

A Study of Ideal Learning Environments in Schools

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Abstract— Education is the most powerful weapon which you can use to change the world.’

-Nelson Mandela

Education plays vital role on an individual’s personal development and the future of society. The selection of educational institution has become one of the prime decisions that parents make for their children as the kind of basic education provided to a child shapes him and decides his future and growth.. But the present seen trend of picking the schools which charge killer- fees in return for ‘International’ standards of education which in truth does not inch one step ahead of providing good faculty and smart classrooms. The significance and development in the field of education calls for the need for a functionally and aesthetically distinct and appropriate spaces to serve the purpose of providing education that boosts the influence and scope of architecture to facilitate for the overall character development and creative interests in students.

Keywords: Learning Environments, Schools

I. INTRODUCTION

The significance of education is to enable an individual to develop intellectually and prosper in the future. But it is unfortunate that success is often measured in terms of monetarist benefits and esteem. ‘It becomes the obligation of the educationists to support the real facts of life by linking classroom lectures with real-life experiences. The present education system should include personality development lessons, moral and ethical teaching.’ (WEINSTEIN,, WOOLFOLK,1981)How the spaces affect and motivate or degenerate the development in child is of concern while designing spaces. The qualities of learning spaces and its role in encouraging different types of interactions are important parameters of academic life. Also the need for a new syllabus and ideology of teaching and learning that imbibes in the students, the need to be more ecologically responsible and sensitive beings at a young age itself is seen to be the need of the hour(LACKNEY, MOORE,1994)

A. Need for the Study

The selection of educational institution has become one of the prime decisions that parents make for their children, as the kind of basic education provided to a child shapes him and decides his future and growth. How the spaces affect and motivate or degenerate the development in child is of concern while designing spaces as it can have a huge impact on the children of younger ages (CUMMINGS, HINTON, 1975).This study has scope to be further applied in the formulation of a different syllabus and curriculum and in the better design of schools.

B. Aim

To identify and study the factors that influence the design of learning environments and spaces in schools that contribute towards the overall development of students in the age group of 5 to 12 years.

C. Objectives

- To study various schools that practice alternative educational systems all over the world.
- To understand the role of architecture in shaping the learning environment of the classrooms and how it moulds the psychology of the student.
- To identify the factors that contribute to the design of good learning environments.
- To draw a comparison between learning spaces in the different types of schools.
- To develop ideologies that help in the design of spaces for children in the given age group.

D. Methodology

After understanding the theories and previous studies on factors influencing learning spaces, education philosophies and school of thoughts and their influence on behavior through literature studies and live case studies were conducted in 6 schools. In each campus, the plan is analyzed to understand the overall spatial configuration. Then a field survey is carried out comprising of a questionnaire survey and interviews. Later the information obtained from plan analysis, questionnaire and interviews are verified through observations. The characteristics of each space is analysed in detail to identify the factors.

II. LIVE CASE STUDIES

A. Bhavishya School, Trivandrum

Bhavishya is a Steiner inspired school located in Thirumala, Trivandrum. The school aims to instill a love for learning in the students through hands-on, experiential learning and by imbibing knowledge from the surroundings.



Fig. 1: Bhavishya School
Source : Author



Fig. 2: Central Courtyard
Source :
www.facebook.com/bhavishya-the-waldorf-steiner-school

The campus is located in a quiet and peaceful area which provides a serene and enhanced study environment that is away from the hustle and bustle of the city. Bounded by vacant plots and a stretch of Karamana River on three sides and residences on the fourth, the site finds it a suitable location for a school. There is no striking architectural feature in the entrance area.

