

Built Environment that enhances Children's All Round Development-VIDYALAYA¹

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ABSTRACT

India is one among the ten fastest growing economies in the world but suffers in terms of literacy contributing to 34% of the world's illiterate population. In India English is the primary language for government, business and education along with Hindi. The Indian system of education is primarily divided into two categories, the government and the private sector. 29% of the students in India are from the private sector. The rest are from the government schools, which are predominantly for the rural population. But the condition of government schools in India is pathetic in terms of Infrastructure. Other than two or three states all the other Indian states have very poor educational statistics. More children are enrolled in the government schools than ever before but the quality of education in these schools has considerably sunk to very low levels. This paper explains the current Indian Education System and why it has to be improved. This

paper discusses the history of Indian education system and the changes it has undergone and the consequences that led for shaping the current education sector in India. And this paper also discusses the results and outputs of both the private and public education system in India, which leads to the thesis for designing a Built Environment that intensifies a Child's all round development. The primary goal is to design a built-environment that enhances Children's all round development.

INTRODUCTION

India my motherland is a land of diverse religions, rich cultural heritage and considered as one of the world's oldest civilizations. One of the earliest civilizations in India dates back to 4,500 years ago known as Indus Valley Civilization.² But according to Western societies, societies outside of Europe or North America that did not follow the European or Western way of

life were considered primitive and culturally inferior. The western attitude of superiority against non-western societies includes African Countries, India and the Far East. The British introduced the current education system in India to create clerks and civil servants and, while a few changes have occurred the education system follows the same pattern pointlessly. Only a few things have changed from the colonial times. India now has IIT's (Indian Institute of Technology), IIM's (Indian Institute of Management), law schools and other institutions of excellence. It is a routine for students to score 90% marks in exams but it is difficult for them to get into colleges of their choice. In spite of all these fundamental flaws we are still following the same old pattern of education system.³

There are various reasons for the failure of the system of education in India. Few of those are shortage of learned professionals who take up teaching as their career. Lack of motivation, as these children do not get support from their parents, as they cannot afford to go the private schools. It is hard to believe that in many of the government schools basic amenities are not provided such as water, electricity supply, infrastructure facilities or even benches to sit. In major number of the government schools children still sit on the floors and

lack a basic hygienic environment. Surveys conducted in recent times prove that the system of education, which is imparted in government schools, is of very low standards. The curriculum also does not equip the children with various skills that they require to make them employable. There is also long standing neglect of insufficient government funds to provide necessary facilities and right use of the funds allotted for development of education.

METHODOLOGY

The primary motivation for this paper is my personal experience –what I have undergone –learnt, witnessed and developed during 19years of my schooling life from the age of 3 years till 22 years in my homeland of India.

Research includes case studies, analysis of various educational facilities in different parts of the world and their system of curriculum. Analysis of the built environment and development of the ideas regarding the best practices for learning environments that will benefit my design process based on what would be beneficial for my design also considering the location and site conditions.

This paper includes views from various articles and books based on Indian Education and books and also few film documentaries that explain the education system of India and what changes have been made since ages and how it arrived to follow the current education system based on what standards.

I have visited few schools in India during summer out of which 10 are government schools and 8 are private schools and personally analyzed the kind of mental impact a child has depending upon the surrounding environment in which they learn and grow. My idea is to develop a built environment that would enhance a child's inner development

BODY

Unknown fact to many one of the earliest centers of learning of the ancient world is located in India known as Nalanda currently situated in the state of Bihar.

History of Nalanda goes back to the days of Mahavira and Buddha in the 6th Century B.C. But the place rose into prominence in 5th Century A.D. as a great monastic-cum-educational institution for oriental art and learning in attracting students form distant countries.



Figure 1 : Remains of Nalanda University

Nalanda, regarded as one of the greatest universities by historians, was founded by Kumaragupta I of the great Gupta dynasty. King Harshavardhana of Kannauj (606-647A.D.) and the Pala kings of east India (8th-12th Century A.D.) continued to extend patronage to this centre. Various subjects like theology, grammar, logic, astronomy, metaphysics and philosophy were taught here. The decline of this great institution started in later Pala period but the final blow came in around 1200 A.D. by the invasion of Bakhtiyar Khalji who destroyed it by fire burying its glory.

