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Post Occupancy Evaluation Of Schools Of Architecture

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ABSTRACT

Architecture is a delicate and fine art, which needs a conducive atmosphere, knowledgeable and exceptional design skilled faculties. The Campus plays a major influence in the student life. The learning environment has a great impact in the student. This study aims to find out the satisfaction/ comfort level of the users in the schools of architecture. This has been assessed by a tool called POST OCCUPANCY EVALUATION, which is a part of Building Performance Evaluation.

The study is about assessment of the user satisfaction level in the architecture schools in Tamilnadu. At first, schools to be evaluated are selected . For this study noted Institutions like Thiagarajar College of Engineering, Mdu., PeriyarManiammai University, Vallam and a newly started college CARE school of architecture, Trichi are taken as samples. Analytical tool called POE is used for data collection. The purpose of this POE was to find out, from evidence, what contributes to a successful school environment and to recycle the lessons learnt back into the school capital programme in order to:

• improve the efficiency of capital investment;

• improve the quality of design in school buildings and grounds;

• inform support that's given to users with the aim of improving the performance in use of their school premises.

For the purposes of this report we have chosen to define a successful school environment as a place that meets the needs of the users :

- *by supporting effective teaching and learning;*
- *by being functional, comfortable and sustainable; and*
- *by being cost-effective over its lifetime. POE is a valuable way of determining whether the buildings and grounds meet these needs.*

The intention of this POE was not just to collect data but to seek out the stories behind the data and to understand why the buildings and grounds were performing as they were. In this respect, this POE was a wide-ranging exercise and perhaps broader than might be carried out as part of a rolling evaluation programme.

KEYWORDS : Post occupancy evaluation, User satisfaction level, Architecture schools, Building Performance Evaluation.

INTRODUCTION

The aim of the study is to assess the learning environment of architecture schools.

Post Occupancy Evaluation is an effective method of assessing satisfaction level/comfort level of the users by data collection through a questionnaire, and interpreting the data. **Post Occupancy Evaluation (POE)** is proposed as the most suitable tool to interpret and report the outcomes of on-site evaluations.

The output of POE can be used for strategic planning of the institution facilities and built form, improvement and also planning of such facilities.

METHODOLOGY

Identification of institutions for the study based on a defined criteria
Framing a POE questionnaire based on case studies.
Sample Selection (Year wise)
Conducting the survey and collecting data.
Consolidation of data and analyzing the data.
Synthesizing of data and finding out the factors that affects the satisfaction level of the users.
Outlining the general factors and recommendations for an ideal institution



Building Performance Evaluation (BPE) Process Model

Post-occupancy evaluation (POE) is generally defined as the process of systematically evaluating the degree to which occupied buildings meet user needs and organizational goals. The POE provides "an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values of those for whom a building is designed" (Friedmann et al,1978; 20).

Zimring and Rosenheck (2001) summarize a number of potential benefits of POE in educational design practice:

Aids communications among stakeholders such as designers, clients, end-users and others;
Creates mechanisms for quality monitoring, similar to using -student testing to identify under-performing schools, where decision-makers are notified when a building does not reach a given standard;
Supports fine-tuning, settling-in and renovation of existing settings;
Provides data that informs specific future decisions;
Supports the improvement of building delivery and facility management processes;
Supports development of policy as reflected in design and planning guides;

Accelerates organizational learning by allowing decision-makers to build on successes and not repeat failures.

The early POE framework (Preiser, Rabinowitz and White, 1988) provided for three levels of effort, degrees of sophistication and data gathering techniques, cost, manpower, etc.: indicative, investigative and diagnostic POEs.

ARCHITECTURE SCHOOLS IN INDIA

In India there are many architecture schools and colleges offering various degree programs depending upon the area of interest of the student. Majority of the architecture institutes are part of the engineering colleges in India. The architecture program is for a minimum

period of five academic years. Candidates with an aggregate of more than 50% marks are eligible to apply. They also need to seat for the NATA (National Architectural Ability Test) eligibility test. Students have the opportunity to pursue post graduate program in architecture after their completion of graduation. There are 326 architecture Schools in all over India, of which nearly 76 colleges are in Tamilnadu.