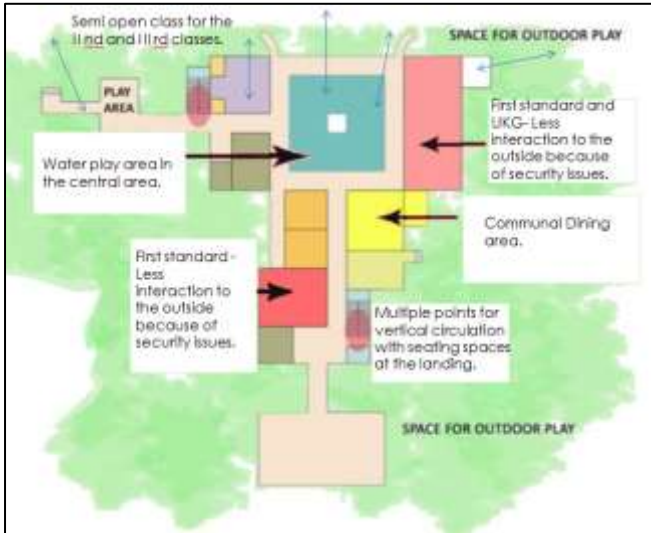


Fig. 3: Ground Floor Plan and Analysis

Source: Author

Water play is an integral part of Steiner schools and hence the central placement and importance given to the water body. The absence of windows makes the room airy and full of light. The seat at the sill level is often used by the students, even during class hours.

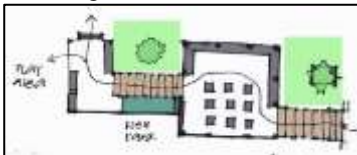


Fig. 4: Second standard classrooms

Source: Author



Fig. 5: Schematic Section

Source: Author

The continuous visual connection reinforces the pedagogical intent of teaching students to live interacting with nature, creating a relationship between the built mass and the spill out spaces. The absence of windows makes the room airy and full of light. The seat at the sill level is often used by the students, even during class hours. The classroom is set between two open spaces and well connected to the outside also. The children in this class are seen to be more active in nature. The attractions-the fish tanks have been placed in close proximity to the classrooms and along the circulation paths.

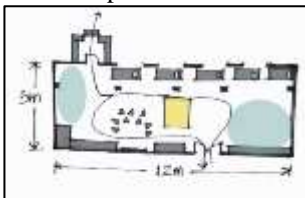


Fig. 6: First standard classrooms

Source : Author



Fig. 7: View of the classrooms

Source : Author

The presence of columns in the centre of the classrooms hinder the circulation. The room is very large for the 10 students and due to the arrangement of the furniture in the room the corners are unused. The classroom is not painted with bright or warm colours. Instead, sober colour has been used. The students are provided with toys for playing. A small area of the room has been set aside for bunk beds which are used in the afternoons. Variations in the learning environment

heighten the senses and creativity of the children. Most of the classes are taken outdoors and children are always seated on the ground even for indoor classes.

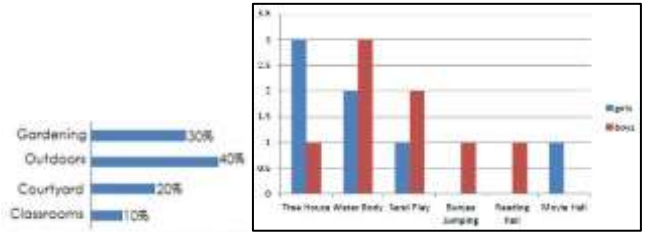


Fig. 8: Graph showing the spaces used by the students during the break

Source: Author

The Part to Whole relationship of the Steiner principle specifies that there are three fundamental forces to be engaged in every child namely the mental, emotional and physical activities, otherwise known as head, heart and the hand (RADFORD, MORKOC, SRIVASTAVA, 2014). According to Rudolf Steiner, the classroom needs to have an open plan that allows various activities to be done in the spaces provided (BJORNHOLT, 2014). The classroom has French windows which let in a large amount of light and ventilation and help students remain active throughout the day. Also, there is no separate space allotted for interaction or discussions.

B. Nisha's School, Goa

Nisha's playschool designed by Architect Gerard de Cunha is built on a 800 sq. ft. plot, constructed on a slope, squaring cut and fill. Disquiets of carrying in natural light and the westerly breeze were the deciding factors in the evolution of its form.



Fig. 9: View of the school

Source: Author

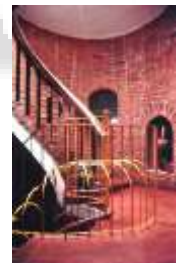


Fig. 10: Central Chute

Source: Author

Within this form, layers of spatial experience have been added with a central chute alongside the stair. A special Doll room has the miniature requirements of a real home with beds, etc. The socially productive activity room has all the requisites for activities including cooking and cleaning. The scaled down space obtained because of the sloping roof has been utilised to accommodate a private dollhouse which is a place for recluse and play for the children, which is one of the essential necessities that Steiner schools also place emphasis on.

