaded by trees in certain
Areas. All entrances are linked to the courtyard by pedestrian pathways. Hence the courtyard is an area of heavy circulation and interaction.

Fig 20

5.1.16 LIBRARY

CEPT library houses approx. 50000 books , technical videos and reading material in the subject of architecture, interior design, construction, technology, and management, urban and regional planning, housing, environmental planning, urban design, landscape architecture, civil engineering . Structure design, visual art, humanities etc.

Fig 21

5.1.17 OUTDOOR CIRCULATION

The circulation with in this the campus is pedestrians. The vehicular access is restricted along the periphery of the campus. There are lot of trees within the enclosed spaces from where all the building are accessed which provide ample shade and comfort.

5.1.18 INDOOR CIRCULATION

- the circulation within the building is very complicated with lots of level changes and
  Staircases at different level.
- the internal staircase lacks natural light in many places spiral
- Stairs are used are widely uncomfortable for daily use. The corridors are less and short length.
- All the places within are visually interconnected.

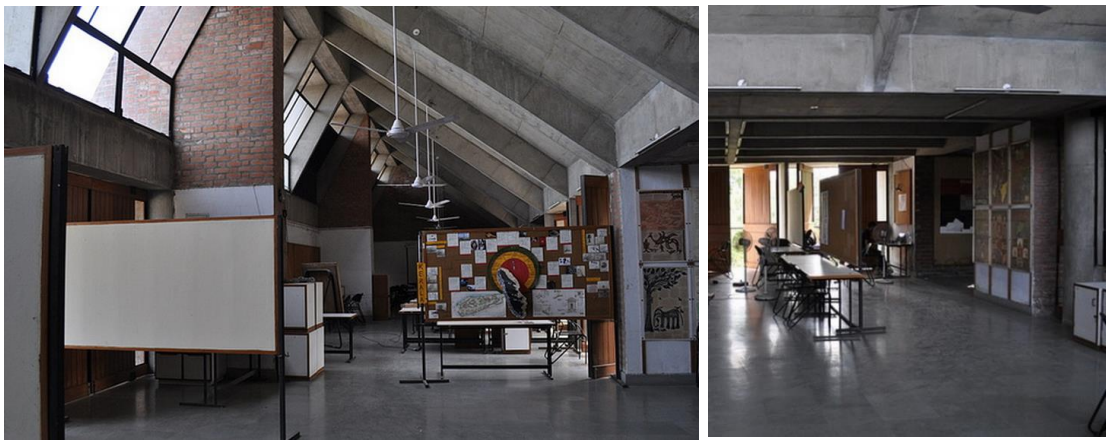
Fig 22

5.1.19 STUDIOS:

- Studios are very interesting with north facing slanted windows on the wall which brings a lot of light in the interiors of the studio.
- Panels at the sides help the students to put up the important and useful sheets.

- All the studios are above one another, along with the adjacent lecture rooms. This has both negative and positive effect on studios. Makes noise for both the studios.
- There are common interaction zones between the studios of different years.
- The studio spaces have bay spaces facing the exterior, creating semi-private spaces which are yet totally open to the exterior - spaces where the individual can be alone with nature even in the environment of a studio.
- The language Ar. Doshi has used is of **exposed brick with concrete**, emphasising the slabs and the beams to create a natural coarse texture.
- The changing sense of light, climate, and vegetation plays strong role in creating dynamic learning and social space. Play of light and shadows. relating the community space to the environment
- The design is intended to be close to nature and experiment the designing skills, play with levels etc. since the land was earlier a brick kiln hence the **site was undulated** and gave opportunity to **play with levels**.

Fig 23



5.1.20 CANTEEN

The canteen and the adjoining areas are of great importance to the students. Students as well as teachers are comfortable here. There are external built in seats which encourage discussions and which over the years have evolved into the most active vibrant part of the entire campus.

5.1.21 GAMES

The spaces in the basement as well as outdoor courts have been dedicated to indoor and outdoor games respectively.

SERVICES

5.1.22 WATER SUPPLY:

- for the water supply system two types of storage tanks were provided:-
- overhead water storage tank
- under-ground water storage tank
- Proper filtration system were also setup for the clean water purpose.
- Aqua guard were provided for the filtration of drinking water

5.1.23 HVAC:

- There were no HVAC service provided.
- in the administrative block, conference room, computer labs, faculty room,
  Principal's room, window and split conditions were used.
- the design was based on the concept of optimum use of natural resources and the
  Surroundings (through the large opening and semi-opened spaces), like proper
  Air flow through north-south axis.
- Therefore, no HVAC service were provided in the building.

5.1.24 ELECTRICITY:

- as a design is based on a concept of optimum use of natural resources (provided
  Angled windows and large opening for maximum light in the spaces).
- So, firstly there were less electricity service were provided.
- Later on proper electricity service were provided.
- Open wiring system is used for electricity services.

5.1.25 RAINWATER HARVESTING AND STORM WATER DRAINAGE:

- There was no rain water harvesting system in the campus.
- There were open drains running throughout the campus.
- Rain water and storm water run through these open drains.
- This water further use for watering the field and gardening purpose.

ASTHETICS

5.1.26 BUILDING MATERIAL AND ANALISIS:

- The design was built-up by locally available material.
- The design was built to ensure a low cost and easy to maintain.
- Structure is made full of bricks and concrete.
- Exposed brick work was done.
- Concrete slabs were laid on four parallel load bearing walls.

Fig 24


5.1.27 LANDSCAPE:

- Trees, landscaped courts and planters give shade in the hot climate.
- There are also small plants within the building and plotted plants at places which makes nice entry gesture.
- There exists a harmony running throughout the whole campus, building and nature coexisting in a comfortable relationship.

Fig 25


5.2 CHANDIGARH COLLEGE OF ARCHITECTURE

(CCA) CHANDIGARH

5.2.1 INTRODUCTION:

Chandigarh College of architecture was established in the year 1961

- Was a part of the great Chandigarh Experiment
- Architect- Le Corbusier
- built in three phases, is only an undergraduate institute.

5.2.2 LOCATION:

It is located in Punjab university campus, located in the sector 12 institutional area of Chandigarh u.t.

Fig 26

5.2.3 SURROUNDING:

Land use & Urban form-the surrounding areas of the university is institutional as well as residential. proper setbacks of the houses from the roads with a green cover in between and well planned wide grid-iron roads gives a feeling of an Urban District .

5.2.4 CONCEPT:

Concept can be understood from the design of main building. the use of north light concrete roof with an open lawn as a central courtyard and minimal openings on the west wall indicates the climate as a reason behind the design. long corridors with squarish built form gives resemblance to thecharacter of Chandigarh city .

Fig 27

5.2.5 AIM:

CCA aims at developing its unique inherent potential and location and to inspire, support, sustain and continue academic programs whereby professionals –trained in the tradition of modern urbanism ushered in by the incomparable master- could extend the frontiers of Creativity in the pursuit of serving the Family of Man -- efficiently, comprehensively, beautifully.

5.2.6 DEVELOPMENT OF PLAN:

The thought behind planning must have been to create separate zones having different purpose .the entrance foyer has been designed in such a way as to serve as a multipurpose area. The open lawn at the centre does not open at the sides but at the front entrance corridor and the rear corridor studio. It serves as a gathering space and a zone for all the users to relax. The administration zone is on the left side complimenting adjacent spaces very well. A separate academic zone is at the rear side of the campus comprising of the studios, library, computer room, workshops, and labs. Etc.

Fig 28 : **SITE PLAN**

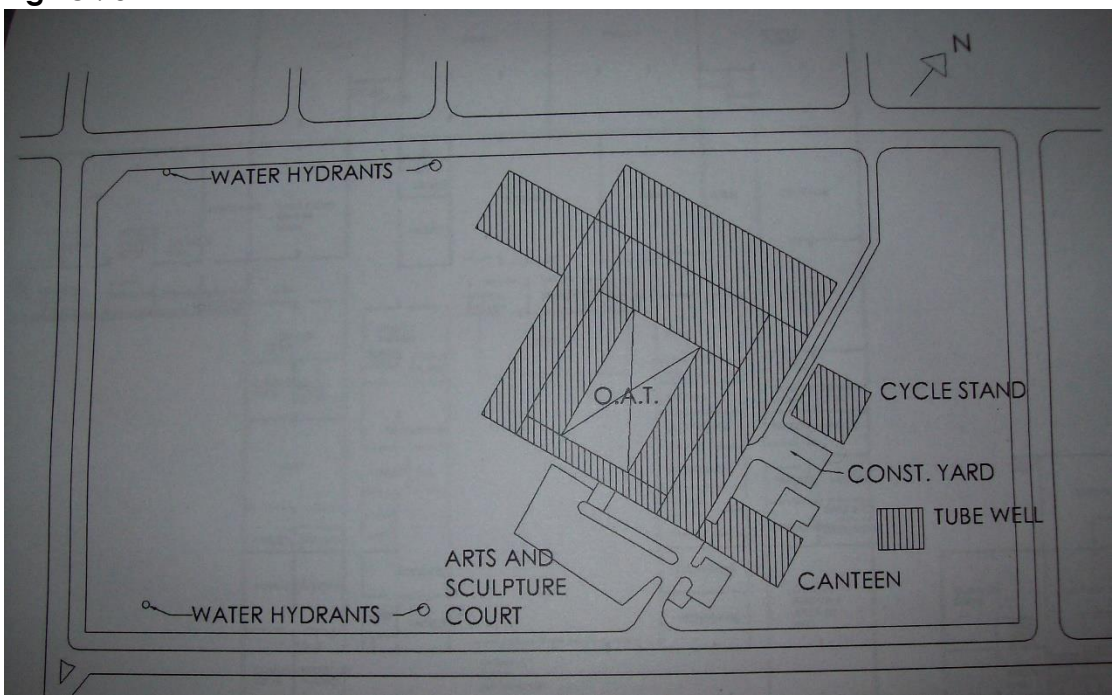
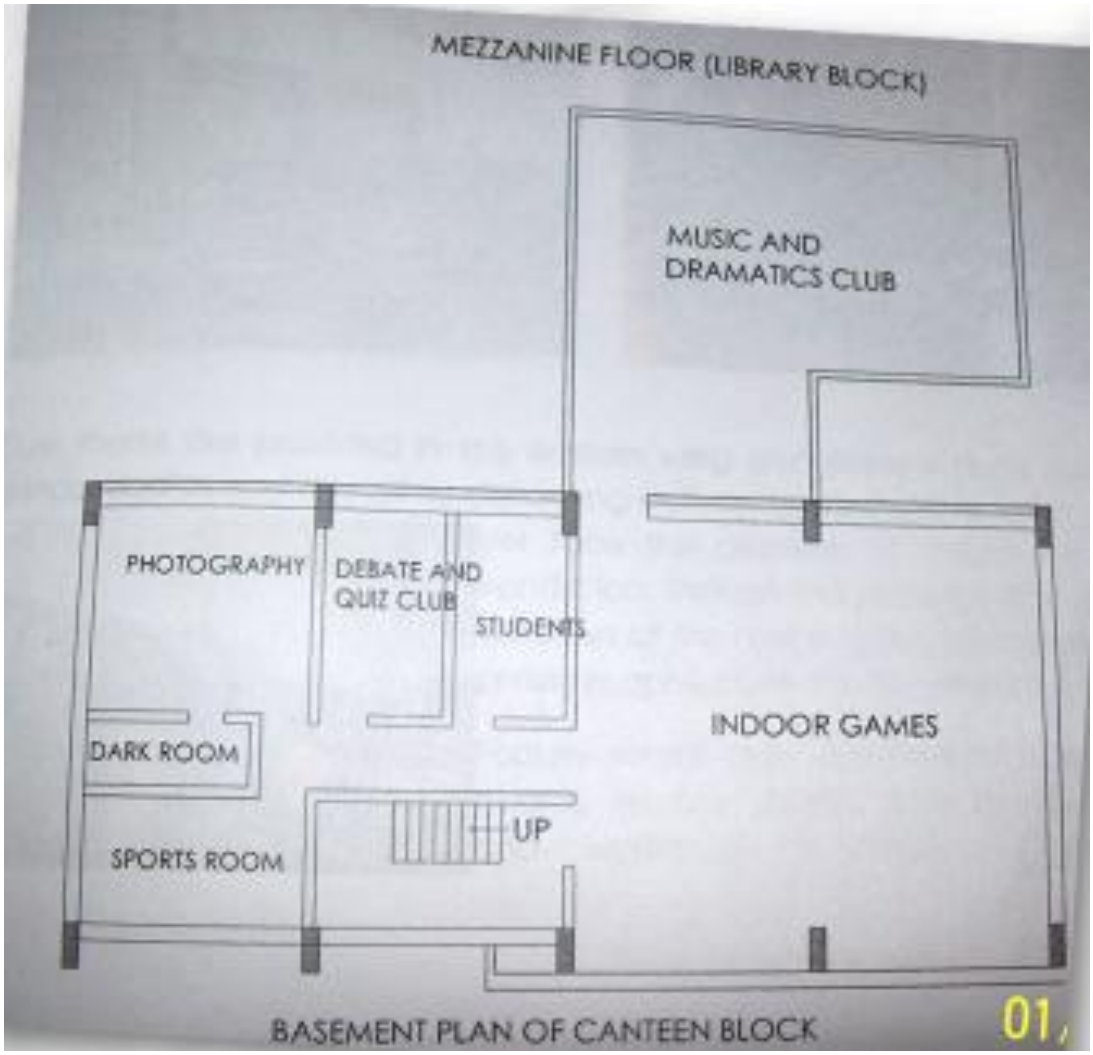


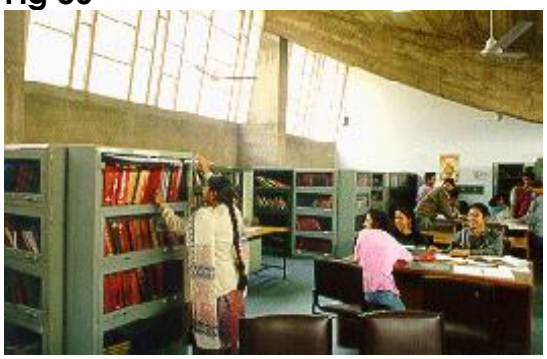
Fig 29 : **MEZZENINE FLOOR (LIBRARY BLOCK)**



5.2.7 LIBRARY AT C.C.A.

- Le-Corbusier's modular windows are incorporated in most of the buildings of Chandigarh.
- The roof is not made in a simple form and is given an interesting form which provides the provision for adequate lighting to the library.
- The College has a centrally air-conditioned library with approx. 15,000 titles in architecture and related fields.
- There is also an exclusive thesis section where all the 10th Semester thesis reports are kept for record and consultation. With time this section has developed into a major resource centre for architectural studies of the region. Training reports of Seventh semester students are also available here for reference.