SPECIAL STUDY

Aspecial study is done on Centre for Environmental Planning and Technology (CEPT), Ahmedabad and R.V. School of Architecture, Bangalore.

CEPT, is one of the pioneer institues established in 1975, by one of the eminent Architects Ar. B.V.Doshi. The campus is located in the heart of the Ahmedabad city, in the university area and has been designed by Doshi himself. Doshi and his contemporaries believe that a student of architecture must be surrounded by beauty and art, so that he/she develops into a well rounded creative person, 'sensitive to the emotional, spiritual, cultural and aesthetic dimensions'. This philosophy is epitomised in the campus design itself, with built and open spaces forming a harmonious whole with nature, interspersed with sculptures, installations and other art works.



The language Doshi has used is of exposed brick with concrete, emphasising the slabs and the beams to create a natural coarse texture which has weathered over the years and now almost forms part of the land. The buildings are organised as double storeyed linear masses, open from both sides, letting in plenty of light and ventilation into the studios. In addition, there are inclined skylights on top of the studios, perpetually letting in natural light into the spaces. 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.

R.V. School of Architecture, Bangalore:

Started 15 years back in the year 1999. The School has its own independent building in thecampus. The core success of the School lies in its unrelenting rigour and focus on teaching and learning. The School has developed as a Centre for Quality Improvement Programme, Centre for Continuing Education Programme, Research Center under the Visvesvaraya Technological University and also a Consultancy Centre. Academic rigour in the School is legendary which is known in the academic and professional circles across the country. The selection of Teaching Faculty-Full time as well as visiting is done by the Director by hand picking them based on their talent. A thorough investigation is made into the background, attitude, skill levels and professional standing through peer review. Each faculty is expected to specialize in a certain area of study in architecture. The Council of Architecture chose the School as one of the four Schools for showcasing the best of architectural education in India to Visiting architects of Singapore during April 2006. The School therefore, was put in the same league as that of School of Planning & Architecture, New Delhi (North), School of Architecture, CEPT, Ahmedabad (West) & IIT, Kharagpur(East).

The School has obtained the confidence of professional Architects of India in general and Bangalore in Particular. The graduates of the School are preferred for employment in their offices**.**

SELECTION OF SCHOOLS

The schools for assessment of POE are selected based on the following criteria,

Based on their time of establishment, (TCE, Madurai, & PMU, Vallam started in 1995, same period)

Recently started college of unconventional design. (CARE college of Architecture, 2009).

	SCHOOL 1 / TCE	SCHOOL 2/PMU	SCHOOL 3/CARE
	an ISO 9001:2008 certified Institution		PRIVATE COLLEGE AFFILIATED
	affiliated to Anna University.		TO ANNA UNIVERSITY
YEAR OF ESTABLISHMENT	1957	1988	2009
SCHOOL ESTABLISHED IN	1995	1995	2009
DESIGNED BY	AR. N.RAMALINGAM	AR. C.V SUBRAMANIAM	AR. SANJAY MOHE
FUNDED BY	by Central & State	DEEMED UNIVERSITY FROM 2007	PRIVATE COLLEGE
	Governments and Management.		
APPROVED BY	AICTE, NEW DELHI	UGC & MINISTRY OF HUMAN RESOURCES, NEW DELHI	AICTE, NEW DELHI
ACCREDITED BY	NBA, COA	COA	NBA, COA
AFFILIATED TO	ANNA UNIVERSITY	DEEMED UNIVERSITY FROM 2007	ANNA UNIVERSITY
	Granted autonomy in – 1987		
INTAKE / YEAR	80 SEATS/ YEAR	60 SEATS / YEAR	40 SEATS / YEAR
SITUATED AT	10 KMS FROM MDU	10 km towards west from	15 KMS FROM TRICHI TOWARDS
	AT THIRUPPARANKUNDRAM FOOT HILLS	Thanjavur and 45 km on the east from Tiruchi	MANAPPARAI
COURSES OFFERED	B.ARCH	B.ARCH, M.ARCH	B.ARCH
		PG STARTED IN 2012	
STAFF STRENGTH	20 FULL TIME	25 FULL TIME	10 REGULAR STAFF
	10 PART TIME	10 PART TIME	10 PART TIME