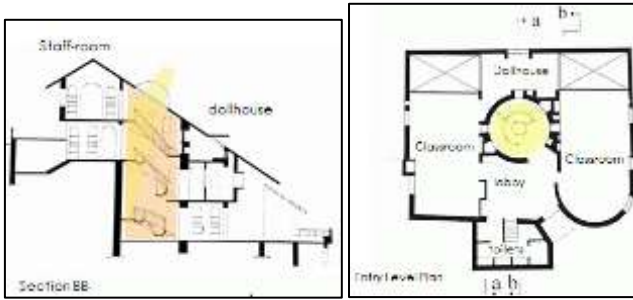


Fig. 11: Entry level Plan and Section

Source: Gerard de Cunha (Modified by the Author)

The building has been designed with minimum interaction from the classes to the outside on the entry level but with small terraces with seating spaces from three of the classrooms which children were seen using during their free time. Prudent use of glass has been made to allow in abundant daylight, thus reducing the need for artificial lighting. The use of green building glass ensures the reduction of heat penetrating into the building, while allowing sufficient light transmission. Open windows facing the skylight are provided. The school has customized some of its classrooms with tiny entrances just suitable for kids, while adults need to stoop to enter. There are places in the classrooms where children can play without supervision. Niches and inbuilt seats built according to the anthropometry of the children.



Fig. 12: Niches
Source: Author

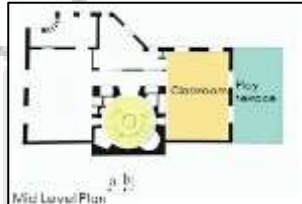


Fig. 13: Plan of First floor
Source: Gerard de Cunha (Modified by the Author)

Large openings makes the room airy and full of light when compared to some rooms that are dark because of the exposed brick finish. Use of coloured grills and openings and personalisation help in creating bright, vibrant spaces for the children.

C. Pallikoodam, Kottayam

The school that was designed by Laurie Baker is cut into a gentle slope. Run by Mary Roy as an International school it follows alternative educational teaching methods. The school follows a 'MULTI-LAYERED' type of approach. This minimises competition as each student is at a level of his own.



Fig. 14: Plan- Relation between the built and unbuilt
Source: Laurie Baker – Life, Works and Writings, Bhatia (Modified by the Author)

The spaces created between the blocks have been treated to ensure that the kids use them as places for interaction and play. The use of wise use of both scale and materials to suit their requirements can be observed. The site along a gentle hill is graded into a series of related plateaus. The upper contours, serviceable from the road, contain the formal functions whereas on lower ground the rooms twist organically, turn and triangulate into varying positions and sizes. The success of the project is doubtlessly the outcome of an architecture that in itself encourages innovative teaching.



Fig. 15: Arches connecting the outdoor space
Source: Author



Fig. 16: Inbuilt seating
Source: Author

According to Baker when rooms do not have the formal labels of classrooms, assembly halls or offices, the students feel less intimidated and is left to roam and explore, to meet others like himself, and discover on his own places suitable for learning and for play. The primary block is an agglomerate of rooms that organically twist and triangulate into various positions and sizes offering choices of formal classrooms as well as intimate study dens, larger halls and smaller nooks. The playfulness of the walls, however, reveal a delicately worked flexibility. Rooms function as independent classrooms, but when necessary, their radiating walls also shift the focus to the common gallery outside, and together the teaching complex becomes a single multipurpose hall for the junior block.

The lack of walls are seen to create opportunities for different spatial requirements in the Primary Block. Formal classroom spaces, informal meeting spaces and space for intimate communal work gatherings have been incorporated. Use of level differences is seen to be used to demarcate the classrooms. One major drawback is the travelling of noise because of the lack of walls.

