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To Study The Problems Faced By The Design Institutes While Creating Multi-Purpose Areas

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ABSTRACT

India is a fast-developing country, where villages are growing into towns, towns into cities and cities into metro cities. The population is also increasing at a very fast rate. Youth for its development, education and better job opportunities is moving towards urban areas. As the youth are moving towards cities for their betterment, they are in constant search of upgrading their education and knowledge. For this many schools, colleges and universities are being constructed to fulfill the growing demand. So, this shifting from rural to urban is leading to space crisis. Everything in this world is designed be it a home, an article, an outfit, or a website. The art of designing is leading to more design colleges in the urban areas. Limited accessible land and increasing demand for more design institutes leads to an imbalance of available amenities as referred by UGC (University Grants Commission), AICTE (All India Council of Technical Education), and COA (Council of Architecture). Colleges in the cities are build but lack certain amenities or facilities that are a must have as per UGC, AICTE, and COA [14,15]. To overcome this many design institutes, opt for multipurpose areas in their premises which when needed can be utilized as per the current requirement. The design institutes while using these multi-purpose spaces face certain problems in their day-to-day execution. This study is done to understand such problems that the design institutes face. For the accomplishment of this study schedule and interview was conducted and data thus obtained was collected and analyzed.

Keywords: *Multi-Purpose areas, Interior Design, Portable Partitions, Carpet area, Circulation space, Planning.*

1. INTRODUCTION

Indian cities are getting crowded due to their increasing population. Increase population means providing them with all amenities like health care, education, recreation, etc. To educate the country's youth a greater number of colleges and universities are coming up in the cities. Amongst all the disciplines, design is one of the most developing streams. Design colleges and universities are increasing on a rapid scale. More number of design colleges in the limited rural areas leads to a problem of space crunch. Hence, these design institutes many a times face the problem of fitting all the needed amenities and facilities as referred by AICTE, COA and UGC. The design institutes are unable to provide all the areas that are made mandatory by their affiliating bodies and so they opt for halls that can be used as multi-purpose areas. These multipurpose areas are created in bigger size rooms by installing different types of partitions in them.

1.1 Multi-Purpose Areas:

Multi-purpose area can be referred to as a large space that can be used in multiple ways or for multiple activities. Rather than serving a single purpose, this space can be used to perform different activities and tasks providing the user the versatility and flexibility. These multi-purpose areas are used to maximum the usage of any area. Big halls can be used as multi-purpose area as a whole one area or can be used by creating multiple smaller areas in the same big premises [1].

1.2 Different Ways of Creating Multi-purpose Areas:

Multi-purpose areas can be created by using various means like curtains, furniture pieces, difference in flooring or ceiling patterns, plants, fixed partitions, and portable partitions. Depending upon the availability of raw material, hardware, and labour, time of construction, budget, and need one can decide upon which type of partition can be used to create multi-purpose areas [6]. Following figure1.1, figure 1.2, figure 1.3, and figure 1.4 show fixed glass partition, furniture used as partition, Curtain used as partition, and change in furniture layout to demarcate different areas in a multipurpose space.

ways to lessen pain during local anesthetic injection.[4]. Another suggested method for alleviating patient's perceptions of pain that is successful, efficient, and economical is cryotherapy. The use of ice or refrigerant spray on the anesthetic site to prevent pain from being transmitted to the nerves is known as cryo-anesthesia [5]. Topical anesthetics are commonly applied before administration of local anesthesia to manage pain from the initial needle insertion. The limitation of applying topical anesthetics includes the duration of action of topical gels or sprays, which can range from 5 to 10 minutes, an unpleasant