Table:1 INFORMATION OF SELECTED ARCHITECTURE SCHOOLS

SCHOOL OF ARCHITECTURE , TCE, MDU

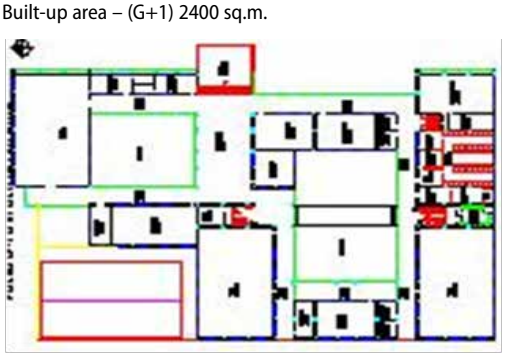
The department of architecture in TCE, was designed in harmony with the existing building style, colonnaded façade, false windows and niches as in the main building. It is a two storeyed building with two courtyards. With a built-up area of 1200 sq.m. There are 3 studios/ lecture halls, 2 separate lecture halls, CAD lab, climatology lab, Energy lab, a multi- purpose foyer and a under-utilized model making workshop in the ground floor.

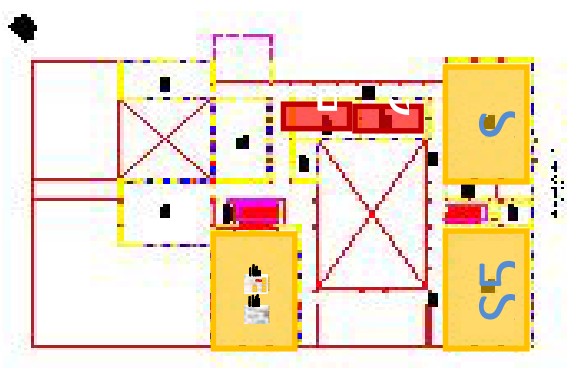
The first floor houses 4 studio/ lecture halls, a separate lecture hall, an AV hall, a library and a crit/jury space in the mezzanine floor, with staff dining, below. A well lit corridors with the courtyards at the centre, enhances air movement. All spaces rise to a height of 14'0", thereby creating a huge volume of spaces, with large steel windows for better lighting and ventilation.

The department building has two large courtyards for good lighting and ventilation.

East facing, solid blank walls on the west, to avoid radiation from the rocks in the western side

STARTED IN THE YEAR 1995.
DESIGNED BY – Ar. N. Ramalingam.
Students intake per year – 80
Courses offered – B.arch, (5 years)
Built-up area – (G+1) 2400 sq.m.