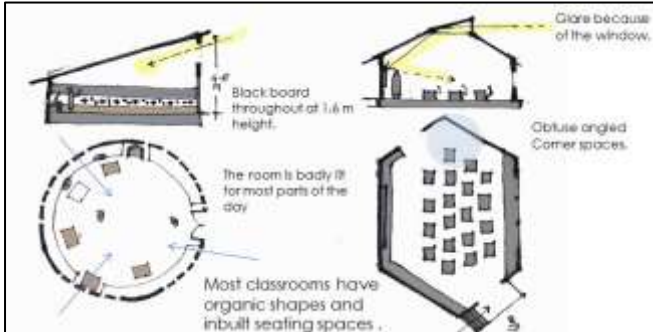


Fig. 17: Organic and Geometric forms of classrooms
Source: Author

Most classrooms have organic shapes and inbuilt seating spaces with steps leading to the common area which is used extensively by the students. Flexibility in arrangement of the seats even though most of the seats are fixed. The rooms would be well lit throughout the day because of the windows but the exposed brick gives a dim appearance to the interiors of the classrooms.

D. Loyola School, Trivandrum

Envisaged by the Jesuits and recognized in 1961, Loyola School Trivandrum is one of the finest of its type in India. Concealed on an wide campus on the outskirts of the capital city it has a total strength of 1750 students of UKG to Plus Two classes in the CBSE, ISC, ICSE and HSE streams.

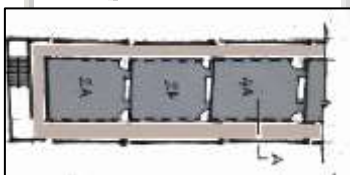


Fig. 18: Classroom with parallel corridors
Source: Author

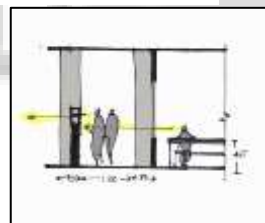
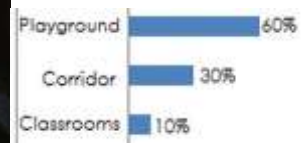


Fig. 19: Graph showing the spaces used by the students during the break
Source: Author

The classrooms open out into two parallel running corridors in all the blocks. The class rooms are monotonous in nature as there is no difference between different grades and children spend 12 years of their life in similar classrooms. 95% of the students rushed out of their classes during even the short breaks to play in the playground which is the only place for interaction in the campus. The smaller children get bullied because they don't have a separate place to play in. Also the distance between the ground and the classrooms result in teachers complaining that most of the children arrive late to class after the breaks.



The majority of the student's preferred to sit in the sides of the room, close to the windows and away from the teachers. The presence of the 80cm deep columns on the corridor is a hindrance as well as, a waste of space. The high parapet wall of the corridor ensures that the average 8 year old is not able to view what happens outside. The students of smaller classes never use the corridors for lingering or any sort of activity, more ever so because it is a 'boys-only' school.

E. G.H.S.S. Chavadamukku, Trivandrum

The Government school situated at the Chavadamukku junction is an old school which has been recently renovated with a new block being added to house the primary students. Left exposed because of the lack of sufficient funds the classrooms look dingy and cold because of the lack of personalisation.



Fig. 20: Classroom
Source: Author

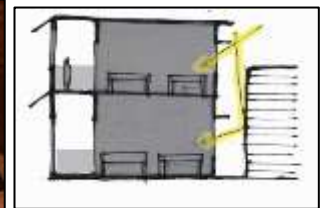


Fig. 21: Retaining wall blocks light to the ground floor
Source: Author

The presence of a retaining wall less than a metre way results in dark classrooms in the ground floor. The walls give a blank cold appearance due to the lack of colour or any other artworks on the wall. The children also don't use the corridors much because of the presence of a staff-room along it. Girls were found loitering in the corridor quietly during break hours, whereas boys were seen running to the open space in front of the school. There are no proper grounds or play areas anywhere in the compound and the children suffice with the open area near the entry to the school. The students did not have any preference in seating in the classrooms in the ground floor due to the retaining wall blocking the windows.

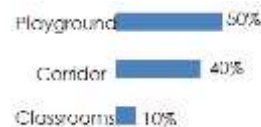


Fig. 22: Graph showing the spaces used by the students during the break
Source: Author

F. Le' Cole Champaka School, Trivandrum



Fig. 23: The OAT
Source: Author

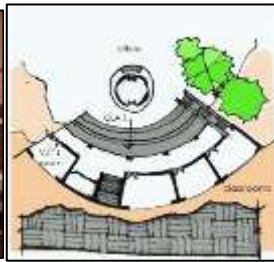


Fig. 24: Plan of Primary Block
Source: Author

The school is situated in a rocky hill with buildings cut into the slope at different levels. Classrooms are arranged in the converging block with the rooms facing a common open air theatre that steps down according to the natural contours. This arrangement ensures that the kids use the spill out space during their breaks. But at the same time, the presence of the office facing the O.A.T makes it very unpopular. The floor has been treated so that there is sufficient traction, reducing accidents. Even though there is a rocky surface behind the block no access has been provided because of safety issues.