Fig 30

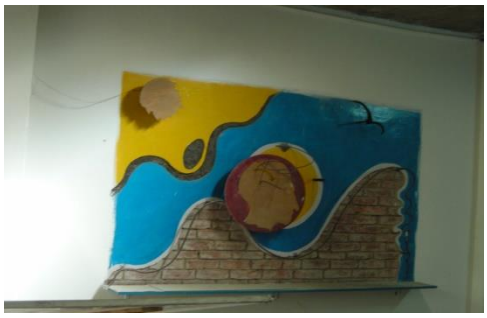



5.2.8 AREA REQUIREMENTS

•The area of a studio is approx. 250 sq. m. comparing it to the intake of one batch i.e. 40 it is very much sufficient.
•The open lawn is having a small stage with a total area of 700 sq. m. which is very much sufficient to hold a cultural event having a capacity of 200 people easily.
•There is an outdoor seating space at the canteen which does not makes it appear crowdie even when large mass of people attend there.

5.2.9 CORRIDOR AT C.C.A:

Corridors are used for exhibiting art works of the students.Different patterns of painting at the walls of the corridor. **Fig 31**

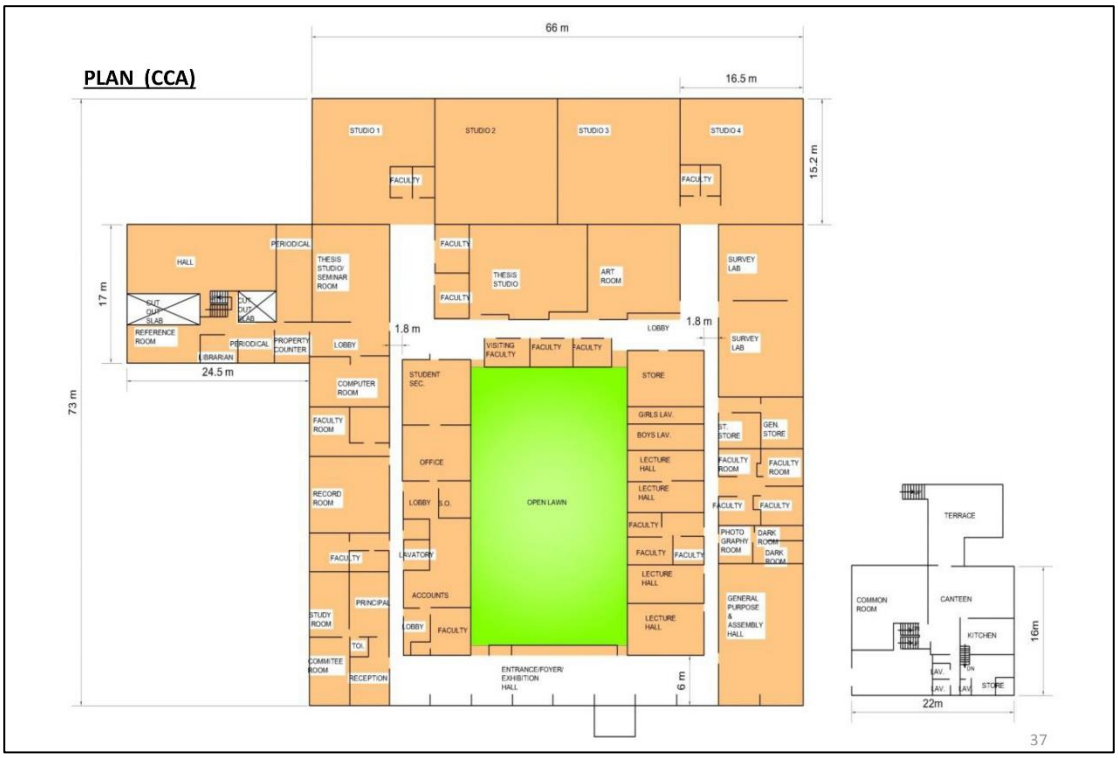
5.2.10 AUDIO-VISUAL SECTION:

- The audio-visual section has four overhead projectors, seven slide projectors, one video projector.
- Audio-visual lectures are delivered by professors to complement class room teaching.
- The photographic laboratory has been equipped with darkroom facilities for B/W processing, five cameras a medium format camera, enlargers, and developing & printing gadgets.

5.2.11 RESEARCH, DESIGN AND DEVELOPMENT CELL:

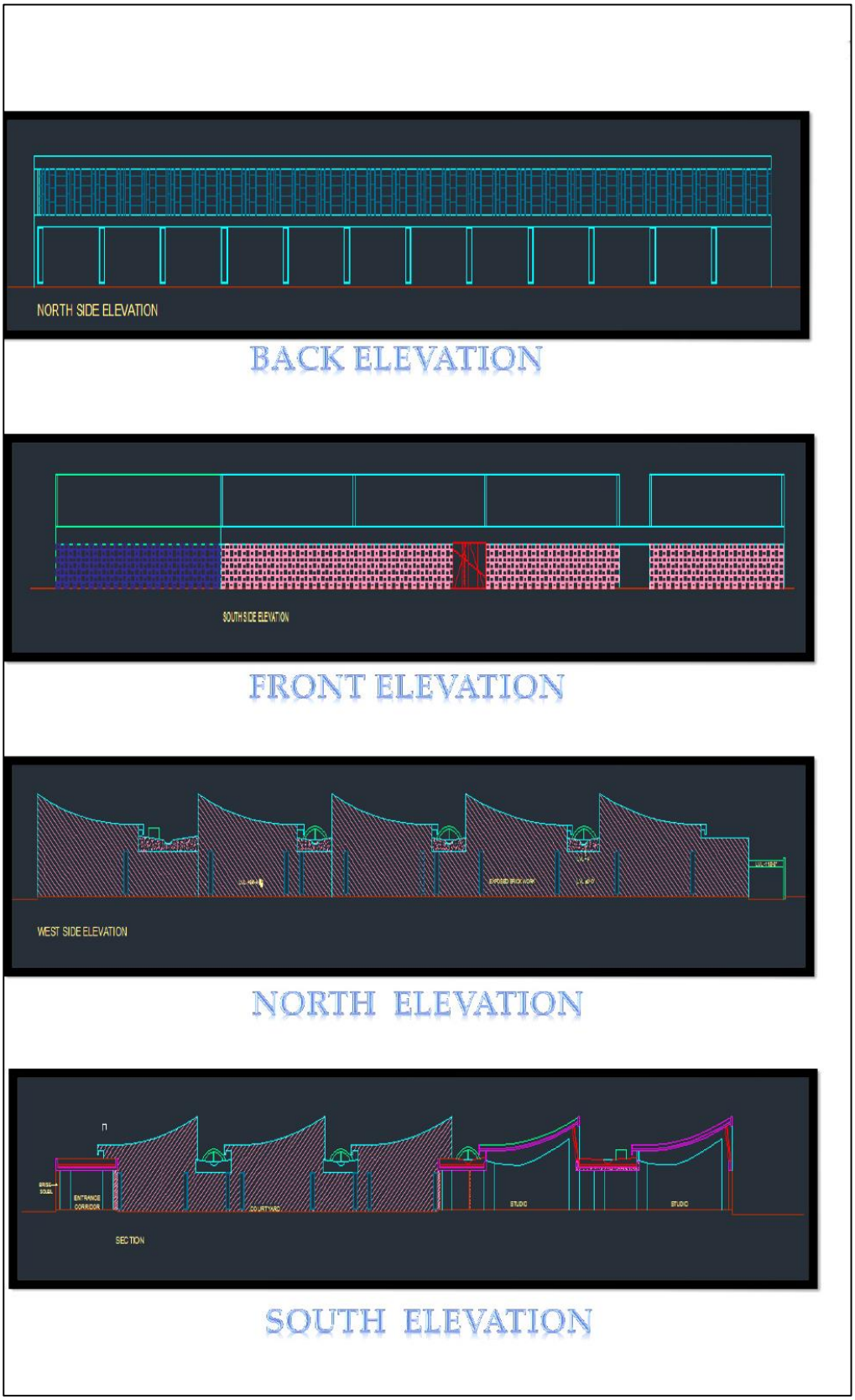
- The cell has been engaged in the study and documentation of various aspects of the Chandigarh experiment.
- It also undertakes classification and compilation of research material based on the students' B.Arch. thesis, publication of College Newsletter and Research Journals, and research papers on architecture and allied disciplines.
- At present, two architects are working as Research Assistants in the Cell. The research cell is currently involved in the publication of the updated Informograph on Chandigarh and Natural heritage- a history of Chandigarh . The informograph is available at the students' section in the college.

Fig 31



5.2.12 ELEVATION :

Fig 32



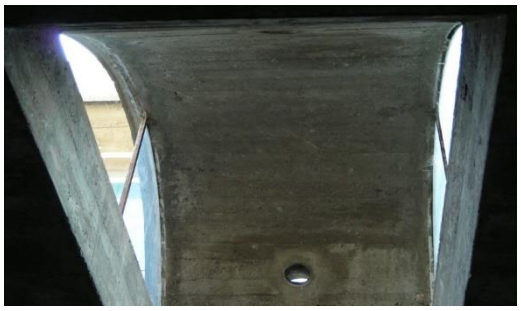
Level difference in roof to create excitement in view. These level differences makes the elevation of the building interesting.

Fig 33


5.2.13 VENTILATION PATTERN:

The roof designing is such that maximum natural light comes in thus arches and semi circular windows are provided throughout the corridors.

Fig 34




5.2.14 BUILDING MATERIAL'S MUSEUM & WORKSHOP:

- The college museum houses samples of building materials, architectural products, structural system models, various kinds of trusses, joinery details, metal doors and windows, etc. for ready reference and for use as teaching aids.
- The college workshop caters to the need of 'hands on' experience in handling of building construction tools and model making. It has facilities including machines and trained personnel in the fields of carpentry, metal work and model making.
- The workshop is equipped with machines, tools and materials of carpentry, black smithy, model making, painting and polishing etc. which have resulted in numerous innovative working models

5.3 NATIONAL INSTITUTE OF DESIGN

(NID) (CEPT UNIVERSITY) AHMEDABAD, GUJARAT

5.3.1 INTRODUCTION:

PROJECT: National Institute Of Design

LOCATION: Paladi, Ahmedabad

ARCHITECT: Sarabhai and Gira

SITE AREA: 63,848 sq.m

CLIENT: Ministry Of Industry, Government of India

YEAR OF COMPLETION: 1961

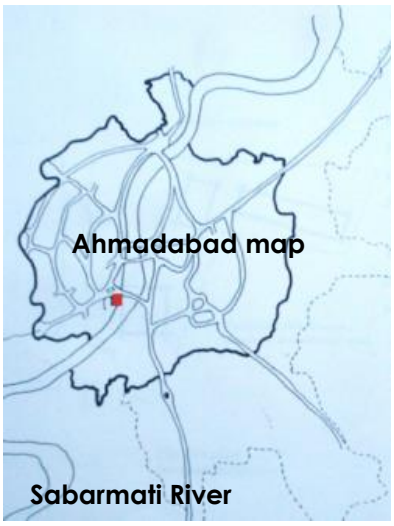
STRUCTURE: RCC frame structure

- **National Institute of Design (NID**) is a design school in India.
- The institute functions as an autonomous body under the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India.
- NID is recognized by the Department of Scientific and Industrial Research (DSIR) under Ministry of Science and Technology, Government of India, as a scientific and industrial design research organization.
- **National Institute of the Design (Ahmedabad)** is the only institute of its kind serving the above functions.
- NID is autonomous institute with the support of "The Ministry of Commerce and Industry, Govt. of India".
- NID is a design institute which plays a key role in creating a bridge between Designer and Manufacturer on one side and the user on the other side.
- NID is internationally acclaimed as one of the finest Education and Research Institution for industrial, communication, textiles, IT integrated designs.
- The professional education at NID has both under graduation for four years for students after 10+2 or equivalent and post-graduation for 2 to 2 ½ years for graduates particularly from architecture, technology, fine arts, etc.
- Having entered the 5th decade of design excellence, NID has been autonomous National Institute of Excellence in Design education, applied research, service and advanced training in industrial communication, textile and IT integrated design.

