

# An Experimental Study of Seating Arrangement Dynamics in Educational Institutions of Delhi

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**Abstract:** Seating arrangements in educational institutions play an important part in determining the functional efficiency of the institute and also the psychological impact on its users. Many great thinkers, designers and experimenters across the world have deduced several vital conclusions about the ideal seating arrangements. An experiment with 63 participants in 3 educational institutions of Delhi was conducted in the beginning of winter 2015 to investigate the dynamics of typical typologies of seating configurations. From the finding of the experiments, the unique intricacies could be deduced which is specifically pertaining to the study area.

**Keywords:** seating arrangements, seating configurations, seating layout, furniture layout

**Introduction:** Seating arrangements in educational institutions are designed to enhance the functionality of an activity within a particular space and to increase or decrease verbal exchange and interaction amongst users of the space according to the required feature. Architectural design approach of seating configuration involve the parameters of

- Stage of Socialization
- Level of Hierarchy
- Degree of Proxemics and Anthropometrics

## Background

Level of socialisation may be modified by sociopetal and sociofugal preparations. 'Sociofugal' and 'sociopetal' describes areas which either push people away or bring them together within a space collectively to enhance social interaction respectively. (Mehrabian & Diamond, 1971) An arrangement being sociopetal or sociofugal in addition relies upon factors which contribute to the respective capability.

Measuring directness as a function of how many degrees one should flip to face every other, a 0-degree orientation is the most direct, 90 degree is an intermediate orientation and one hundred eighty degrees even much less direct (Mehrabian & Diamond, 1971) in which 0 degree bring face to face, ninety degree positioned at right angles and one hundred and eighty degree is side by side orientation. Apart from that, with the angles of orientations, distance is also a determining thing in communication in a seating configuration. Apart from directness, the concept of immediacy plays a crucial role in interaction in secluded seating arrangement. The notion of immediacy is applied to account for the perceptual access of individuals to each other. Closer distances and larger direct orientations have been classified as more instant positions which tends to embellish communication. (Mehrabian & Diamond, 1971). Level of proximity can be thought as availability of a larger number of humans who are physically and visually closer to each other to communicate. Degree of socialization, therefore takes place through the concepts above called immediacy and directness.

In the open public space, physical characteristics play a vital role in fostering social interaction and it is noticed that providing appropriate landscape elements could influence the socializing activity. (Spooner, 2014). Sitting availability in public open space is of remarkable contribution by which it makes it as a successful social place. Moreover, there is a terrific importance of providing sitting facilities in the public open space or areas including parks, open public squares, beaches etc. in the context of social life and energy in the region. Considering this level of significance, there have been many studies that achieved a clear

picture regarding the features and benefits, which one of various kinds of seating preparations and furnishings may offer, adding higher qualitative attributes to the space.

By nature, people are social animals, and they need contact with others. It is by far very essential to have a connection amongst people and social involvements for their growth. In this regard, public open spaces have two most dominant features in that people feel they belong to a big social network in public open spaces and the places served as congregating grounds whereby people have the opportunity to communicate with each other. While the public open spaces are judged, they may be stated to gain success if the locations are conducive for the social interactions and have the potential to attract the site visitors in big numbers if they wish to conduct their individual hobby there and are available to all category and age of individuals such as the otherwise abled people. Thus, it is very important and vital to make open public spaces which can be used to carry out extraordinary activities required to be accomplished by unique agencies of people.

There are clear and obvious seat choice depending on the sort of configuration, style of motion every group is carrying out, i.e., communicating casual teams have a choice on nook to nook preparations and collaborative parties want to sit alongside face by face.

Various seat preparations serving to a various stage of socialization calls for numerous prospects. There are positive types of sitting arrangement for the customers who would like to be seated alone without an eye to eye contact which includes straight seating like benches, steps, ledges which provides a natural area between two people and do not prefer unwanted eye contact between them. There's another type of seating - a circular bench around a tree/planters/flora facing outwards allowing a unique set of people to sit down in close proximity to each other, however at the same time maintaining their characteristic stage of privacy by having the freedom to look out in different directions. It has been observed that the primary benches in specific cities are precise to maintain a sense of privacy between the customers and not too effective to encourage verbal communication between customers. In most of the benches which could be offered in towns only two people could turn around and talk to each other, but this kind of seating does not do any justice to the human beings in organizations. Soon enough, a set of alternatives came up to deal with this problem. It is clear in an experiment by Gehl, that the two benches organized with far between them with a moderate open attitude furnished the customers freedom to select whether or not they need to be alone or together. (Gehl, 2010) It has also been proven in a study concluded by Hadavi et al that benches that are planned and designed to facilitate interaction and socialization are likely to be selected and preferred more than any other (Hadavi, Kaplan, & Hunter, 2015). In an area that consists of each convex and concave form of seating, it is observed that there is a high percent of social interaction evident in concave kind seating than in convex kind seating as concave seating encourages interplay and allows eye to eye contact to a tremendous volume between people sitting collectively which the convex seating fails to provide

Prospect- refuge theory which refers back to the requirements of each sociopetal and sociofugal preparations, because in a public area the needs of the customers can be numerous.