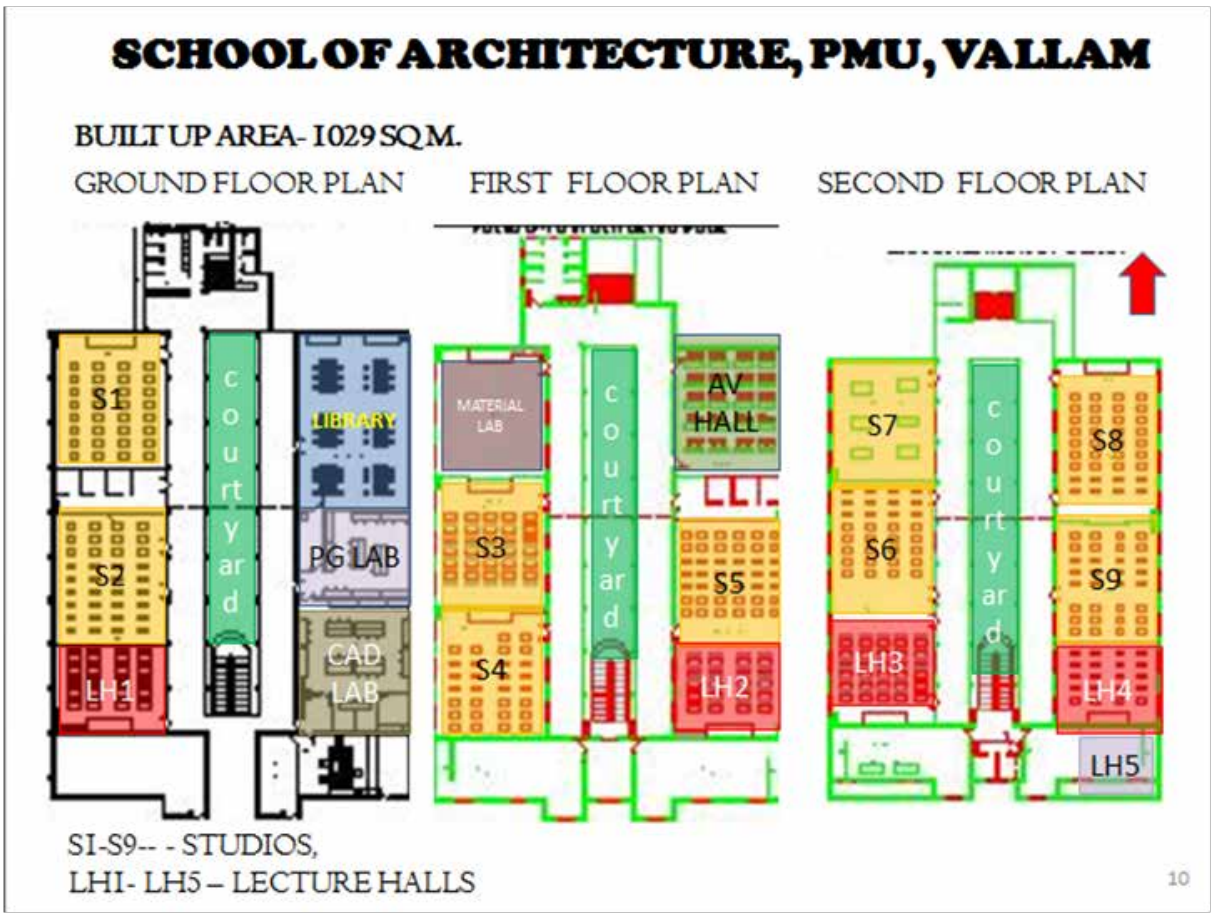
DESIGNED BY – Ar. N. Ramalingam.

Students intake per year – 80

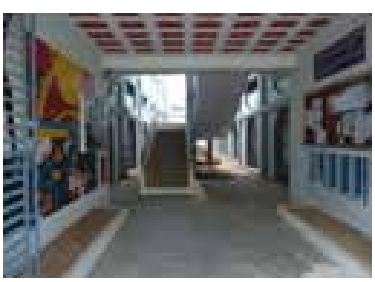
Courses offered – B.arch, (5 years)

Built-up area – (G+1) 2400 sq.m.