5.3.2 LOCATION:

- The site is located along the Sabarmati River.
- The site measures about 20 acres.
- In its surrounding is the Tagore hall, the kite museum and opposite to the site is Diwan Ballabhai high school.

Fig 35



5.3.3 FEASIBILITY:

The site is 4km from the railway station and 3km from the St. bus stand.

5.3.4 CONTEXT-(SURROUNDING AREA):

This site is connect to Sabarmati river , educational area, residential area, museum(recreational area).

- Main Access of the site is from the main road.

5.3.5 SITE&FEATURES:

- The shape of the site is such that it divides the site into two parts.
- The site is sloping towards the river.
- Its ground level 2.51 m below the high flood level .
- The shape of the site has influenced its design of the institute greatly.
- Most of the main buildings are provided with the river view.

Fig 36

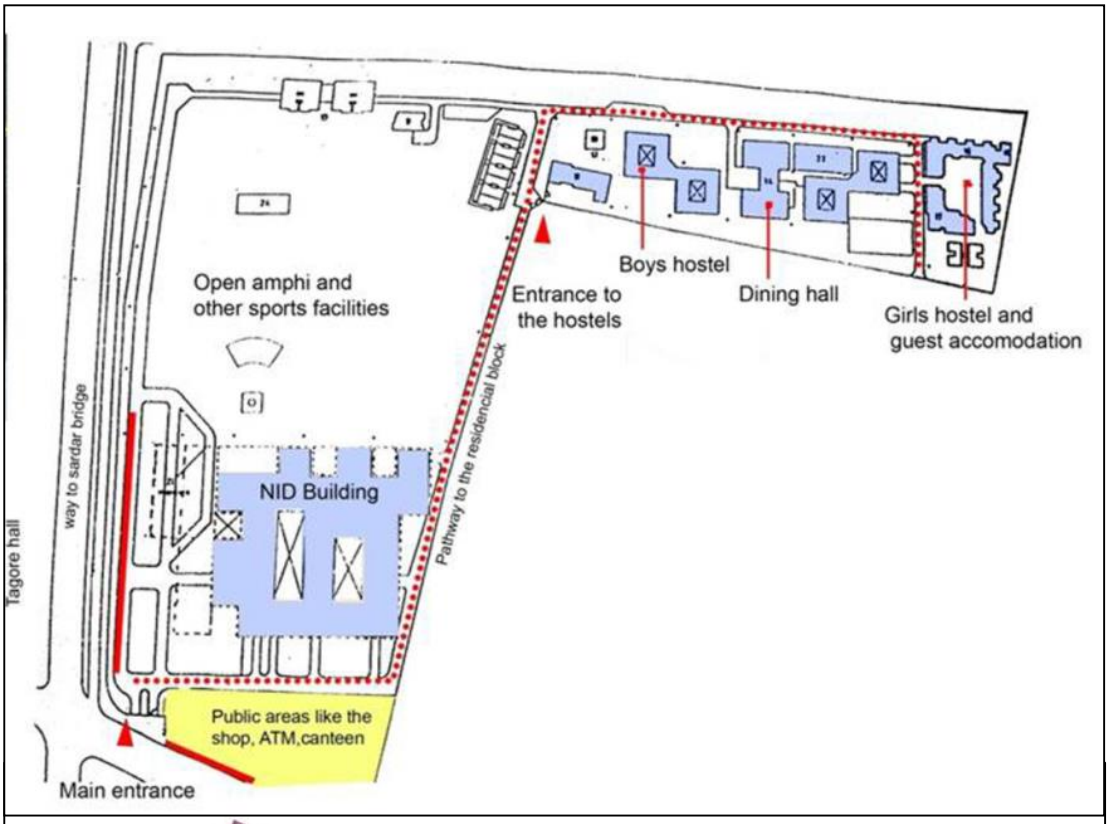
5.3.6 ACCESS TO SITE:

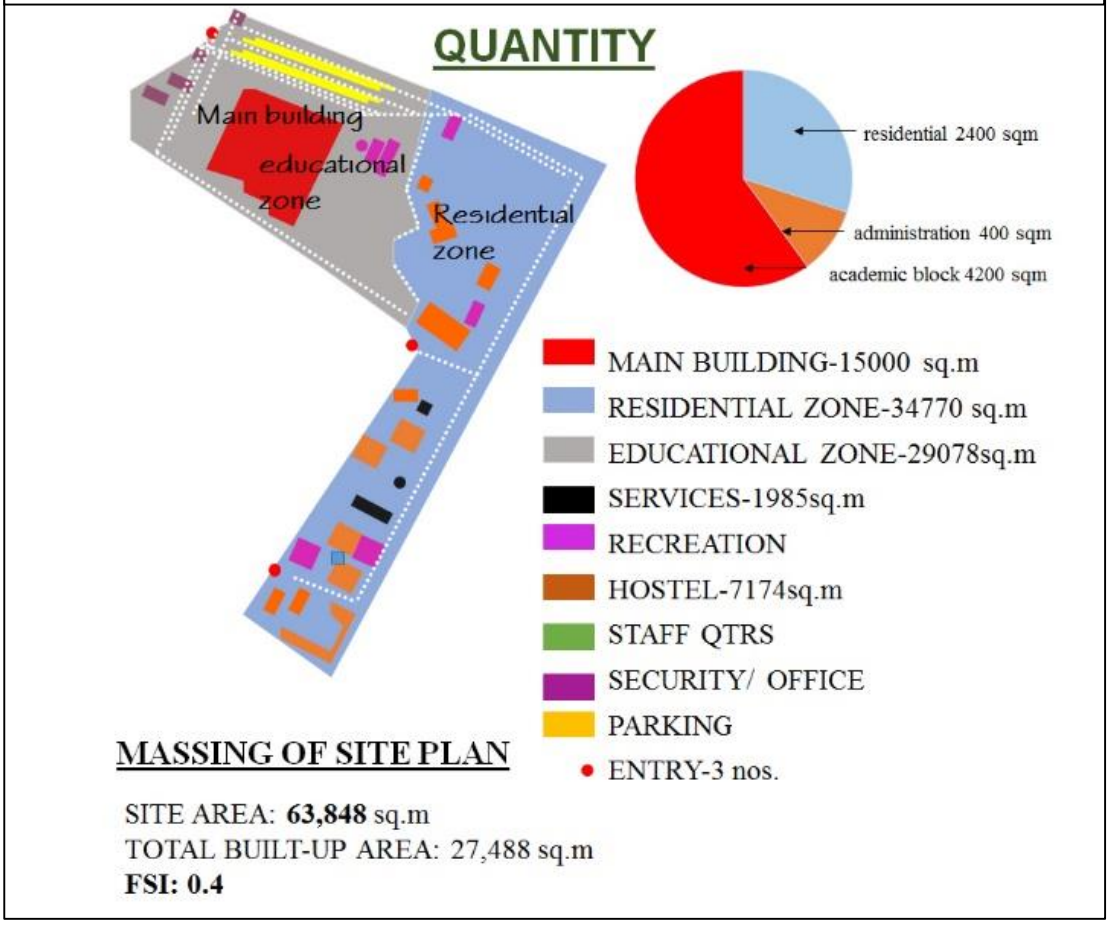
Vehicular movement: vehicular movement is restricted only till the entrance for the visitors. But it is possible from residential areas to academic block and vice- versa. Besides, services entries are provided for the various workshops. But pedestrian and vehicular movement are not separated.

The academic and residential areas are located far apart with the narrow link between the two but having separate external access.

Both the blocks have controlled entrances.

Fig 37 :VEHICULAR ACCESS TO RESIDENTIAL SPACE:





5.3.7 LIGHT AND VENTILATION

- The campus has been designed taking into consideration the hot and dry climate of Ahmedabad.
- The activities are so planned that they spill over into inward looking spaces.
- The courtyard are a result of this and remain building in the shadow for most part of the day.
- Large trees protect the building from surface glazing and courtyards from excessive heating.
- The external cladding is prefabricated and consist of heat resisting glass in metal frames in workshops and in rosewood frame in studios.
- Winds from the riverside are captured in the studios and workshops from the terraces due to adjustable glazing.
- Features like water bodies with jalis are used to filter the cooled air flowing over the water and passed in interiors.

Fig 38


5.3.8 POCKETS OF VEGETATION:

Pockets of vegetation blend with the structure on the exterior as well as interior which helping to lower the temperature.

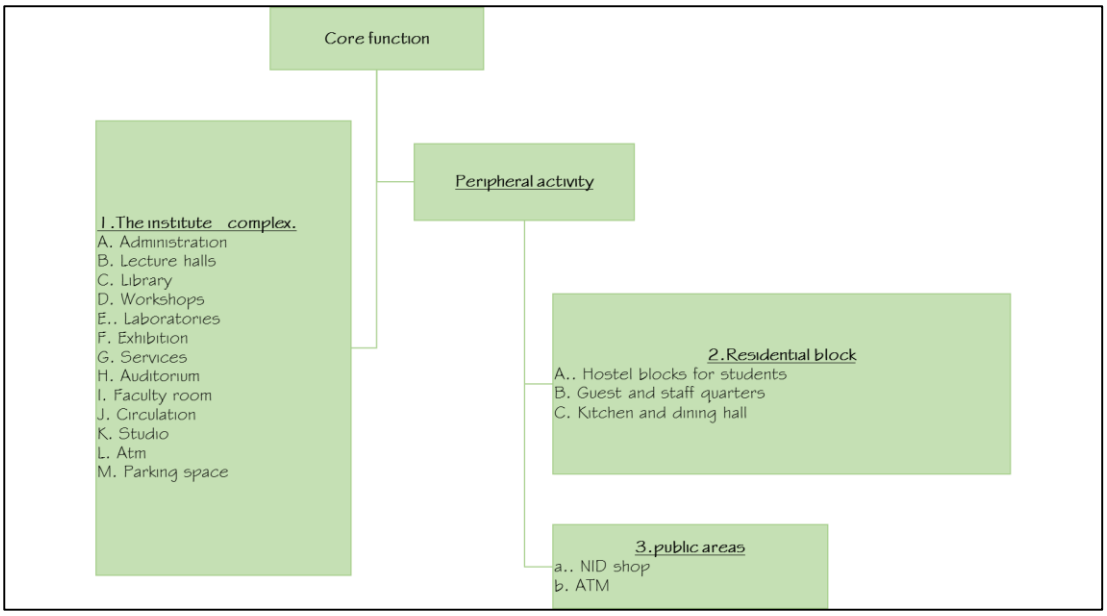
Fig 39


5.3.9 Landscape

- As soon as the built form is placed on site it generates its own space in and around it. Thus the outside open spaces are as much important a design criteria as inner spaces.
- The campus has been completely landscaped. Three platforms extend from the institute building in the lawn acting as built-in sit outs.
- There is also an ancient monument and open air amphitheater having densely planted trees around it.
- Lawns are not only a feature of landscape but they act as interactive spaces.

Fig 40

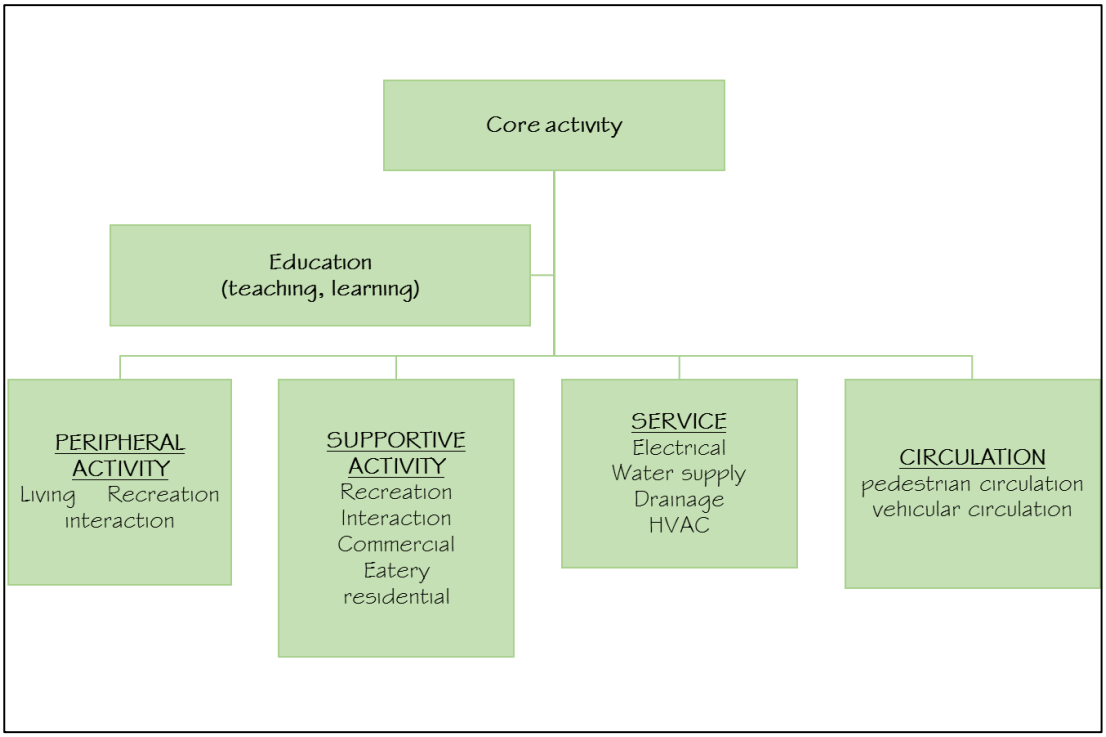
5.3.10 SITE FLOW CHART:



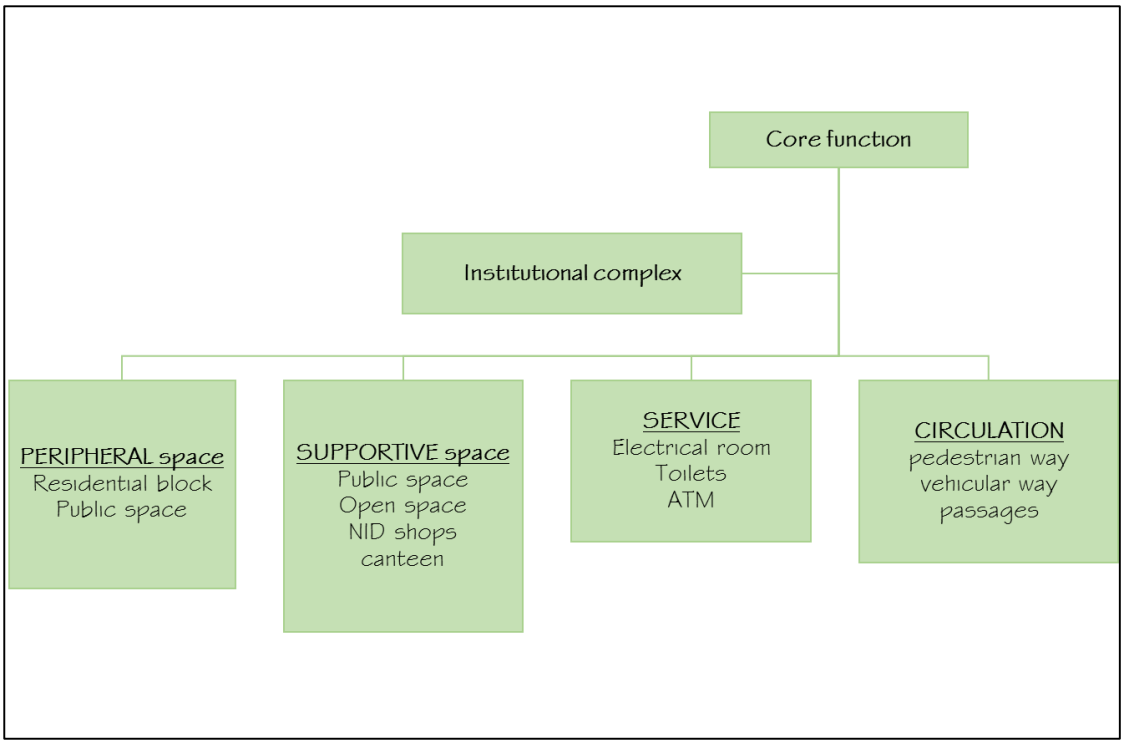
THE MASTER PLAN OF THE CAMPUS IS DIVIDED INTO THREE PARTS.

- The institute complex.
- Residential block
- Public areas

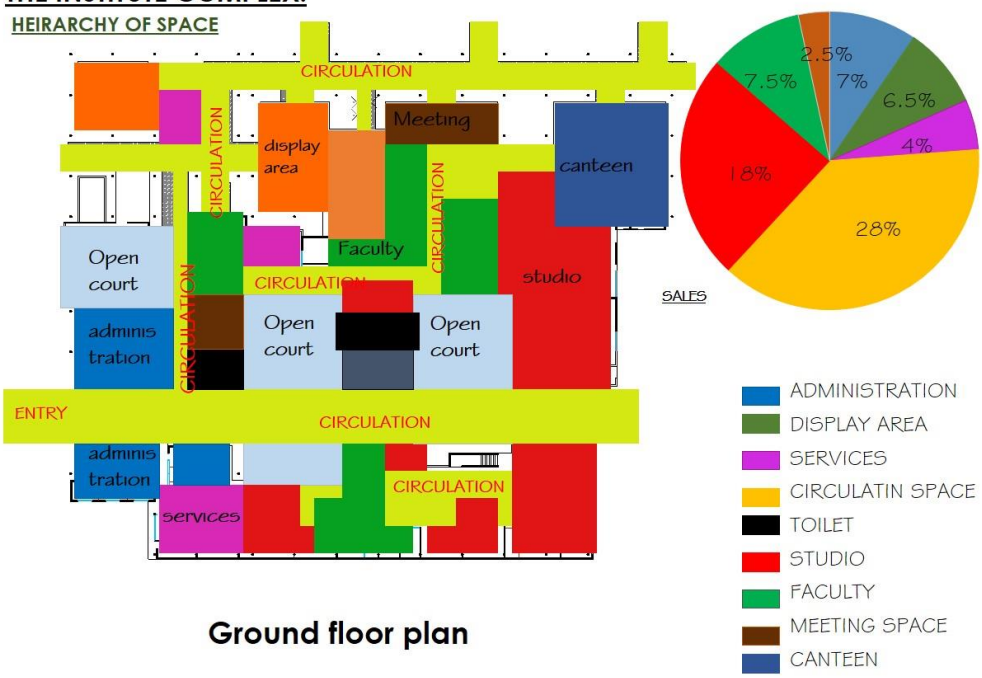
ACTIVITY DIAGRAM



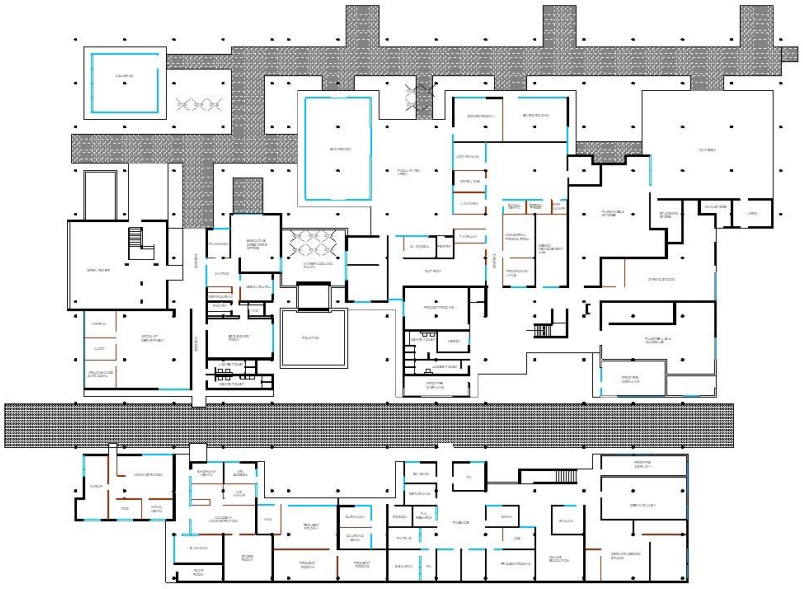
SPACE DIAGRAM



THE INSTITUTE COMPLEX.

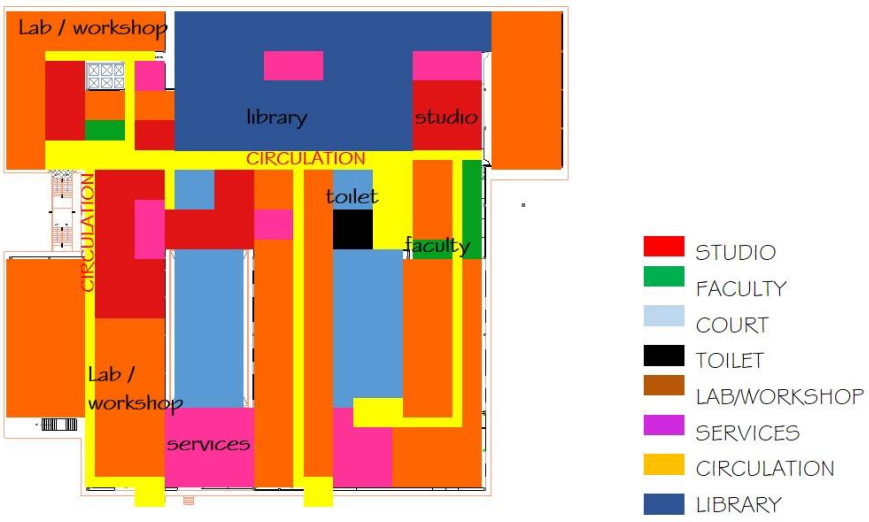


Ground floor plan



Ground floor plan

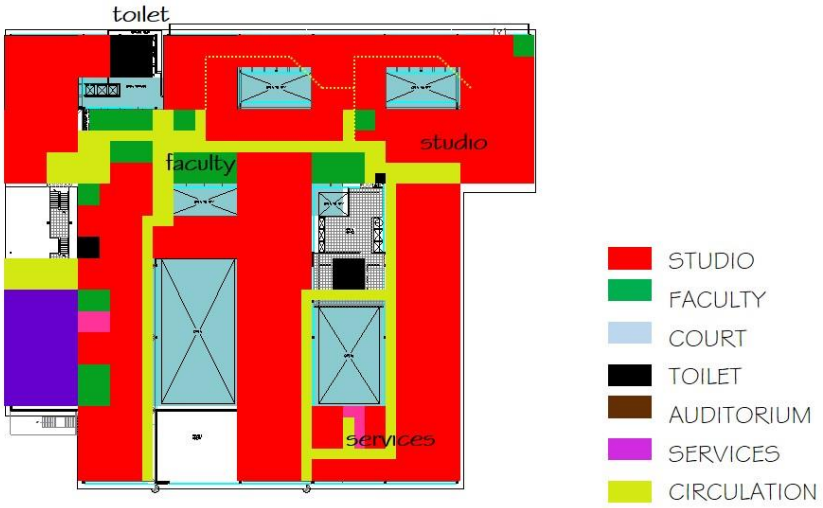
HEIRARCHY OF SPACE



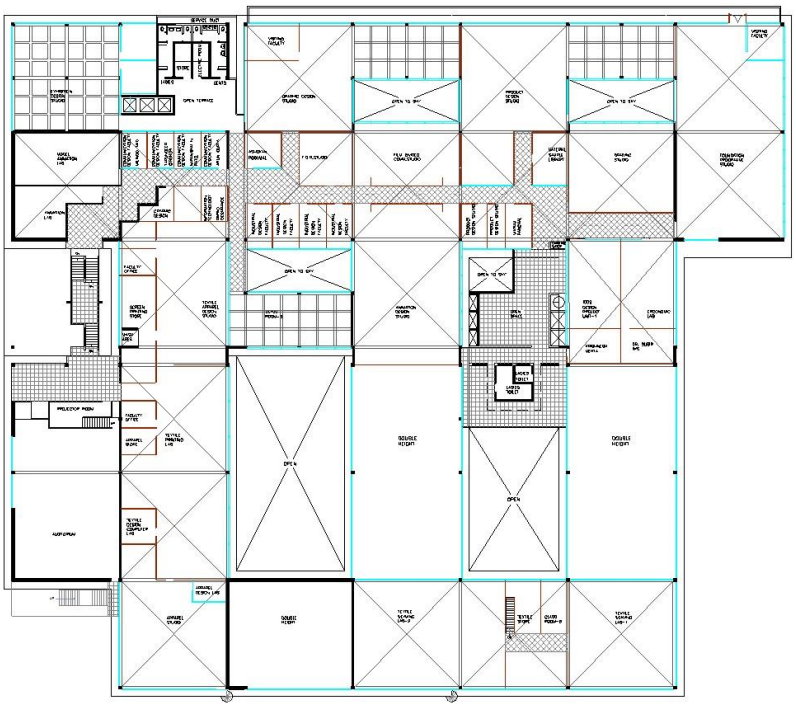
FIRST FLOOR PLAN

First floor plan

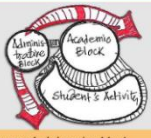
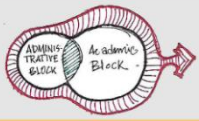
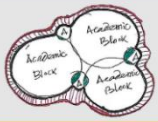
HEIRARCHY OF SPACE