It can be called prospect when possible to see through unhindered whereas an opportunity to hide would be called a shelter. According to Gehl in his review of the research stated it is important to create seating with different opportunities for being alone on the one end of scale and for social groups on the other end (Gehl, 2010).

### **The experiment design:**

The experiment was conducted daily over a period of 2<sup>nd</sup> to 6<sup>th</sup> November, 2015 within the educational institution campuses of Dr. B. R. Ambedkar University (AUD), Indira Gandhi Institute of Technology (IGIT) and Indira Gandhi Delhi Technical University of Women (IGDTUW) all three of which are located in the historically and architecture heritage wise rich area of Kashmere Gate in Delhi, India. All the three are under the Government of National Capital Territory of Delhi with AUD being a co-educational university providing undergraduate and post graduate programmes in various humanities discipline whereas IGIT and IGDTUW are women's universities mainly giving bachelor's degree in engineering. A total of conveniently sampled 63 willing participants, including 60 students and 3 faculty members, participated in the experiment and were required to fill in a questionnaire in the following week through 6 randomly selected volunteers from each

institution. Within the duration of the experiment, the volunteers were instructed to use designated seating arrangements of their choice during the one hour lunch recess time which included 5 types of spaces of both formal and informal nature within the buildings as well as the institution outdoors. These 5 types of spaces were: classrooms, seminar/conference rooms, faculty rooms, institution lawns and cafeteria. 6 volunteers (on daily rotation basis) from each institute were systematically noting down the user activity through observations and by filling in a simple table where the data could be conveniently inserted through yes, no and tick mark options. On the last day of the experiment, all the 63 participants were given a questionnaire to complete a survey where they had to fill in qualitative data pertaining to their experiences, opinions and feelings during the various stages of the experiment. The completed questionnaires were collected on the last day of the experiment. At the beginning of the experiment all the participants were informed about the purpose of the research and also about its non-commercial non-profit nature. The participants were also guaranteed anonymity.

After the collection of all the 75 observation data tables each with 10 items and 63 questionnaires with 3 demography based and 7 qualitative items each, the data was assimilated and this was further synthesized and analysed.

## Results and discussions

### 1. Classrooms

In classrooms where single pod seating arrangement is prevalent, college students are seated linearly having proximity among them which discourages interaction amongst the students and offer a point of recognition in the direction of the speaker. 95.2% of the responses agreed that this kind of association promotes unidirectional conversation between speaker and student.

### 2. A. Seminar rooms

Here pair pod seating arrangement is found which is successful as a type of sociofugal arrangement in which all the seats are arranged in a linear manner. 100% participants agreed that the participants in close proximity to each other felt the intermediate level of lateral conversation and have a focal point towards the speaker. 96% respondents felt that this kind of arrangement also promotes the unidirectional communication i.e. the interaction between speaker and audience only. Where level of authority was concerned, the participants did not feel particularly in control, neither did the presenter felt completely in authority. But the audience felt less in control in comparison to the previous situation.

### B. Conference room

Horseshoe shape seating configuration uniquely impacts the users' awareness and behaviour.

Straight lines and sharp angles of shapes provide a sense of reliability and security. People highly associate squares and rectangles with strength. The participants a major (93.65%) response of curved shape and curved areas to create an informal mental response and a sense of relaxation and calmness for them. In both cases, the sight lines, distances and closeness of the participants give them a sense of control with the most amount of control and authority felt by the

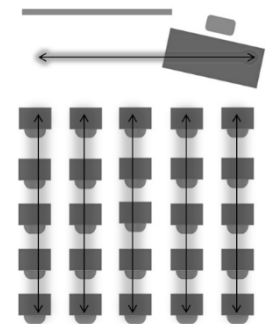


Figure 1 Single pod seating arrangement in classroom. Source: Author

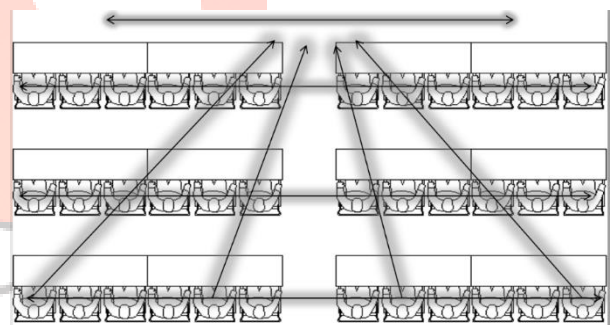


Figure 2 Pair pod linear type seating arrangement in seminar room. Source Author



Figure 3 Horseshoe type (curved) seating arrangement in conference room. Source Author

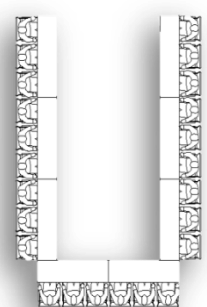


Figure 4 Horseshoe type (angular) seating arrangement in conference room. Source Author

person seated at the centre of the curve or one in the shorter middle flange (in case of the angular arrangement). The hierarchy of power felt recedes as the position of the seats move further.