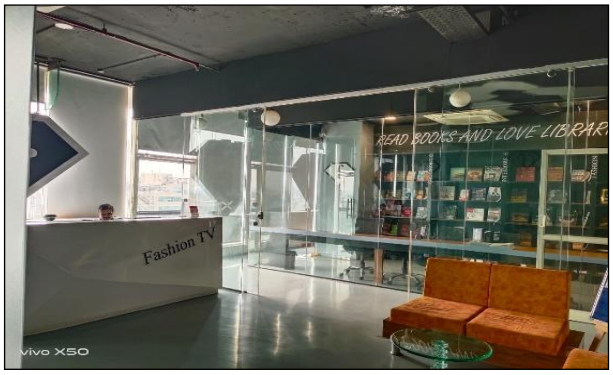

Fig1.1 Creating Multi-purpose area by Installing Fixed Partition

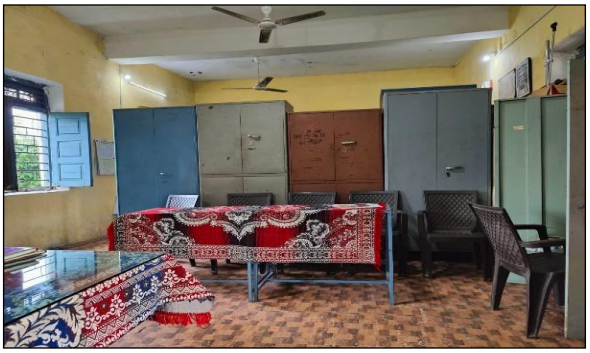

Fig1.2 Creating Multi-purpose area by Placing Furniture

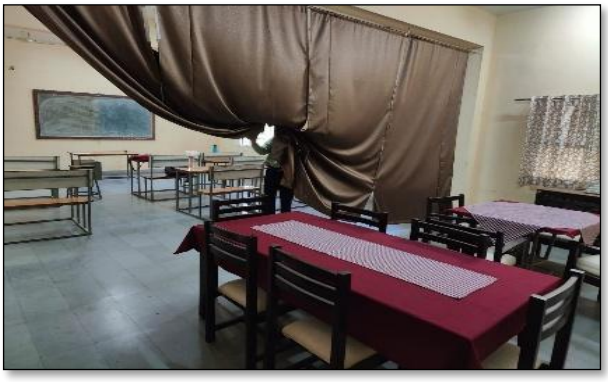

Fig. 1.3 Curtain used as partition in a multi-purpose space

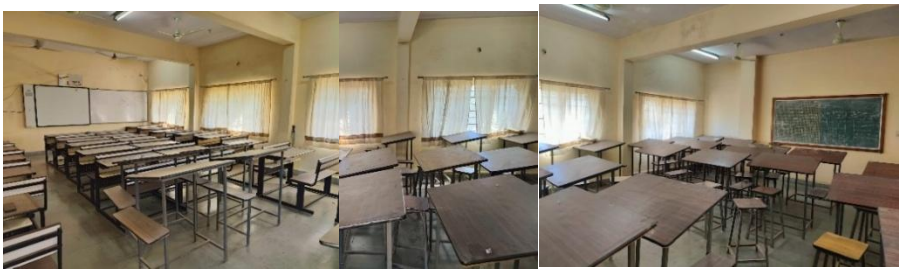

Fig. 1.4 Change in Furniture layout to demarcate different areas

Every type of partition or demarcation that is used to create multi-purpose areas has its own advantages and limitations.

1.3 Types of Problems Faced in Multi-purpose Areas:

Basically, multi-purpose areas are big halls that are converted into smaller areas that can be used in multiple ways. These smaller areas can be created using partitions, furniture, Curtains, etc., and while doing so, problems arise. While creating multi-purpose areas, many of the design institutes face certain problems at the time of its functioning. The majorly faced problems are described as under.

1.3.1 ***Lack of Ventilation*:** When partitions, furniture, curtains, or any other means of separating areas, is installed in front of the building fenestrations, then there arises the problem of improper natural ventilation. This issue may also arise when the separating structures are placed in front of the air conditioning vents or artificial lighting systems [4,13].

1.3.2 ***Lack of Visual and Audible Privacy*:** Certain spaces need audible and visual privacy like classrooms, laboratories, library, or conference halls. If transparent materials like glass and fiber sheet is used to the make separating structure in the multi-purpose space, then it fails to render visual privacy. If sound absorbing or sound proofing material like glass-wool, perforated sheets, acoustical panels, etc. are not used for the making of partitions then it will not provide audible privacy [9,12].

1.3.3 ***Irregular Circulation*:** If the separating structures are not installed in a planned manner than it may hinder the circulation or moving space in the multi-purpose areas [11].