Second floor plan



Second floor plan

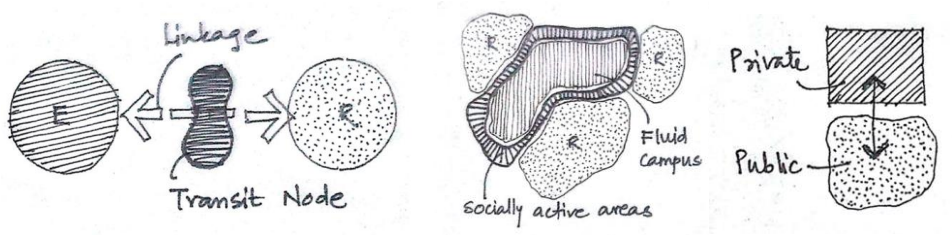
	CEPT , Ahmedabad	CCA , Chandigarh	NID , Ahmedabad
SITE PLANNING **SITE ZONING**	 Semi-formal Planning Site Area - 9 acres Building evolved around a central open space with smaller courtyad	 Formal Planning Site Area - 6 acres Building evolved around a central open space	 Informal Planning Site Area - 16 acres Building evolved around a central open space Disorganized . several smaller courtyards at different levels .
ENTRANCE **ACCESSIBILITY**	 Paved pathways shaded by trees with lawans on both sides . No direct entry. Secured entrance .	 No such pathways leading to main entrance .	 The academic and residential areas are vice-versa, have separate external access. Besides service entries are provided .
LINKAGE **CONNECTIVITY**	 No restriction on exchange of idcas and thoughts through informal enviornment . Provision for flexible spaces which can be used in a Multifunctional manner . Strong connectivity between space making the school as an open space with no doors at all providing working enviornment which ease for faculty and students to teach , learn and interact .	 There has been no thought of linking studios and the relationship between different classes is quite poor , as a result , it is a passive & dead space . The corridors and courtyard are poorly linked . Some faculty rooms are very close to stuidos while others are far away . Thus a varying nature of realationship has been generated between students and faculty .	 The linkage between studios , classroom and other activity spaces are informally planned for creating a diversity of use . Corridors are not clearly define but spaces for different department are situated in different part of the institutional building .
OPEN SPACE **DIVERSITY OF USE**	 The campus was stressed on the concept of "an open place with hardly any doors". Open and close areas are related tremendously which creats "free scope to teach and learn anywhere .Large openings are provided in the studios which gives the visual access from inside to outside and vice varsa .	 Cortyared is the only open space in the college building which is well linked to the rest of college , it is a grassy lawn , used by students to relax during their spare time . there is a large garden at the south side of the college .	 informal open spaces with central court and open spaces for gathering and sit-out.
LIGHT AND VENTILATION	 North South orientation of building with large opening permitting ample of sunlight inside and allow fresh air in the built structure .	 The classrooms , studios and other spaces depend on north lights for their lighting .The lighting in the building during day time is good . Small windows are provided for Ventilation purpose . Northside windows are large and placed at the top of the room .	 The campus has been designed taking into consideration the hot and dry climate of ahmedabad ,the Courtyards are result of this .
ADMINISTRATIVE BLOCK	 Separate administrative block .	 Office and administrative areas are connected with in the academic block .	 Office and administrative areas are connected with in the academic block .
LOBBY **CONNECTING INDOOR SPACE**	 Lobby is interpreted in the form of double height amphitheater or courtyards .	 Lobby is interpreted in the form of long passage	 Lobby is interpreted in the form of long passage
CLASS ROOM	 Open classrooms with visual Connectivity between two classroom and a healthy relation with Nature.	 Closed Class room and no visual connectivity between classrooms and with Nature .	 Closed Class room and no visual connectivity between classrooms but has a good connectivity with nature or out door space .
STAFF ROOM	 Provided in the central administrative block .	 Staff rooms are provided in the academic quadrangle to easily reach to the classrooms.	 Staff rooms are provided with academic block but separately in deferent activity zones .
UNIVERSAL DESIGN	 No approach has been taken for barrier free design.	 Minimum approaches are taken towards barrier free design.	 No universal design present in college campus.

Chapter 6

INFERENCES

1. Site Planning/zoning can be formal or informal.

2. Formal entrance with landscaping to merge with the surrounding. Secured entrance.

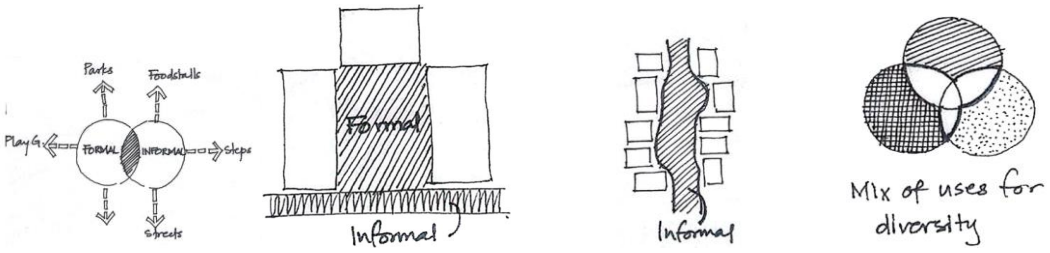


3. Different buildings for different streams help in defining the circulation pattern easily.

4. Class rooms to be designed in accordance with the open spaces to allow visual as well as physical interaction.

5. Planning to be done in a way to allow possibility for future expansion.

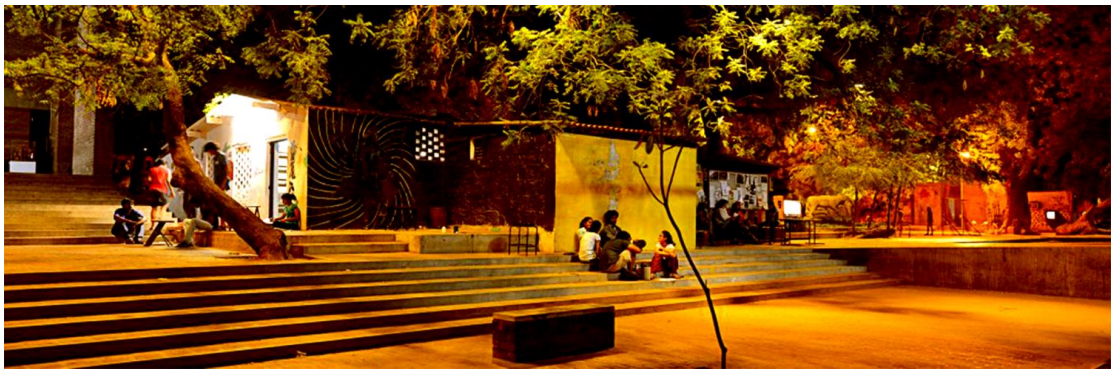
6. Different morphological spaces offer different opportunities for interaction at different levels and a combination of these formal spaces like (parks, playground) and informal spaces (like steps and streets) creates diversity of use.



7. Hierarchies of multipurpose opportunistic spaces like event spaces, performances spaces, holding a symbolic value (cultural) create a healthy and fulfilling environment for youth.

8. Gathering space characteristics, mix of static and dynamic spaces formal and informal spaces, privet and public domain, affordable and inclusive flexibility of use for group activity, along with physical, visual and metabolic quality of the space.

9. Canteen should be in proximity with the learning zone and have interesting open areas surrounding it.



10. The class rooms, Lecture halls, studios, library, auditorium, and other components of the college should be designed and arranged in a responsive and meaningful pattern.

11. Bigger openings along the North-South axis are functional in allowing natural light in the interior spaces and for cross ventilation as well.

12. Building height to be restricted to G+2 max, to prevent the built structures from over shadowing the open areas and it is favourable for educational institute.

13. The institutional campus should be designed in such a way that can be usable for all people (Barrier free /Universal Design).

14. Equipment needed for architecture students on daily basis should be available in stores within the college campus also printing facilities should be provided to students within the campus.

Chapter 7

SITE ANALYSIS

7.1 INTRODUCTION:

Siliguri and its immediate neighbourhood have an estimated population around 10 lakh making it's a business hub. This is evident by the huge number of store, shopping centres that have mushroomed in the city in the recent past. Siliguri has a vivid mix of local, transit and tourist population. Visitors from Nepal, Bhutan and Bangladesh also form a part of it.

CITY: SILIGURI

COUNTRY: India

STATE: West Bengal

DISTRICT: Darjeeling, Jalpaiguri

NAMED FOR: Largest city of North Bengal

GOVERNMENT:

- Type Municipal Corporation
- Body Siliguri Municipal Corporation

Metropolitan City/Urban Agglomeration: 260 km2 (100 sq mi)

Population (2011 census): 705,579
Average Literacy (%) : 85.91 %
Density : 1,200/Sqkm
Highest elevation : 644 m (2,113 ft)
Lowest elevation : 122 m (400 ft)

7.2 CLIMATEIC CONDITION:

Siliguri is located in the state of WEST BENGAL. The weather and climate in Siliguri is usually fine with temperature in summer being an average of 34.8 'C and the winter temperature being around 12.8 'C. The humidity in this region remains quiet high throughout the year with an annual average of about 81 %. The best time to visit the city throughout the year except for the monsoon season that begins in June and lasts up to the end of September.

Climate data for Silguri													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	23 (73)	25 (77)	28 (82)	31 (88)	33 (91)	35 (95)	34 (93)	31 (88)	28 (82)	26 (79)	24 (75)	23 (73)	28.4 (83)
Average low °C (°F)	3 (37)	10 (50)	13 (55)	21 (70)	24 (75)	25 (77)	26 (79)	25 (77)	23 (73)	16 (61)	10 (50)	4 (39)	16.7 (61.9)
Average precipitation mm (inches)	8 (0.31)	18 (0.71)	33 (1.3)	94 (3.7)	300 (11.81)	658 (25.91)	818 (32.2)	643 (25.31)	538 (21.18)	142 (5.59)	13 (0.51)	5 (0.2)	3,266 (128.58)
Source: Siliguri Weather													

7.3 WHY SILIGURI?

7.3.1 IMPORTANCE OF THE CITY:

- The largest city of north Bengal and in Northeast India.
- The second largest city in West Bengal after Kolkata.
- The only city in West Bengal, after Kolkata, with an International Airport.
- Siliguri is a fast growing modern cosmopolitan city and famous for its four 'T's (IT, TEA, TIMBER, TOURISM)
- The city is located in the Siliguri Corridor or Chicken's Neck - a very narrow strip of land linking mainland India to its north-eastern states.
- Two National Highways, NH-31 and NH-31A passes through the city.
- The West Bengal government is developing Siliguri as one of the satellite IT hubs.
- Siliguri is the headquarters of Federation of Chamber of Commerce and Industry of North Bengal.

7.3.2 GEO STRATEGIC IMPORTANCE TRADE CENTER:

The Geo strategic importance of the town Siliguri is unforgettable. Siliguri connects three international borders (Bangladesh, China, and Nepal) which is rare evidence on the map of the world. Siliguri is joined with Kalimpang (Kalimpong) and Sikkim by road and there is rail connections with Darjeeling (Darjeeling) and Jalpaiguri. Being so located,Siliguri became a Trade hub for the whole West Bengal.
An important nerve center of all kinds of activities related to the trade and commerce of the region. Siliguri is occupying a leading position in all type of business.

7.3.3 CONNECTIVITY TO SILIGURI TRANSPORT HUB:

Whether it is by air, road or by rail, siliguri is well linked to the rest of the country.

Air: Bagdogra, is an international airport and is only 15 km from Siliguri.It has a direct air link with Bangkok (Thailand), Paro (Bhutan), Guwahati, Kolkata, New Delhi, among others

Rail: Siliguri is the junction of the North East frontier Railway Grid. New Jalpaiguri, popularly known as NJP is the one of the
most important rail stations of the North
East and is just 4 km from Siliguri. NJP is connected with direct trains from New Delhi, Kolkata, Chennai, Mumbai, and Bangalore.

Road: Siliguri is connected by excellent national highways to its neighbouring states and is 650 km from Kolkata, the capital of West

Bengal; 760 km from Kathmandu, the capital of Nepal; 350 km from Thimphu, the capital of Bhutan.

7.3.4 EDUCATION HUB :

Siliguri has always been the Hub of Education in the Terai and the Dooars region. Apart from the residents of West Bengal, students from states of Sikkim, Bihar and Assam and neighbouring countries of Bhutan, Nepal and Bangladesh come here to pursue education.

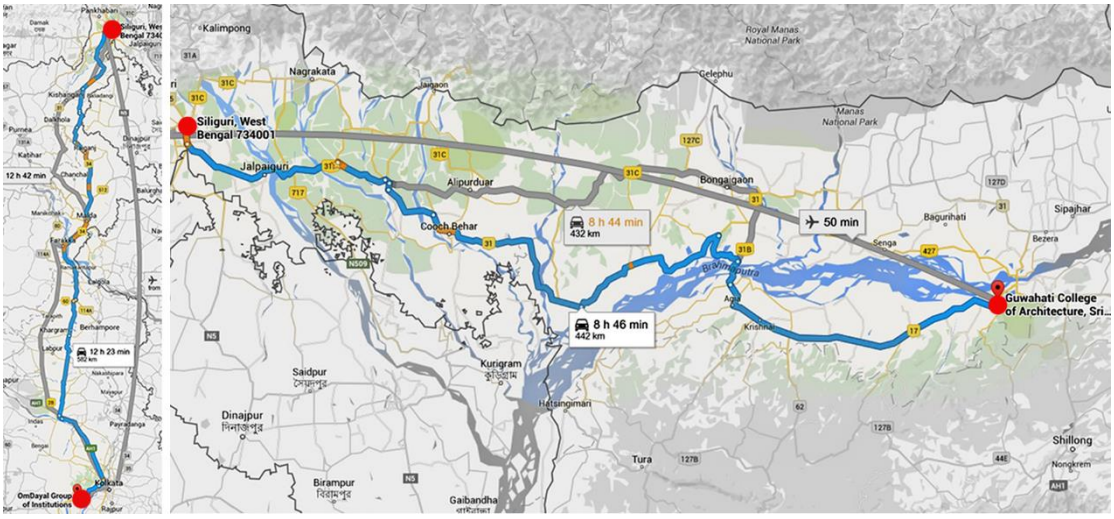
7.3.5 PRESENT SCENARIO OF ARCHITECTURAL EDUCATION IN NORTH-BENGAL :

Although, it is the main Education hub of North- Bengal or north-east zone or its the gateway to North-east India, But the fact is that only a couple of decades ago there was only a few institutions. With the passage of time many government and non-government Schools, Colleges, Universities have established at the city of Siliguri , but till date no approach has been made for the commence of an Architecture College (B.arch & M.arch) .