Here I would like to discuss about the history of the current Indian Education System and the changes it has undergone and the consequences that led to shaping the current education sector in India and also the results and outputs of both public

and private education in India which is the primary motivation for my thesis.

Gurukul System

Gurukul system is the earliest known education system of ancient India, which is purely residential in nature. In this type of education system the students used to live with the teachers mostly in the same house. This is the primary type of education in most of the South Asia before the British rule. All the students live together irrespective of their social standing at the guru's residence and help him in his daily life. The teacher does not receive fees from the student prior or during the course of their education . But at the end of the studies, student should be offering dakshina before leaving the master. The guru dakshina is a traditional gesture of acknowledgment, respect and thanks to the guru, which may be monetary, but may also be a special task the teacher wants the student to accomplish.

Pre Independence

The British ruled India for about a period of 125 years (1820-1945), which led to English being the primary language for government, business and education along with Hindi. The British introduced the current education system in India to create clerks and civil

servants and, while a few changes have occurred the education system follows the same pattern till now without understanding the kind of impact it has on students.

In 1835, British Historian Thomas Babington laid the foundation for English Education in INDIA believing the best education that Indians could receive should be taught in English. He believed that this type of education would serve the cultural intermediaries between the colonial masters and the Indians. They trained English-speaking Indians as teachers as it was the prime concern that everything should be taught in English. In one perspective this can be understood as one of the key elements, which made English a very important language among all the other different languages spoken in India prior to British rule.

Today India stands as the second highest in number of English speakers after the United States. For a fact the largest circulated English daily newspaper in the world is "Times of India".

Post Independence

After the Indian Independence in 1947 the individual state governments were held responsible for education in each state until 1976. Later the education sector is a responsibility of both state and central government's in India.

Only a few things have changed from the colonial times. India now has IIT's (Indian Institute of Technology), IIM's (Indian Institute of Management), law schools and other institutions of excellence. It is a routine for students to score 90% marks in exams but it is difficult for them to get into colleges of their choice. In spite of all these fundamental flaws we are still following the same old pattern of education system.

Indian school system of education is primarily divided into two categories, the government (public) and the private sector. 71% of the students from rural India are from government schools, which are pathetic in terms of infrastructure.

The school system in India for the age group of students from (3-15 years) is basically divided into Pre-Primary, Primary, Middle and Secondary education.

Pre-primary is for children below 6 years and is for 3 years duration.

The primary school is from 1st to 5th grade, Middle school is from 6th to 8th grade and 9th and 10th grades are called secondary or high school education. 11th and 12th grades are called intermediate or senior secondary.

And the course of under graduation varies from 3 to 5 years for different majors.

The public and private schools in India follow different curriculum of Education.

They are

1.CBSE: Central Board of Secondary Education which is a board for public and private schools under the government of India.

2.CIE: Cambridge International Examination which is world's largest provider of International education programs and qualifications for 5-19 year olds. Over 9000 schools follow this system in more than 160 countries

3.IB : International Baccalaureate Education : There are 107 IB World Schools in India offering one or more of the three IB programs which are primary year program, middle year program and diploma program.

4.ICSE: Indian Certificate of Secondary Education is an exam conducted by Council of Indian School Certificate Examination, a private, non-governmental board of school education in India.

5. State Board: is a board both for public and private schools of the state under the state government of each state.

Exams conducted by this board are variously referred to as Secondary State

Certificate and Higher Secondary State Certificate examinations and the syllabus varies for each state.

The central government schools in India follow CBSE Board and the State Government Schools follow SSC Board. And the private schools are free to follow any of the 5 boards.

International Schools

Private schools in India as explained earlier could have any of the mentioned 5 boards for their curriculum. International boards such as IB and CIE need to have certain kind of infrastructure as basis to follow their curriculum. And these curriculums are extremely expensive for a student from middle class family to afford.

The cost of tuition for an individual student will be around little more than 10,000 U.s \$ per annum starting from 1st grade. Only the rich can afford this. There are about 410 international schools in India.