1.3.4 ***Difficulty in Transforming Spaces*:** When the separating agents installed are fixed or heavy like fixed partitions or furniture than it becomes difficult to transform that multi-purpose space into some other space. The concept of using the multi-purpose space in different ways also diminishes in this case [7].

1.3.5 ***Less Flexibility in Space Planning*:** When separating structures are used to certain smaller multi-purpose areas then the options for space planning reduces. Fixed partitions or heavy furniture like wardrobes or cabinets also reduce the flexibility of space planning in multi-purpose areas [7].

2. LITERATURE REVIEW:

i) **Jenni Radun, Mikko Lindberg, Aleksi Lahti, Marjaana Veermans, Reijo Alakoivu and Valtteri Hongisto, (2023) – "Pupils' experience of noise in two acoustically different classrooms"**: The study is done to examine different levels of sound associated with various activities and the students' perception in two different classroom types, i) Refurbished Classroom and ii) Conventional Classroom. Three types of data were collected in this study, i) Sound levels of various activities, ii) Experience of students, and iii) Acoustical measurements. Students activities were divided in further four categories i) Group work, ii) Activity based, iii) Silent work, and iv) One student speaking. The results showed that refurbished classroom had lower sound levels by 2-13db depending upon the activity. Chattering of students was most annoying in both the types of classrooms, but the refurbshed classroom had less irritation and distraction. The study concludes by stating that noise in classrooms can be reduced effectively by acoustically refurbishing it.

ii) **Mohamed Hassan H. Alhilo, Mudar Reda Hussein, (2022) – "Flexible Furniture Design And It's Reflection On The Interior Spaces (Turkish University Dormitory As A Model)"**: The researchers in this study say that as furniture is an integral part of interior design its design depends upon the its function and availability. This study is done in Turkish University and the furniture used by its students. This research studies the aesthetics, innovation and function of the flexible furniture and its affects on the classroom interiors. This study focuses on designing innovative flexible furniture as per the consumer's need. The study concludes by stating that flexible furniture is folding, portable, multi-purpose and multi-functional.

iii) **Colin Pennington, Rebecca S. Putman and Beck A. Munsey, (2022) – "An examination of flexible seating in the higher education classroom from a physical and kinesthetic perspective"**: This study states that flexible seating arrangement can be used in classrooms for active learning. The interaction between students and peer groups improves when their classroom has flexible seating arrangement. This study tries to bridge the gap between the physical seating arrangement and the learning process in a classroom. The study was done by interviewing students and then data was collected and analyzed. The analyzed data showed that 80% of students were positive in terms of i) Anxiety and restlessness, ii) Backache and comfort, iii) Concentration, and iv) Moving opportunity. The study concludes that flexible classroom arrangement should be provided to the students and teacher for creating better teaching learning environment.

iv) **Yeo-Kyung Lee, Young Il Kim and Ga-Hyeon Kim, (2022) – "Indoor Air Quality Diagnosis Program for School Multi-Purpose Activity and Office Spaces"**: This study is done to diagnose the quality of classroom and office indoor air as compared to the pollutants of outdoor air. This study used Microsoft Excel for data

collection and for the application Visual Basic was used. The program studied the concentration levels of CO2 and PM2 in the indoors. These concentration levels were studied before and after the running of lectures, so that if the levels increased beyond the standards, then purifiers can be installed to purify and improve the quality of the indoor air. The study was completed in four stages. The before and after the lecture data was collected and then studied and compared. The improve the accuracy of the results, air pressure and wind speed were also added. This study was able to lower the concentration of PM2 by 5.15% in the indoors.

v) **Bonny A Suryawinata, Yosica Mariana, Sigit Wijaksono, (2020) – "Portable architecture studio recording video as solution for space limitation"**: The new era teaching needs video lectures and for that video recording needs to be done for the overall development of the students. The recording studios occupy huge space and are costly too. To resolve this portable architecture is opted that proves to be sustainable and efficient. Portable architecture means that the commodities can be moved and can be adoptive to the changing surroundings. The recording studios can be made portable so that they become adaptive and can be easily shifted from one place to another. The researchers here have designed one such portable recording studio that can be assembled, dismantled, has a capacity of one person with optimum ventilation and can house all recording devices namely, tripods, cameras, backdrops, lightings, etc. in it.