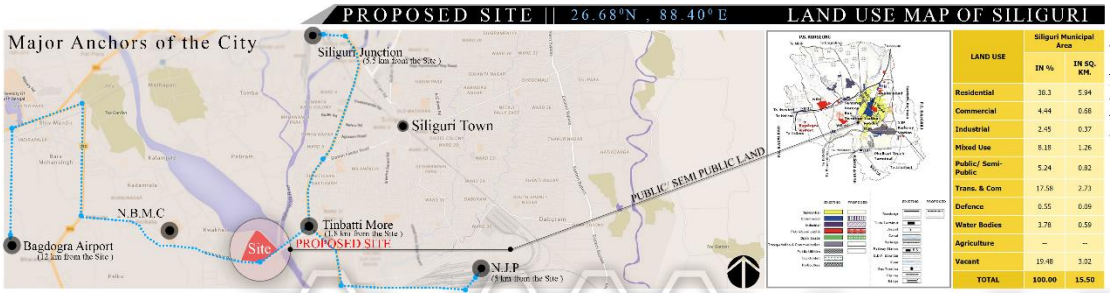
Despite of the fact that North Bengal is such an important (Transportation, Commercial, Educational) HUB of INDIA, there are no Architecture College for higher education in Architecture. But now-a-days, students of North Bengal are very much enthusiastic about Architecture. Every year More than 100 students migrate from the cities of North Bengal to other states for Architectural Education purpose.

BUT NO ARCHITECTURE COLLEGE IN 450KM OF RADIUS

From the city Siliguri , the Nearest Architecture Colleges in West-Bengal are **Omdayal Group of institution** , **Jadavpur** and **Sivpur University** which are more than 550 km away from Siliguri and the other Nearest Architecture College is **Guwahati College of Architecture** in Assam, which is 432 km away from the city .Therefore in the circle of 450 km there is no Architecture College available .



Therefore , I think Siliguri is an appropriate site for proposing my thesis project 'School of Architecture'



7.4 SITE CHARACTERISTICS

7.4.1 LOCATION:

Kawakhali , P.O.-Sushruta Nagar , Siliguri, Darjeeling , PIN- 734012 State -West Bengal , INDIA
Coordinates: 26.680N , 88.400 E

7.4.2 AREA: 17 Acres

7.4.3 SITE CONTOUR:

The contour lines indicate 500 mm rise from South to North . Thus the whole slope of the site is negligible because it is a total 4 M slope in 400 M long distance .Thus the site is flatland with no steeped slope.

7.4.4 VEGETATION:

A large part of the site is covered with dense flat Vegetation and the surroundings are covered with small shrubs and Agricultural field.

7.4.5 SITE TOPOGRAPHY:

No Canyon:

The site doesn't have any Canyon feature SO, there is no need to cut & fill.

Grassy Bowl:

The site doesn't have this feature for landscaping

Flat land with Grass / exposed soil:

This feature is very useful for campus design and planning.

Undulating land with mix vegetation:

The site is not an undulating land and less vegetation at boundaries.

Densely vegetated flat area or bowl:

The site is only densely vegetated on the boundaries and rest portion is flat vegetated.

Dry flat land with less vegetation:

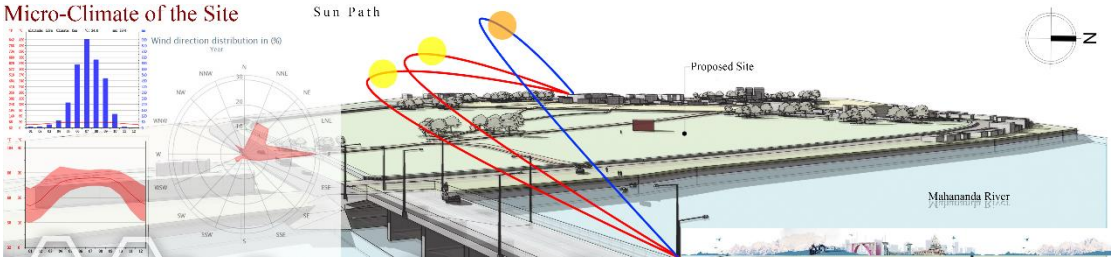
Uneven land with steep ditches or slop:

The site slope is very less and site does not have any steep ditches.

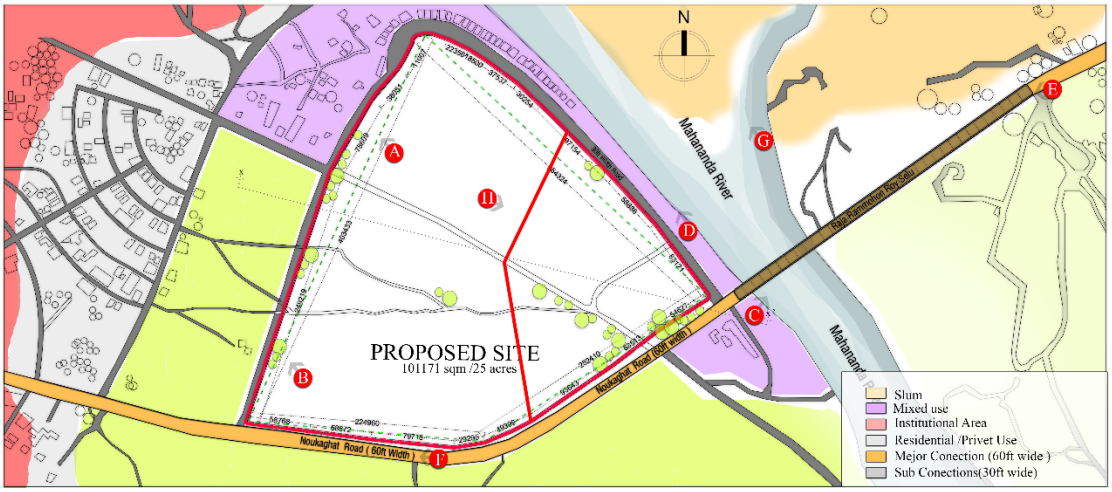
7.4.6 SITE ACCESSIBILITY:

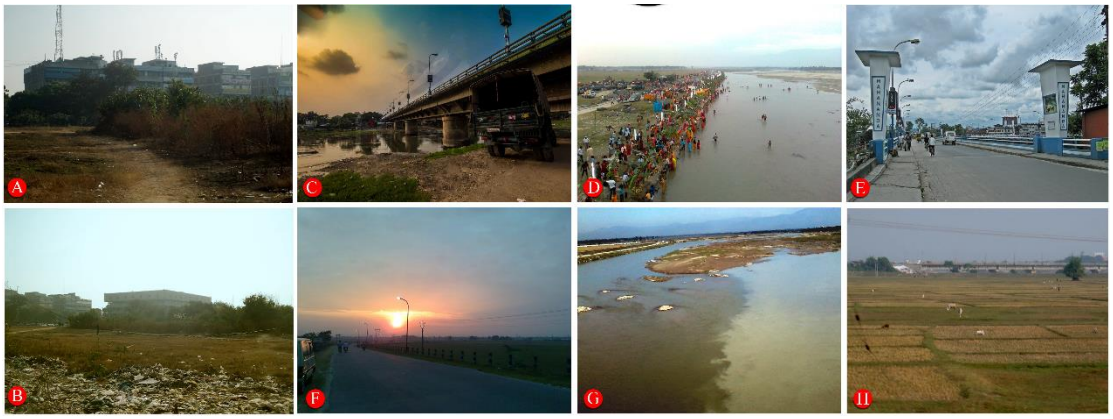
The site is situated just 1.8 Km from Tinbatti More Bus stop, 5 Km from NJP railway station, 5.8 Km from Siliguri Junction and 12 Km away from Bagdogra Airport.
At the South side of the site, 60 ft wide Major Accessible Road (Noukaghat Road) is connected to the high way AH2 through 3rd Mahanada Bridge, and the other direction it is connected with the High way NH 31. The North, east and west side of the site has a 30 ft. wide Circulation Road.

7.4.7 MICRO-CLIMATE OF THE SITE:



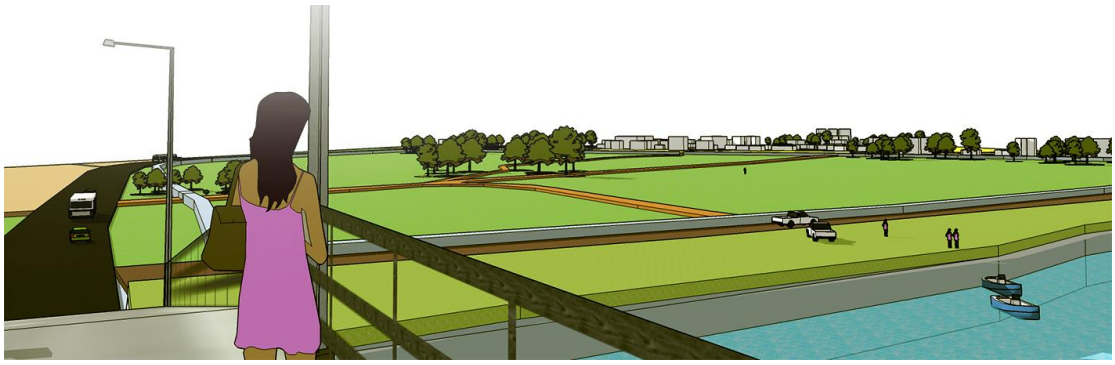
7.4.8 EXISTING FUNCTIONAL STRUCTURE:





7.5 SWOT ANALYSIS

7.5.1 STRENGTH OF THE SITE



1. The site is situated at the center of three major anchor of the city (Siliguri junction, NJP, Bagdogra Airport), so it is well connected to the rest of the city.

2. Undulating and flatland are the strength of the site.

3. The site surroundings are well planned, and the site is located near the North Bengal Medical College, thus the site surroundings are already developed and well engaged with educational environment.

4. The site has a Different viewing angel from the 3rd Mahananda Bridge.

5. The Site has also a attractive east facing River side view.

7.5.2 WEAKNESS OF THE SITE

1. Underground water level is very high, so that excavation for High Rise building is not possible.

2. The site is under the Seismic zone IV.

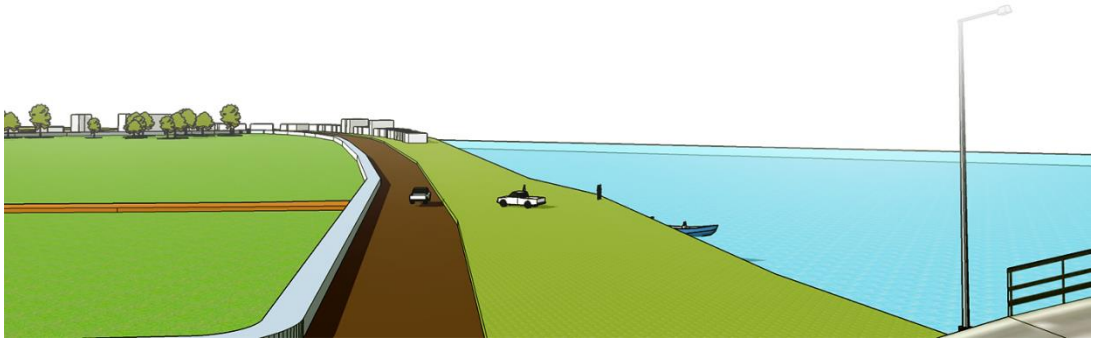
3. Lack of trees in the proposed site.

7.5.3 OPPORTUNITY ANALYSIS

1. The rate of Socio economic value will be increased.
2. River side development will be happened.
3. Educational value of North Bengal will be increased, it will fulfil the gap of Education Hub of Siliguri.
4. There are a proposal of Kawakhali Township 2020.

7.5.4 THREAT ANALYSIS

1. Earthquake
2. High water level.
3. Under High damage Risk zone in Wind risk zone map.



Chapter 8

AREA ANALYSIS

BACHALOR OF ARCHITECTURE (5 YEARS OF COURSE)						
INTAKE OF 80 STUDENTS PER YEAR (TOTAL- 400 STUDENTS)						
S/N	ACTIVITY SPACE	NO	AREA OF EACH ROOM	CAPACITY(NO.)		
1	**STUDIO**	8	150 SQM	40		
2	**CLASS ROOM**	14				
	1.LECTURE/ THEORY CLASS	10	60 SQM	40		
	2.A/V CLASS ROOM	4	120 SQM	80		
3	**LABS**	5				
	1.CLIMATOLOGY/ENVIORMENT	1	100 SQM	20		
	2.SURVEYING	1	100 SQM	20		
	3.MATERIAL MESEUM	1	100 SQM	20		
	4.LIGHTINH /ILLUMINATION	1	60 SQM	20		
	5.PLUMBING AND SANITATIONS	1	90 SQM	20		
	6.ACOUSTICS	1	60 SQM	20		
4	**WORKSHOP**	1	300 SQM	100		
5	**PRINCIPL'S CABIN**	1	30 SQM			
6	**ADMINISTRATIVE OFIICE**	1	573			
	1.RECEPTION	1	12			
	2.WAITING LOUNGE	1	30			
	3.ADMIN OFFICE	1	60			
	4.MAINTAINANCE OFFICE	1	30			
	5.RECORD ROOM	1	15			
	6.STORE ROOM	1	20			
	7.DIRECTOR'S OFFICE	1	20			
	8.DIRECTOR'S ASST	1	16			
	9.CONFERENCE ROOM	1	50			
	10. NATA ROOM	1	60			
	11.CONFERENCE HALL	1	260			
7	**STAFF ROOM**	6	Teacher and Student ratio in an architecture college should be -1:10 . 1983 act			
	1. PROFESSOR-3	1	teacher needed 10 for 100 students in B.Arch. So, 40 total teacher needed. 25%			
	2.ASSOCIATE PROF.-7+2	2	teaching load can be taken by visiting faculty.Min 25 permanent teacher for 80 intake			
	3.ASST. PROF.-14+4	3	10 visiting faculty and 30 full time permanent faculty should be installed			
8	**STAFF LOUNGE**	1	60 SQM	30		
9	**CONSTACTION WARD**	1	200 SQM	20		
10	**EXHIBITION AREA**	1	400 SQM	-		
11	**COMMON ROOM**	2				
	1.BOYS' COMMON ROOM	1	120 SQM	100		
	2.GIRLS' COMMON ROOM	1	120 SQM	100		
12	**INDOOR SPORTS**	1	300 SQM			
13	**GYM**	1	100 SQM	20		
14	**COMPUTER LAB**	1	60 SQM	40		
15	**COMMON LIBRARY**	1	400 SQM	400		
16	**FRIST AID ROOM**	1	20 SQM			