Private schools, which follow the non-governmental ICSE board, and governmental CBSE board are well constructed in terms of infrastructure and basic facilities and would charge around 600 to 750 us dollars and 1200 to 2000us

dollars respectively for an individual student per annum. Only students from upper middle class and above can afford to go to these schools.

Majority of the private schools in India follow the state board. Tuition for each student can vary depending upon the school from 180 to 300 US\$ per annum. Affordable for the middle class families and lower middle class.

But majority of these schools are apartments turned into schools. I would not say 100% but majority of them. Students are in classrooms all day without the ability to leave, as extra curricular activities do not exist. Students are required to conduct only their studies during the school day. Such kind of training leads to only develop book knowledge in the children, which is not sufficient for all round development of the child. Most of the students in such environment are prone to stress themselves. This congested classroom environment does not provide positive surroundings for the students to perform well.

Central Government Schools:

Kendriya Vidyalaya Sangathan or KV schools is a system of central government

schools in India that are under the Ministry of Human Resource Development . There are over 1,000 schools in India and three abroad.

The objective is to educate children of those who work for Indian Armed forces who are often posted to remote locations. With the army starting its own Army Public Schools, the service was extended to all central government employees. The uniform curriculum followed by these schools all over India was intended to ensure that the children of government employees do not face education disadvantages when their parents are transferred to different states by providing a common syllabus.

The admission fee in these schools is less than a dollar ☺ AND the tuition per annum for an individual student is less than 100 US dollars.

State Government Schools:

71% of the students in India are from the Government sector. The rest are from the private schools. The students in the government schools are predominantly from the rural areas. But the condition of government schools in India is pathetic considering the aspects of quality or infrastructure. Other than two or three states

all the other Indian states have very poor educational statistics. According to the statistics, more children are enrolled in the government schools than ever before but the quality of education in these schools has considerably sunk to very low levels.

The students in these schools come from mostly rural background whose families are economically backward and cannot afford to send their children to private schools. In spite of more number of children attending the schools than ever before they still remain ill equipped.

Fundamental Changes that need to be addressed in the Indian Education system:
(Systemic Faults)

(A) Skill based Education: Students need to be taught in such a way that the primary focus is on practical knowledge instead of theoretical knowledge which is mostly washed out of their brains after the exam is over. But if they are taught how to implement the theoretical knowledge in practical terms it cannot go out of their minds. An individual can only understand things if involved in it. One may or may not remember the things once heard or seen. But its very difficult to forget something if involved in it.

(B) Qualified Professionals for Teaching: Getting qualified professionals into teaching field should be the first step that has to be taken to enhance the quality of education in the country. One motivated professional can change the children's perspective towards education and make them inspired. High standards should be set for teaching jobs that can only take in motivated individuals who can inspire the upcoming generation in discovering their study of interest.

(C) Personalize education: Not every student aspires to become a doctor or engineer.¹²⁰ Engineering colleges have been shut down in the state of Telangana in the year 2014 by the new government because they do not qualify to have basic standard of education.⁴

(D) Reservation based on Caste should be made irrelevant: One major problem, that obstructs the path of passionate and skilled students, is the reservation system in India. Reservations based on caste were introduced in the constitution when certain castes in the nation were not

allowed into schools and when education was only a privilege for upper class in the society for many years. This reservation system was included in the constitution for the uplifting of the backward castes in ancient Indian Society. But after more than four generations took the advantage of caste based reservation system from the backward classes of the ancient society there is no point in still continuing the same system. And the current statistics no more show the economic differences in terms of caste. Example: An individual of poor economic background can be from an upper caste and an individual from high economic standard can be from a backward caste.

(E) Implementation of quality infrastructure and technology enhances the students ability in reaching their goals: Learning is a life time process and one can get inspired by the world around us in so many different ways. The only necessity is the individual has to be sensitive to the environment surrounding him or her. When it comes to the environment there can

be lot of impact on child's thoughts depending upon the environment that he or she grew up. And this thought process is carried out in every individual's life consciously or sub-consciously. Architecture plays a major role as one of the fundamental elements that needs to be addressed for quality of education and laying a strong foundation for the system.