GROUND FLOORHAS
4 LECTURE HALLS,
3 STUDIOS,
15 STAFF ROOMS,
CLIMATOLOGY LAB,
GROUND FLOOR PLAN FIRST FLOOR PLAN
ENERGY LAB
FIRST FLOORHAS
2 LECTURE HALLS,
4 STUDIOS,
6 STAFF ROOMS,
LIBRARY,
AV HALL

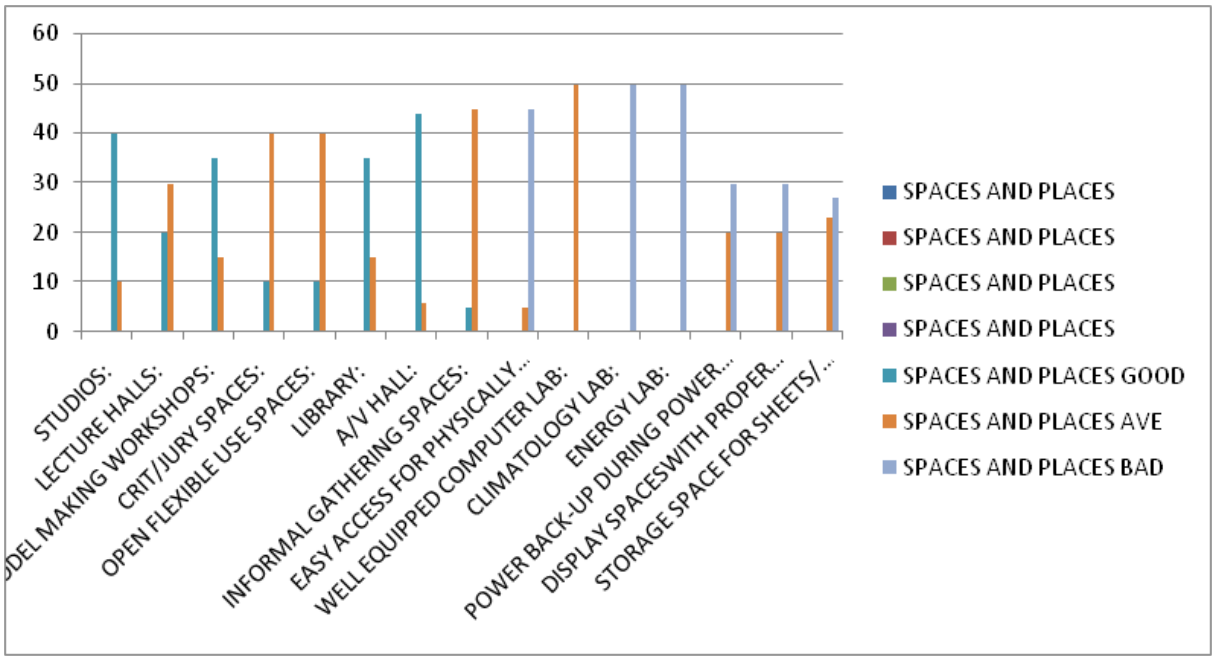


SPACES AND PLACES			
	GOOD	AVE	BAD
STUDIOS:	40	10	
LECTURE HALLS:	20	30	
MODEL MAKING WORKSHOPS:	35	15	
CRIT/JURY SPACES:	10	40	
OPEN FLEXIBLE USE SPACES:	10	40	
LIBRARY:	35	15	
A/V HALL:	44	6	
INFORMAL GATHERING SPACES:	5	45	
EASY ACCESS FOR PHYSICALLY CHALLENGED:		5	45
WELL EQUIPPED COMPUTER LAB:		50	
CLIMATOLOGY LAB:			50
ENERGY LAB:			50
POWER BACK-UP DURING POWER CUTS:		20	30
DISPLAY SPACESWITH PROPER DISPLAY BOARDS:		20	30
STORAGE SPACE FOR SHEETS/ MODELS:		23	27