MASTER OF ARCHITECTURE (3 YEARS OF FULL TIME COURSE)

INTAKE OF 20 STUDENTS PER YEAR(TOTAL-200 STUDENTS)

S/N	ACTIVITY SPACE	NO	AREA OF EACH ROOM	CAPACITY(NO.)	
1	**STUDIO** (M.ARCH)	10			
	1.ARCHITECTURAL CONSERVATION	2	60 SQM	20	
	2.URBAN DESIGN	2	60 SQM	20	
	3.INTERIOR ARCHITECTURE	2	60 SQM	20	
	4.LANDSCAPE ARCHITETCTURE	2	60 SQM	20	
	5.SUSTAINABLE ARCHITETCURE	2	60 SQM	20	
2	**LECTURE HALL**	10			
	1.ARCHITECTURAL CONSERVATION	2	30 SQM	20	
	2.URBAN DESIGN	2	30 SQM	20	
	3.INTERIOR ARCHITECTURE	2	30 SQM	20	
	4.LANDSCAPE ARCHITETCTURE	2	30 SQM	20	
	5.SUSTAINABLE ARCHITETCURE	2	30 SQM	20	
3	**LIBRARY**	(Common Library for B.arch & M.arch)			
4	**COMPUTER CENTER**	1	60 SQM	20	
5	**LABS**	(Common LAB for B.arch & M.arch)			
6	**WORKSHOPS**	(Common WORKSHOP for B.arch & M.arch)			
7	**EXHIBITION**	(Common EXHIBITION for B.arch & M.arch)			
8	**COMMON ROOM**	(SAME Common room for B.arch & M.arch)			
9	**STAFF ROOM**	25	Teacher and Student ratio in an architecture college should be -1:10		
	1. PROFESSOR - 1/course- 10	10	so, teacher needed 20 for 200 students for B.Arch. 25% teaching load		
	2.Asst. PROF.- 1/course-10	10	can be taken by visiting faculty.Min 13 permanent teacher for 40 intake		
	3.lecturar - 2/ course-20	5	5 visiting faculty and 15 full time permanent faculty should be installed		
10	**FRIST AID ROOM**	1	20 SQM		
11	GREEN ROOF TESTING LAB	1	60 SQM		

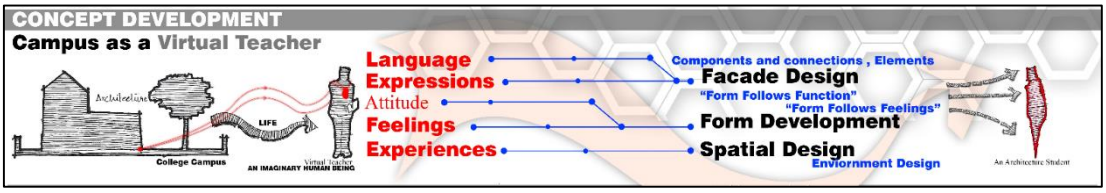
S/N	ACTIVITY SPACE	NO	AREA OF EACH ROOM	TOTAL(SQM)	
1	**PARKING**	300		2055	
	1.2 WHEELER PARKING	150	1.2 SQM	180	
	2. 4 WHEELER CAR PARKING	150	12.5 SQM	1875	
S/N	ACTIVITY SPACE	NO	AREA OF EACH ROOM	CAPACITY(NO.)	TOTAL(SQM)
2	**HOSTEL**				6760
	1. BOYS HOSTEL	1	(28+8)=36 SQM	3/ROOM-250 STU	3000
	2. GIRLS HOSTEL	1	36 SQM	3/ROOM-250STU	3000
	3.KITCHEN /DINING	1	600 SQM	300	600
	4. GUEST ROOM	6	20 SQM	2	120
	5. WARDEN OFFICE	2	20 SQM	1	40
S/N	ACTIVITY SPACE	NO	AREA OF EACH ROOM	ROOM(NO.)	TOTAL(SQM)
3	**STAFF RESIDENCE**				
	1.FACULTY UNIT	1	60 SQM	15	900
	2. STAFF UNIT	1	40 SQM	15	600

SITE PLAN DETAILS				
	TOTAL SITE AREA	71000SQM		/17 ACRES
	MAJOR ACCESSIBLE ROAD	60ft		20 m
	SIDE ROAD	30ft		10m
	PERMISSIBLE GROUND COVERAGE	40%		
	PERMISSIBLE F.A.R	2.75		
	SET BACK FROM ALL SIDES	6m		
	PERMISSIBLE BUILDING HEIGHT	27.5 M		
S/N	ACTIVITY SPACE	AREA(ACRES)		
1	**EDUCATIONAL USE**	8.5		
2	**RESIDENSIAL USE**	3		
3	**RECREATIONAL USE**	2.5		
4	**CULTURAL USE**	1		
5	**PARKING**	0.5		
6	**PUBLIC USE**			
		TOTAL AREA	15.5	
S/N	BLOCK SPACE	AREA(SQM)	FLOOR	TOTAL AREA
1	**ADMIN BLOCK**	749	1	749
2	**B.ARCH BLOCK**	2714	5	13570
				0
				14319
4	**BOYES HOSTEL**	388X2		
5	**GIRLS HOSTEL**	500		
6	**STAFF RESIDENCY**	388X2		
7	**CANTEEN**	450		
8	**AUDITORIUM**	1000		
9	**STOR AND MAINTAINANCE**	1000		
				0
	GROUND COVERAGE	18598 SQM	30%	

Chapter 9

CONCEPTUAL & DESIGN DEVELOPMENT

9.1 PHYLOSOPHICAL CONCEPT:



My 1st idea was to create a campus where architecture student will be able to interact with architecture and environment.

As I said in my synopsis objective – 'to create a new 'man' to create a new 'culture'

It was a Philosophical Idea or concept towards my campus design,

To me, everyone is creative, everyone can design a built form but architect gives life in a designed built form, then it can interact with human beings.

If I compare my campus with a living body or as a virtual teacher, then what common things that a teacher need to interact with students.

Like Language and expressions (to communicate), attitude, feelings (to get respect) and experiences (to be loved by students).

Here language and expressions are the communicating factors, so how will my building can communicate with students, then comes the façade design which can be the medium of communication. Like a glass façade, it's the expression of the building and language is connecting the students with nature (light, shadow, void etc.)

Attitude and feelings, these are the part of personality of a teacher, it can be concept of my form development of the building, like 'form follows function' or 'form follows feelings'. Then the form can be show attitude towards nature or attitude towards proportion and scale.

Experiences, an experienced teacher always loveable by students and also helpful for better learning experiences. So, the environment planning or spatial design of a campus should be designed like the way that student will understand and experienced something new about architecture and architectural planning.

Thus my philosophical concepts are related to the physical Development of my Campus design.

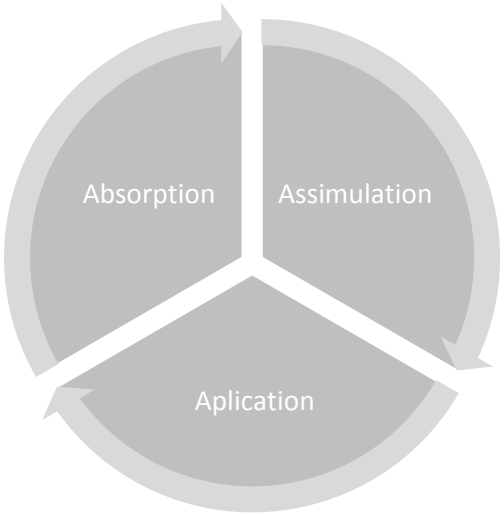
9.2 PRE-DESIGN CONCEPTS:

To zone the college in three broad categories

Absorption **Assimilation** **Application**

To design and arrange the class rooms, lecture halls, studios, library, auditorium, and other components of the college in a responsive and meaningful pattern and classifying them in 3 A categories.

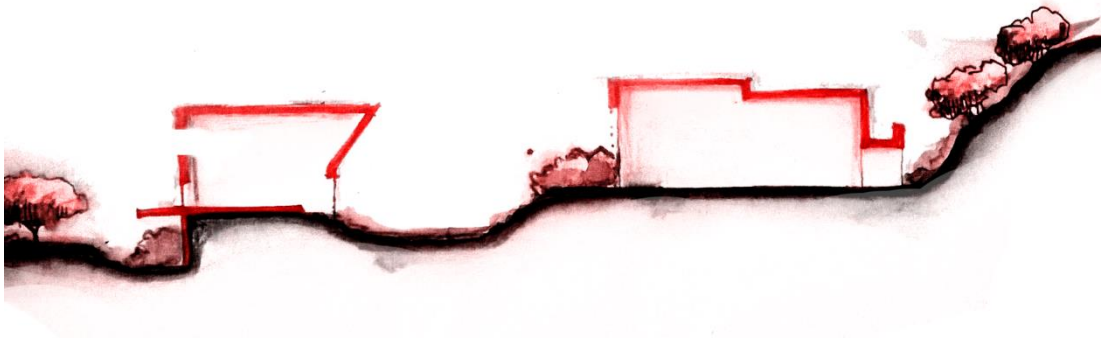
To design a think tank that actually demonstrate and compliment the idea of assimilation which will help the process of creativity how the



space escalates speed.

To create a journey throughout the college to understand the basic concepts of architecture (concept of space, anthropometry, relationship between space and psychology, light and shadow, solid and void)

To create some illusionary spaces to feel them the character of any space and also for accelerate the 6th sense of the students. Students can learn anything and everything when their all sense works together.



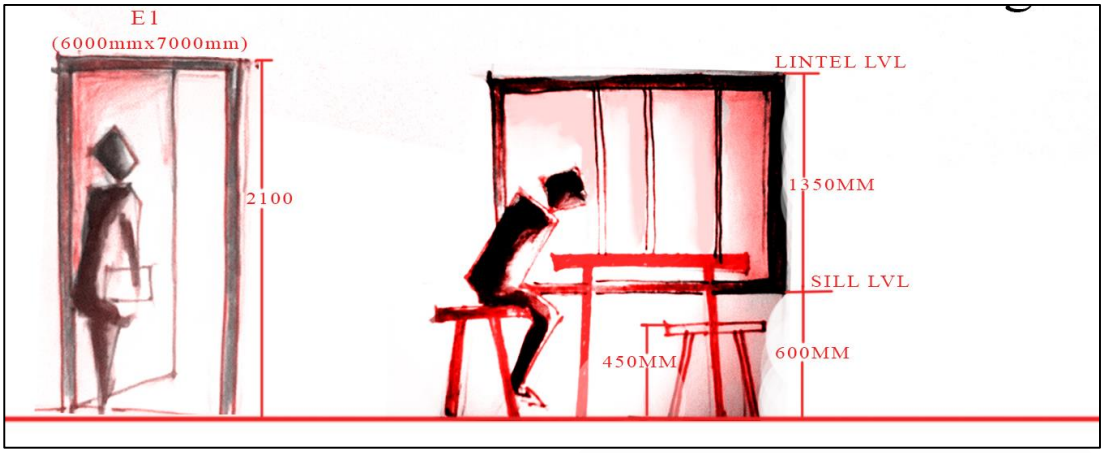
9.3 CONCEPT DEVELOPMENT:

9.3.1 DEVELOPING SENSE OF SPACE:

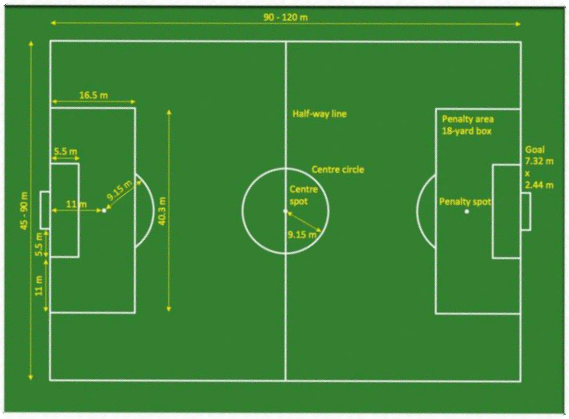
Measurement is an important part in Architecture education. We learn it from doing anthropometry Drawings, measure Drawings or from the Reference books. We see pictures of different scales and remember the measurements of different Architectural elements and one day when we go to a construction site or we see a real Building we cannot visualise the real scale. That is the problem of present Architecture education.

Architecture Institution should be different from any other educational institution. **Observation** is the key of Creativity and students understand and remember a thing better when they observe the thing every day.