Fig. 25: Graph showing the spaces used by the students during the break
Source: Author

The second standard classrooms are in a separate block. The classrooms have jalli openings on one side and no windows on the other. Letting in plenty of air and light. The rocky wall present in the classroom is used as a play wall and in most of the classrooms that had these walls, the kids preferred to play in the classrooms even during the break hours.



Fig. 26: Classroom with play-wall
Source: Author

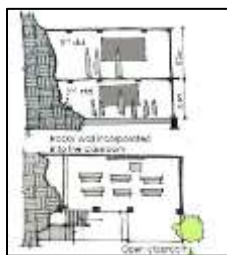


Fig. 27: Plan and Section
Source: Author

The classrooms have been made according to the scale of the students using it. The windows have been covered with jalli which prevents them from obtaining views to the outside.

III. ANALYSIS AND INFERENCE

The physical environment has a great influence on the child's desire to learn and thus respond to their environment. In classrooms for the children of 'middle childhood' the design of play areas is as important as the areas of the learning spaces

and the idea of a good designer is to thin done the line separating the two.

A. Rooms and Regions

An ideal classroom can be divided into two regions -The wet region- It can contain the messy zone with informal chairs, easels and other simple play items. Activity areas could be islands with the circulation path around it. The dry region- The active zone could have motor activities and the quiet zone may preferably occur in a secluded corner with complex play activities.

Societal and flexible seating arrangements are seen to function better. Inclusion of flexible spaces help make it interesting and also break the monotony. The ideal room is an bare shell with mobile furniture.

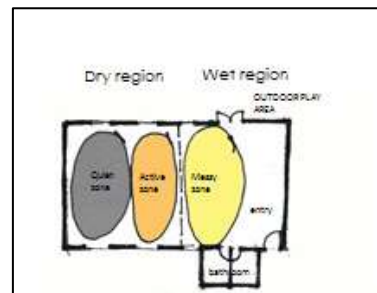


Fig. 28: Regions of a room
Source: Author

B. Environmental Preference

The desks should be arranged such that eye contact is maintained with the teacher and with each other. Outdoor spaces are seen to be better interactive spaces that indoor ones. The provision of windows with clear view to the outside help children rest their minds after their concentration in the class may have waned and return sharper to the class. CONE OF VISION- The paths should be well-defined and towards a destination that is in the child's view point. Avoid dead spaces and paths leading towards them. Play areas should be a part of classrooms with importance for indoor and outdoor play. The provision of nature and animal symbols and use the openness as a real asset. Necessary amount of natural light and ventilation should be provided as they are preferred over artificial light by the kids. The creative use of light and curves, as opposed to straight lines to spark interest in the students.

C. Space Distribution-

Children love to explore and learn but also rely on a assured level of certainty and familiarity. The zoning of activities leads to creation of specific circulation networks. Local correspondence between permeability (where you can go) with visibility (what you can see) may be manipulated. Entries and exits should be clearly defined and the path ways direct. Rooms and seating should be arranged in clusters rather than along a corridor. Traffic flow should be intuitive. Combining the play areas of children with more that 2-3 years age gap was seen to provoke bullying in mild to severe forms. The proximity of the open /closed play areas to the classrooms is important. The space could also be an interactive one used by children in the similar age -group, facilitating better interaction and peer skills.

The curriculum and the teacher: student ratio are seen to be the underlying factors that influence the design of such spaces. The physical environment has a great influence on the child's desire to learn and thus acts as a stimuli.

Designs for learning environments should be arrived at after meticulously working out the needs and specifications of the children keeping their scale in mind.

There is no single learning setting. The best physical settings are the ones in sync with the curriculum of that school. The designs molds the children's perspective about themselves and how they interact with their peers. The most neglected and misunderstood dimension of the planned curriculum is the creation of the environment in which learning is supposed to take place. Learning is maximised when the physical setting is considered as carefully as the other aspects.

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