CASE STUDIES

Architectural case studies that promote child's development through built environment:

CASE STUDY 1: Montessori children's center san Francisco⁵

The building with two classrooms is designed to reflect Montessori method of learning, which basically focuses on self-motivated learning through all five senses. Sliding glass doors in the south facade open to a landscaped play area, where aromatic plants and varying surfaces encourage sensory exploration. Window headers echo the slope of the roof. Corrugated metal panels and large glazed openings contrast with stucco surfaces and punched

openings. *The spatial programming and design ideas respond to the curriculum by emphasizing the connection to nature and the distinction between indoors and outdoors, says Mark Horton, AIA, the architect of the school.*



Figure1©: View of school

To express a connection to the environment the building faces south and the roof was sloped to allow the school to collect rainwater in a cistern for their garden. The link between the classrooms and the outdoors informs much of the student experience, and the expressive patterning and coloring reinforce experiential Montessori learning. With vanilla tones, the interiors are subdued. Contrasting flooring colors reflect a ceiling soffit line demarcating classroom space and circulation area. Overall the design helps to understand how design can make a difference for a child's internal development.

Case study 2: Charles R. Drew Charter School



Figure 2©: Exterior view of the school

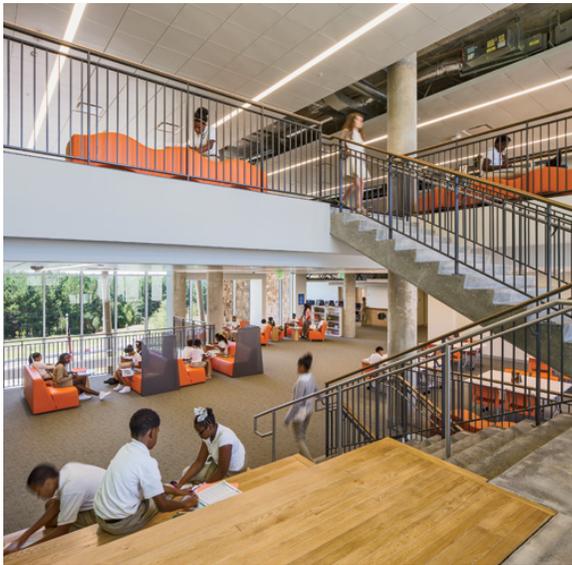


Figure 3©: Interior view of the school

shaped and has curtain wall, which allows in maximum day light into the interior spaces. Children from 6th grade till +2 grades occupy the building. Pencil shaped steel columns uplift the roof on concave side of the crescent shaped plan rising the height of the roof on east side. The structure is mainly concrete frame, which justifies its large span. The building is LEED certified as gold rated for its high efficiency glass, occupancy and non-occupancy sensors that regulate the lighting in the area and use of reclaimed white oak and local stone for the entrance façade. The building also has 180 photovoltaic panels on its roof, which help in supplying electricity and harvesting units for rainwater, which helps in irrigation. Overall this case study includes various age groups in one building and the spaces are divided in such a way that it creates an unobstructed path yet creates a sense of privacy for each individual space that shows the sophistication in design.

Analysis: The Charter School is a three-stored building located near the village of East Lake on the rise of a hill in the city of Atlanta. The plan is crescent

Case study 3: Fayetteville Montessori Elementary School



Figure 4©: Front view of School



Figure 5©: Interior View Of Class room

Analysis: The Fayetteville Montessori Elementary School is conceptualized on the basis of Maria Montessori's educational approach that the system of education should be like a natural process and should be learned from experiences from the environment and it cannot be acquired by listening to words. Nearly two thirds of the site is located on a flood plane leaving a triangular area for buildable space on the site according to the

building code. It is quite challenging for any designer because of its typical site location but the architects developed an appropriate design where one can observe that everything is placed in its right position. The building has two floors in which the second floor is a rectangle placed over the first floor a long triangle cut like a "V". The architect placed simple geometrical forms one above the other creating a building the responds to its site conditions. The large glass clear glass windows bring in a sense of nature into the classroom environment that mixes with the simple white interior spaces. The interior spaces reflect and create a manipulation of the outside environment within the interiors taking the cue from the greenery outside. Storm water is treated by incorporating a green roof on the cut edge of the V shape grove made in the first floor, which is a triangle. The exterior of the building is also made interesting by using two material combinations creating three different patterns by using wooden cladding of two different tones, which adds to the unique shape of building created by the geometry. The right wall of the building from the entrance way is a dark-color corrugated metal cladding mostly used for garages.⁶