### 3. Faculty rooms

In the faculty rooms where the space was smaller and had only 3 chairs and one rectangular table, the participants seated side by side unanimously felt a consciousness of being observed and assessed and powerless and did not feel any scope or desire to interact with the person they are sitting next to. Whereas the person sitting on the solitary side felt authoritative, yet felt a moderate amount of consciousness about their behaviour.

### 4. Cafeteria

The circular kind of arrangement made people feel free and cooperated. All the participants agreed that this arrangement led to spontaneity and free discussions and a level of equality.

### 5. Institution lawns

Here it could be observed that people did not specifically sit in a geometric form. But in most (84.1%) instances, people tended to look for an opportunity to face each other and the formation organically became circular wherever the number of participants kept on being added. Interestingly, it could also be observed in about 7.93% case that people would be interacting closely and yet did not care about facing each other. In these cases, it was observed that such participant groups preferred to sit farther away from the formal buildings and eventually leaned on each other or even lied down in the grass. Wherever there was no defined furniture arrangement, the seating was organic, yet a strong sense of interactive arrangement was seen owing to the close proximity of the participants. The space with provision of appropriate and satisfactory seating having low noise levels and viewable access to pleasing vistas is preferred. The presence of daylight is of utmost attraction especially in the case of public open spaces. But, its presence is taken into consideration to be essential in winters where human beings tend to prefer sunny place to sit down.

### Further discussions

- Spatial function in a seating group determines the extent of hierarchy. During designing, the level of hierarchy may be achieved within a seating arrangement by means of the availability of more area allotted in particular to positive users.
- Spatial association is considered in designing seating arrangement that permits hierarchical authority and dominance through association. In a conference room, interaction besides hierarchy dominance is conventional. Because of this demand, a rectangular association is popular compared to circular seating arrangement; seat at the shorter aspect of the rectangular association lets in for greater area and similarly dominance.
- Distinctive capabilities need a unique level of hierarchy; a circular seating association or a rectangular arrangement with the same area distribution on all four aspects and is more egalitarian with the same possibility of interplay with all different participants.
- Morphology also dictates dominance in an arrangement. The least concentrated corner of the triangle exerts maximum hierarchical dominance.
- Appropriate distances ensure the comfort of the customers physically and create the users consent to the support of the users physically and make the users audible to another while greater distances will cause multiplied volumes throughout communication.
- 5.5 feet or much less, measured nose to nose are preferred in two-person interplay.
- In a 3-seater configuration, we can see that the degree of proximity between adjacent participants is more intimate than the other solitary participant.

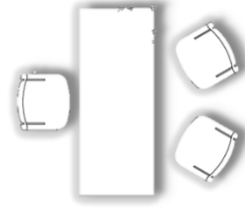


Figure 5 Typical arrangement in faculty room represents formal attitude and defines the authority of the faculty seat. Source Author

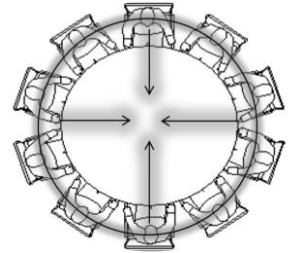


Figure 6 Circular configuration of seating. Source Author

- A horseshoe or U-shaped association, can be considered to be an open ended sociopetal association, allows interaction at intermediate levels and also provides a focal zone. The level of visual and verbal interaction is most common among oppositely seated customers that enhances the directness of visual communicate.
- Closeness, has two physical dimensions: distance and orientation. Face-to-face seating signifies more intimacy compared to seating face-to-face.
- People prefer highly integrated and extensive areas.
- Participants choose seating that allows them to be able to extend their full potential to get the fullest out of it at one time while holding back in not intending to be too available.

## Conclusion:

From the experiment, it could be proven that the level of satisfaction of a seating arrangement, depends on more aspects than the conventionally defined psychological theories.

Those factors are case specific and will differ depending upon the location, function and activity, although the above mentioned the above mentioned theories are very common and have a direct influence on the mental reaction of the person in a seating configuration. The points that mainly govern the success and satisfaction of a seating configuration depend mainly on

- Location
- Orientation
- Number
- Purpose
- Safety
- Aesthetics
- Views
- Degree of comfort
- Materials

With the different examples of seating preparations studied in this research it can be seen that there are basically 3 kinds, which can be termed as: inward looking, outward looking and linear.

For exclusive features, combination of these are used in different styles with one-of-a-kind fixtures. Even when no defined seating arrangement is provided, people tend to orient themselves in a similar fashion. Comfortable environmental situations play a vital position in figuring out whether or not the space is favoured by a person. In an open area, comfort may be distressed or enhanced due to factors like safety, weather, comfort, body situations, familiarity of the place, noise levels and sight lines.

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