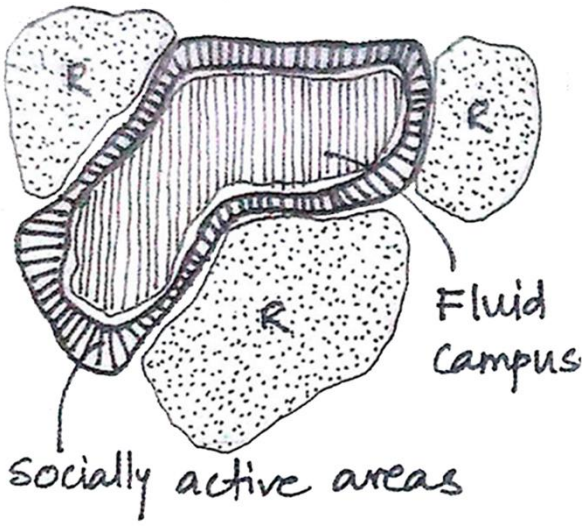
Like the bellow pictures, if a student see the door height is 2100mm, width is 900mm and the room size is 6000mmx7000mm while entering the class room, he can automatically visualize the room size and experience the measurement. To know the lintel height sill height need not to search for a book. We will get it from the class room .live examples can foster the learning experiences.

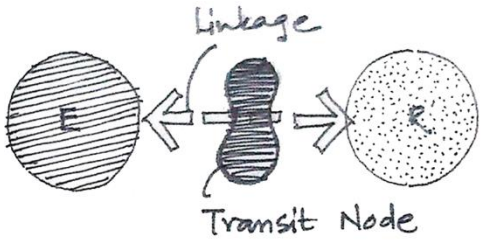


And even when landscape and Sports Ground (courts) are also Painted with Its original Measurements (1:1 scale) it will be More easer to visualise large to Large Areas. Thus students can Learn something from outdoor by Themselves while they are playing Or wondering in to the campus.



9.3.2 INTERCONNECTED: Fluid Figures of Open Space





9.3.3 BREAKING THE MONOTONY OF A CLASS ROOM:

Group

Seminar

Theatrical/Lecture

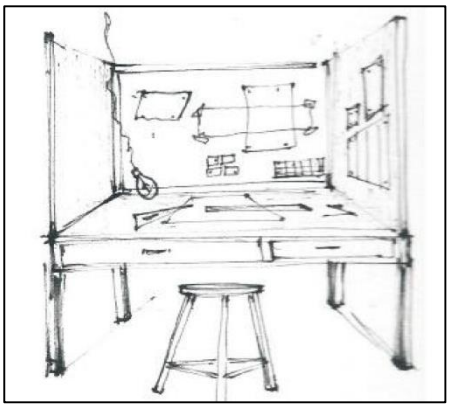
Social Gathering

Lab

Debate

These options illustrate how a singular classroom space can transform into multiple types of learning spaces that cater to specific instructional and learning need.

Alternation of light and shades, students' customised work place will make the class room more interesting and friendly and can foster the learning experience.



"SELF DIRECTED LEARNING SPACE"

9.3.4 CREATING SOME IMPORTANT NODES:

- Levelled sketching zone to understand the perspective
- Breathing space and Student's activity area
- Common spaces to interact with each other
- Sit out at high level

9.3.5 EXPERIENTIAL SPACE PLANNING:

- Exposed Structure to understand Structural details
- Gathering space outside the class to increase interaction between different generations

9.3.6 CONCEPT OF LANDSCAPING:

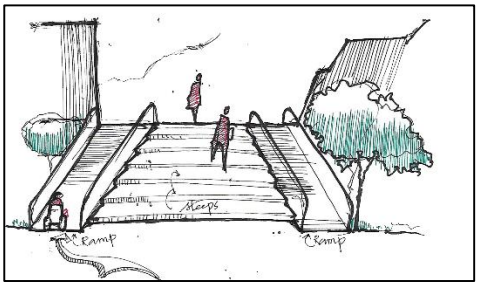
'The GARDEN play environment' provides a diversity of experiences that foster Students' physical, emotional, social and cognitive development. The park will be an organic, flowing space to creating opportunities for Students to interact with water, stone, sand, salvaged tree limbs and ribbons of perennial vegetation, Students are encouraged to reconnect with the natural world, and to become long-term stewards of the environment.

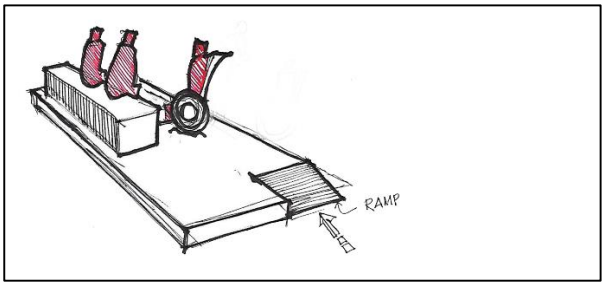
9.3.7 IDENTITY OF SPACES:

SIGNAGE, GRAPHICS & ART, these elements can be powerful tools in creating identity, connecting to the community, and improving the first impressions and visual experience of the Architectural school environment.

9.3.8 UNIVERSAL DESIGN APPROCH:

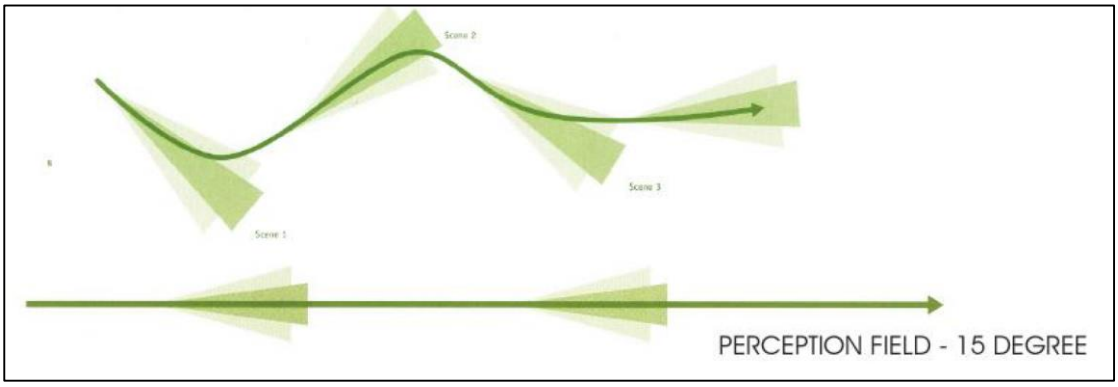
As with most other public institutions, a school should endeavour to accommodate all users, including those with physical, cognitive, auditory or visual limitations. Originating from Barrier-Free and accessibility principles, Universal Design aims to improve the built environment through the creation of facilities, products and spaces which are inherently accessible, functional, attractive and equitable to all.



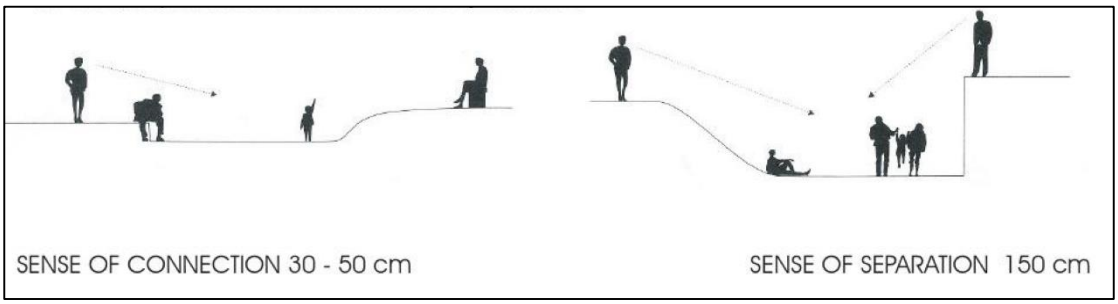


9.4: DESIGN CRITERIA:

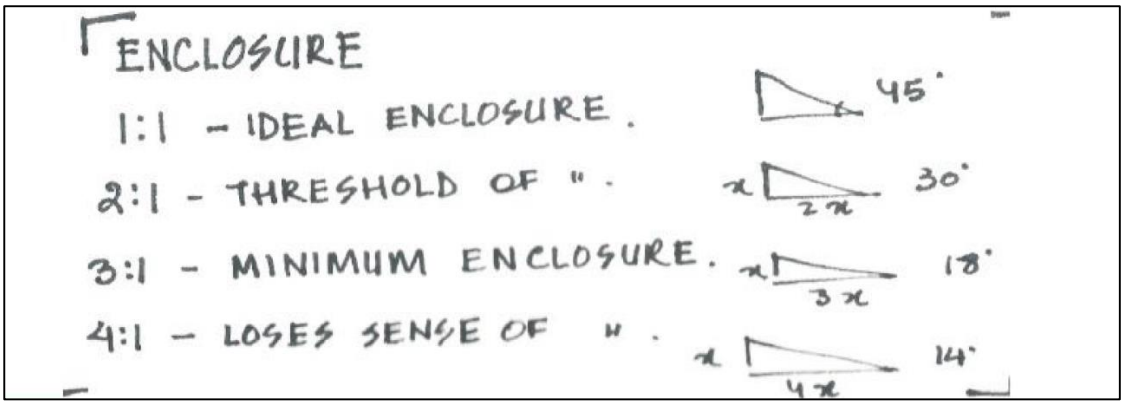
- Gestalt psychology affirmed that mind will simplify the visual environment in order to understand it. Given any composition of forms, we tend to reduce the subject matter in our visual field to the simplest and most **REGULAR SHAPES**. The simpler and more regular a shape is, the easier it is to perceive and understand
- To create sense of progression through a series of varying cross section of the street both spatially and functionally.



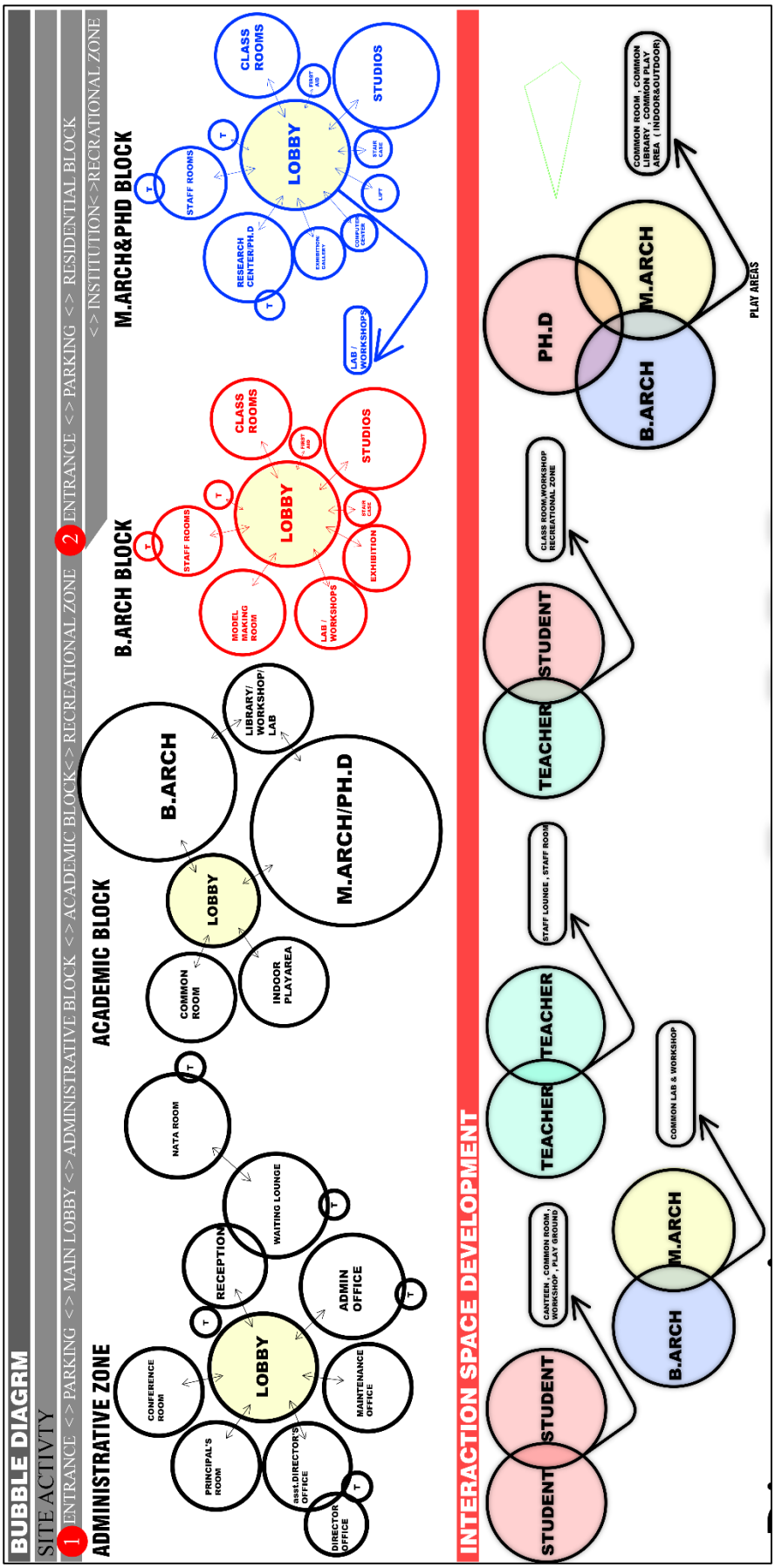
- To articulate volumes through creative use of material which will be indicative of the functions within.
- To create spatial levels the facilitate spontaneity.



- To consciously create and design junction b/w indoor and outdoor as they are strategic gathering points
- To create **VARIOUS DEGREE OF ENCLOSURE.**



CONNECTIVITY DIAGRAM:



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