vi) **Akio Yasumori, Tomotsugu Ezure and Tatsuya Matsuura, (2018) – " The Openness of Campus Architecture from The Viewpoint of Spatial Connection Centred on Multipurpose Common Space: Study on Openness of University Campus by Buildings (3)"**: The researchers have studied the multi-purpose areas of the university building in context with the open areas of the university campus. For this study the building areas were bifurcated into two categories, i) Educational areas like laboratories, classrooms, etc., and ii) Non educational areas like corridors, lounges, etc. These were categorized as open spaces that is without ceiling and with ceiling. Multi-purpose areas were studied based on their traffic flow and the building fenestrations. The study showed that the multi-purpose areas of the building were either connected to the open spaces like grounds, main gates, squares, etc. or to the spaces connected to the outdoors like corridors, verandahs, etc. the study also states that the multi-purpose areas of an educational building are either a major part of the building or they are a functional unit as a whole.

vii) **Banyai Daniel, Dragomir Mihai and Bodi Ştefan, (2016) – "Daylight for Spaces Defined by Movable Walls"**: The researchers here want to design indoor spaces with optimum daylight intake for the convenience of the people who stay indoors for a longer time. This study was done because a furniture company wanted to design and manufacture portable partitions for offices and conference halls. Due to the wrong installation of the portable partitions in the interiors the users face the problem of insufficient daylight. For this 3D modelling software was used to make the layouts of the indoors and to calculate the lighting simulation DIALux software was used. DIALux software was useful as it helped to look for better indoor lighting environment. A hybrid lighting system was developed with a cost ranging from 2% to 30% for the interiors in this study when portable partitions are installed in the interiors. The study finally concludes that proper placement of portable partitions in offices and conferences will not hinder in the intake of daylight in the interiors of the building.

viii) **Eyal Karni, (2000) – "Movable Partitions – Flexible Dwelling: The Intersection of Dynamic Interior Space and Adaptable Dwelling Units"**: The researcher in the study states that the residences should be friendly to the consumer. There are a number of spaces needed in a residence like children play area, work from home area, and hobby area. Whereas when the consumers grow old these requirements reduce and such multiple areas are not needed any more. The author so says that the dwellings should be designed on the concept of flexibility. Portable partitions can be used for creating these multi-purpose areas that are generally found in high- and low-rise buildings with less space availability. Partitions that are modular, light in weight and portable are best for creating such multi-purpose spaces. These portable partitions should be according to the structure of the building, interior of the building and other building elements. The author finally concludes that the portable partitions should be in synchronization with the building structure, its openings, wet areas, and service areas.

3. METHODOLOGY

For this study primary and secondary data was collected and studied. Secondary data was collected by studying previously done research related to the multi-purpose spaces. Primary data was collected was conducting schedule and interview of the academicians of design institutes of Indore district of Madhya Pradesh State, India. Indore district has in all 43 design institutes with approximately 10 teaching staff in each institute. Krejcie and Morgan table is used to decide the sample size. Total population is 430 academia and according to the Krejcie and Morgan table for the population of 430 a sample size of 202 academia was taken into consideration. The analysed data was then used to draw results and conclusions.

4. RESULTS AND DATA ANALYSIS

Primarily for this study the design institutes were divided into three categories based on their carpet areas, i) ≤400 sq. mt., ii) ≤500 sq. mt., and iii) >500 sq. mt. Questions related to the types of partitions that the design institutes are using, their requirements, the areas that they have combined for multi-purpose areas, availability of space, types of activities combined in the multi-purpose areas and the problems they face while fulfilling these activities were asked to academicians of design institutes during the schedule and interview. The collected data showed that the types of partitions or demarcations used by the design institutes are furniture, curtains, plants, and fixed partitions. The data also showed that the activities that the design institutes have combined in the multi-purpose areas are library and staffroom, staffroom and conference room, library and conference room, classroom and laboratory, and two laboratories.