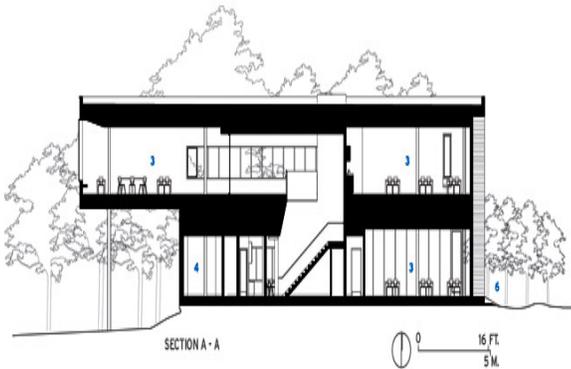


Figure 6©: Longitudinal Section of the school building

The architects design is very appropriate to the site conditions answering its major problems related to flood treatment and its unusual shape of buildable area. The design is very inspiring creating a sense of function follows the form in the first level. The second floor is designed as a creative response to the site geometry breaking its form in the first level yet creating a balance by its arrangement in the form of simple geometric forms overlapped one over the other in a challenging way but still calm creating a balance with the surrounding environment. The wooden exterior cladding allows for a sense of nature's product designed as a man made product in a playful environment of a Montessori school. Overall the design is well organized and oriented with respect to the site conditions

yet not compromising in its creative thought both the interiors and exterior.

Based on the above case studies valid points can be inferred in terms of infrastructural impact architecture can create in a student's thought process.

DISCUSSION

The environment appears distant because we designed it as such says Sim Van der Ryn an American Architect and educator. Stuart Cowan describe this impact in their seminal book, Ecological Design as

“What do we learn from this kind of ‘nowhere’ environment? When living and working in nowhere places becomes normal, it is no wonder that we literally lose some of our sensitivity toward nature. Through the daily experience of the designed environment, we learn detachment... As nature has receded from our daily lives, it has receded from our ethics.”

In the above discussed case studies of educational institutions elevating the spirit of the user with nature's influence on them was the primary focus when these buildings were designed.

CONCLUSION

My study includes personal visits to some of the most successful schools in India such the Lawrence School in Ooty, The Agah Khan Academy in Hyderabad, Isha Home School in Coimbatore. Both architectural and functional analysis of the schools has been done and a critical analysis of what makes them run successfully by setting up high standards has been analyzed. This will be playing a crucial part in understanding the context and background of site location.

Considering the newly formed 29th state of India which is the state of "Telangana", the government is willing to make various changes in different sectors and giving prime importance to the educational sector. In the city of Hyderabad, the capital of the newly formed 29th state of India, in the state of "Telangana" where I was born and brought up, I would like to propose a school unlike any other schools currently in the city. But what I am considering here is not only in terms of literacy percentage or rate of literacy in the country it is about quality of education, about providing a better environment.

DESIGN THINKING

The main idea is to design a built environment that emphasizes connection with nature through all five senses.

The whole experience of life is sensory right now.

What you see

What you hear

What you smell

What you taste

What you touch are all different types of sensations. Therefore sensation is the fundamental of our experience. Through the sensation comes the emotion, which leads to motivation. Therefore architecture plays a key role in creating Built Environment that enhances children's all round development.

BELIEF: IS THAT THE BUILT ENVIRONMENT IS THE BASIS FOR ENHANCING THE TEACHING AND LEARNING EXPERINCE IN A SCHOOL.

GOAL: IS TO ESTABLISH AN INSPIRING, CREATIVE AND CHALLENGING CLIMATE OF INNOVATION IN A SCHOOL ENVIRONMENT.

OPPORTUNITY: IS TO MAKE A REAL DIFFERENCE IN THE MINDS OF YOUNG SOULS THROUGH ARCHITECTURE.

AIM: IS TO ACHIEVE THE GOALS IN A SUSTAINABLE WAY.

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⁵ Montessori children's center san Francisco

⁶ Fayetteville Montessori Elementary School
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