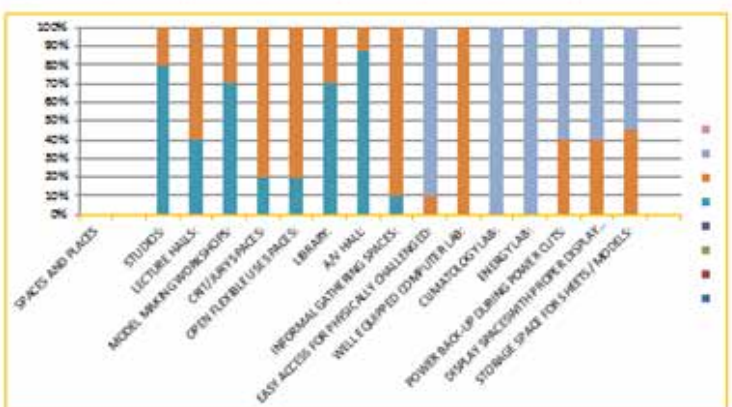
The school of architecture in PMU is housed in a three storeyed building of 1029 sq.m. The ground floor houses 2 studios, a library, a CAD lab, PG lab and staff rooms and toilets at the back. There is a large linear courtyard at the centre of the building. The first floor houses 2 studio cum lecture halls, an AV hall, a model making lab, a material lab, and staff rooms. The second floor houses 4 studio cum lecture halls with a temporary

Roofing, covered with asbestos sheets. The central courtyard is the source of lighting for the corridors.

The roof height is very low in the ground floor corridors.

CARE COLLEGE OF ARCHITECTURE, TRICHI

SPACES AND PLACES	GOOD	AVE	BAD	
STUDIOS:		40	10	
LECTURE HALLS:		20	30	
MODEL MAKING WORKSHOPS:		35	15	
CRIT/JURY SPACES:		10	40	
OPEN FLEXIBLE USE SPACES:		10	40	
LIBRARY:		35	15	
A/V HALL:		44	6	
INFORMAL GATHERING SPACES:		5	45	
EASY ACCESS FOR PHYSICALLY CHALLENGED:			5	45
WELL EQUIPPED COMPUTER LAB:			50	
CLIMATOLOGY LAB:				50
ENERGY LAB:				50
POWER BACK-UP DURING POWER CUTS:			20	30
DISPLAY SPACESWITH PROPER DISPLAY BOARDS:			20	30
STORAGE SPACE FOR SHEETS/ MODELS:			23	27









The CARE school of architecture at present functions in the engineering block, as the architecture block is yet to be constructed. The whole campus is designed by a renowned architect, Ar. Sanjay Mohe from Bangalore. It has open to sky studios and classrooms, with ample lighting and ventilation.

The classrooms designed with each having its own open courtyard. The entire campus is built as a green campus, build with abundance of natural light and natural ventilation. The campus is designed with the philosophy that open spaces creates open minds, thus leading to creative thinking and innovation.

Open classrooms and closed corridors help students to spend more productive time in classrooms than in corridors. But these closed corridors create a sense to pass through it quickly, so idling away time in corridors is reduced to a large extent.

COMPARITATIVE ANALYSIS OF DATA COLLECTED THROUGH QUESTIONNAIRES

Three schools were selected and a sample size of 30% of the total strength is taken for questionnaire survey.

Name	Total strength	30% of total
School 1	400	120
School 2	300	100
School 3	163	50
Total	863	270

Sample size of Proportionate stratified sampling is done in all years starting from first year to final year in all the above 3 schools are questioned and collected the data.

This data is collected in various topics starting from EXTERNAL APPEARANCE, SPACES AND PLACES, STUDIO SPACES, LECTURE HALLS, INDOOR ENVIRONMENTAL CONDITIONS like LIGHTING (Natural & Artificial), AIR QUALITY & ACOUSTICS, INFRASTRUCTURE AND FINISHES to TOILET FACILITIES & finally ended with the MOST IMPORTANT 5 FACILITIES needed for the hour.

All these data are consolidated either as GOOD, AVERAGE & BAD, or AVAILABLE/ NOT AVAILABLE, SATISFACTORY / NOT SATISFACTORY & so on.