The problems that the design institutes are facing in the execution of the above-mentioned activities in these multi-purpose areas broadly divided into six categories i) Lack of ventilation, ii) Lack of visual and sound privacy, iii) Irregular circulation, iv) Difficulty in transforming spaces, v) Less flexibility in space planning, and vi) No problem (for the design institutes who are not facing any problem). The data collected of the problems faced by the design institutes was analysed in context with the carpet area of the institutes. The below table 4.1 shows the details of the issues that the design institutes are facing in the execution of multi-purpose areas with context to the carpet area of these institutes.

Table 4.1 Problems faced by design institutes with respect to the carpet area.

Title	Problems	Carpet Area	Frequency	Percentage	Chi Value	df	Asymp. Sig. (2-sided)	Interpretation
Problems faced by design institutes in achieving multi-purpose areas	Lack of Ventilation	≤400 sq. mt.	22	68.7	117.62	2	0.001	Significant findings
		≤500 sq. mt.	10	31.3				
		>500 sq. mt.	0	0				
	Lack of Visual and Audible privacy	≤400 sq. mt.	17	59.7				
		≤500 sq. mt.	11	38.9				
		>500 sq. mt.	1	1.4				
	Irregular circulation	≤400 sq. mt.	15	65.3				
		≤500 sq. mt.	7	30.4				
		>500 sq. mt.	1	4.3				
	Difficulty in transforming spaces	≤400 sq. mt.	43	81.1				
		≤500 sq. mt.	7	13.2				
		>500 sq. mt.	3	5.7				
	Less Flexibility in space planning	≤400 sq. mt.	7	17.9				
		≤500 sq. mt.	31	79.5				

		>500 sq. mt.	1	2.6				
	No Problem	≤400 sq. mt.	17	0				
		≤500 sq. mt.	14	45.2				
		>500 sq. mt.	0	54.8				

*Level of significance 0.5 level.

The above table 4.1 shows that 68.7%, 31.3%, and 0% of the design institute with carpet area ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. face the problem of less ventilation respectively. Lack of visual and audible privacy was faced by 59.7%, 38.9%, and 1.4% design colleges with carpet areas ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. respectively. Problem of irregular circulation was experienced by 65.3%, 30.4% and 4.3% of the design institutes of Indore district with carpet areas ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. respectively. 81.1%, 13.2%, and 5.7% of the design colleges face difficulty in transforming the multi-purpose spaces as and when change in the need with carpet areas ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. respectively. 17.9%, 79.5%, and 2.6% of the design institutes with carpet areas ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. face the problem of less flexibility in space planning respectively. 0%, 45.2%, and 54.8% of the design colleges with carpet areas ≤400sq. mt., ≤500 sq. mt., and >500 sq. mt. face no problem in the functioning of the multi-purpose areas created in their building structure.

These problems are based on the type of multi-purpose area created, purpose and frequency of using the multi-purpose area, footfall in the multi-purpose area, the type of partition used, and material of the partition constructed.

5. CONCLUSION

From the above study it can be concluded that in Indore district the design institutes are facing the problem of space crunch and so they opt for multi-purpose areas that can be used as per requirement. Multi-purpose areas prove to be very useful in providing a number of amenities in the available limited space, but these multi-purpose areas encounter certain problems during their functioning. The most common problems that these design institutes face are, lack of ventilation, lack of privacy, irregular circulation, difficulty in transforming spaces, and lack of flexibility in space planning. Proper space planning and designing, apt selection of material, and right selection of space separating structures can reduce these problems to a great extent. The designers thus should understand the purpose of making the multi-purpose areas in a particular design institute, and the users' needs, and then the designer should design the multi-purpose area and the ways it can be separated into multiple smaller areas thus tackling all the issues successfully.

6. SUGGESTION

The various problems that the design institutes of Indore district are facing while using multi-purpose spaces can be solved with apt designing tools and techniques. Lack of ventilation can be taken care by not blocking the natural and artificial sources of ventilation while installing the space separating structures. Lack of visual privacy can be handled by using opaque or translucent material for making of space dividing partitions and by using acoustical materials for dealing with audible privacy. Portable partitions are a good solution to rectify the issue of irregular circulation, difficulty in transforming spaces, and lack of flexibility in space planning. Thus, understanding the problem and then solving it as per the requirement can reduce the severity of the problems faced design institutes.

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