STUDIO SPACES / TCE	WEIGHTAGE	SCHOOL 1		
		YES	NO	% x YES
ENOUGH SPACE FOR WORKING:	30%	120		36
OPEN AND SPACIOUS:	10%	120		12
ADEQUATE FURNITURE:	5%	120		6
COMFORTABLE TO SIT AND DRAFT:	5%	120		6
STOOLS:	2%	104	16	2.08
ADJUSTABLE DRAWING BOARDS:	5%	48	72	2.4
ADEQUATE STORAGE SPACES/LOCKERS:	2%	8	14	0.16
WELL MAINTAINED FURNITURES:	2%	2	112	0.04
INDIVIDUAL PERSONAL SPACES:	5%	88	24	4.4
COMFORTABLE FOR GROUP WORK:	5%	104	16	5.2
ENOUGH PLUG POINTS AND ELECTRICAL POINTS:	5%	72	48	0.36
PIN BOARDS/ DISPLAY AREAS:	4%	120		4.8
GOOD LIGHTING AND VENTILATION:	20%	120		24
				103.44
STUDIO SPACES / PMU		SCHOOL 2		
ENOUGH SPACE FOR WORKING:	30%	100		30
OPEN AND SPACIOUS:	10%	100		10
ADEQUATE FURNITURE:	5%	66	24	3.3
COMFORTABLE TO SIT AND DRAFT:	5%	80	20	4
STOOLS:	2%	83	17	1.76
ADJUSTABLE DRAWING BOARDS:	5%	25	75	1.25
ADEQUATE STORAGE SPACES/LOCKERS:	2%	30	70	0.6
WELL MAINTAINED FURNITURES:	2%	15	85	0.3
INDIVIDUAL PERSONAL SPACES:	5%	63	37	3.15
COMFORTABLE FOR GROUP WORK:	5%	80	20	
ENOUGH PLUG POINTS AND ELECTRICAL POINTS:	5%	23	77	1.15
PIN BOARDS/ DISPLAY AREAS:	4%	35	65	1.4
GOOD LIGHTING AND VENTILATION:	20%	43	57	8.6
	100%			69.51

STUDIO SPACES / CARE		WEIGHTAGE		SCHOOL 3
		YES	NO	% x YES
ENOUGH SPACE FOR WORKING:	30%	50		15
OPEN AND SPACIOUS:	10%	50		5
ADEQUATE FURNITURE:	5%	50		2.5
COMFORTABLE TO SIT AND DRAFT:	5%	45	5	2.25
STOOLS:	2%	35	15	0.7
ADJUSTABLE DRAWING BOARDS:	5%		50	0
ADEQUATE STORAGE SPACES/LOCKERS:	2%	40	10	0.8
WELL MAINTAINED FURNITURES:	2%	50		0.1
INDIVIDUAL PERSONAL SPACES:	5%	50		2.5
COMFORTABLE FOR GROUP WORK:	5%	40	10	2
ENOUGH PLUG POINTS AND ELECTRICAL POINTS:	5%	30	20	1.5
PIN BOARDS/ DISPLAY AREAS:	4%	15	35	2
GOOD LIGHTING AND VENTILATION:	20%	50		10
	100%			44.35

INFERENCE:
The above tabular column shows the satisfactory level of users on the STUDIO SPACES.

From this, we infer that 86% of the students feel satisfied of their studio spaces in School 1 ,

And 70% of the students feel satisfied of their studio spaces in School 2,

And 89% of the students feel satisfied of their studio spaces in School 3.

The difference in satisfaction level is due to the lighting and ventilation and the availability of good

Maintained furniture. Schools with good lighting and ventilation because of courtyards and more open spaces

Have got more percentage of satisfaction levels.

CONCLUSION:
Nowadays, in this electronic age, students work more with their laptops than on drawing sheets, so the

availability of wi-fi connections and plug points plays an important role in the students satisfaction level.

By providing all these facilities, in addition to the open and spacious building infrastructure, the user satisfaction

level may be enhanced.

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