Performance Evaluation of School Environs: Evolving an Appropriate Methodology Building

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Abstract

Environ-behavior studies have proved the power of the environmental container to impact inhabitants in a significant way. This paper is part of an ongoing doctoral research on evaluating building performance of urban Indian schools using Post Occupancy Evaluation as a major tool through its primary users- the students. An appropriate methodology was evolved in response to the outcomes of a pilot survey that identified unique ground situation. It assisted in understanding the status of urban learning environs from point of view of child centricity & in conclusion enabled the research enquiry to recommend parameters for a user-friendly & inclusive school design.

Keywords: Schools; student centric; inclusive environs; POE; research methodology

1. Introduction

The designing of an urban facility in a developing country like India, is a challenging proposition due to the cost of land & infrastructure. Urban Indian schools are a typical example of this situation. Schools exemplify the learning environs. Basic education is more than a decade long process & engages the most impressionable years of childhood. The impact of the school environs on the students is thus prolonged & intensive. Like other urban facilities, schools take physical form in adherence to the building

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regulations. The architect & owner conceive the architectural expression of the school with an eye on its marketability. The actual process of teaching learning occurs within the spatial environs of the school building. There is an urgent need to examine whether our school environs are conducive to the teaching-learning process while being sensitive to the needs of the students.

The study aims to investigate the school environs for their user friendliness, students being considered as the major users of the school. This paper is based on the ongoing doctoral research on urban learning environs.

School spaces support the nurture of users who are in a constant state of maturation; from the tender age of 6 years at Ist standard to the oncoming adulthood of 18 years at the 12th standard. The psychological & emotional needs of the child in the various stages of growth has been classified by Piaget on the basis of development of spatial imaging abilities in a child into 4 major stages (Piaget, n.d.). The impact of the surrounding built envelope on the growth of spatial cognition in the young humans needs recognition & greater acknowledgment by the designers of school environs.

‘Much of architecture affects people from beyond the focus of awareness. People are not sure what it is about a building or room that affects them, nor are they able to express how they feel in different surroundings’ (Sommer, 2007, pg. 212). The influence exerted by the school environs on the tender young minds is understated.

Research on the impact of space on behavior has identified intrinsic spatial tendencies in humans such as territoriality, personal & social space, defensible space, privacy, scale, hierarchy & physical comfort etc. All these in tandem make for emotional comfort within given spatial settings and are powerful environmental factors according to La Gory & Pipkin (1981).

In addition, school environs need to be inclusive & child centric. Spaces designed for the growing years, are major shaping influences since children use environment to improve themselves as against adults who use themselves to improve the environments Lillard (1972). Research findings emphasize the deep relationship between the learner & their educative surroundings.

2. The aim of research

The research aims at evaluating the performance of the school buildings through Post Occupancy Evaluation. ‘POE findings typically describe, interpret & explain the performance of a school building’ explains Sanoff (2001, pg.7). Typically a POE seeks to investigate the level of satisfaction of users with respect to the facility.

An appropriate methodology is the spine of any in-depth research work. Although literature study makes for a sound understanding of the generic issues, it was imperative to get acquainted with the ground situation & address the unique concerns that were identified, for a holistic evaluation.

This paper focuses on evolving of an appropriate methodology for the stated research.

3. Literature review

The literature review revolves around three aspects that are an integral part of this research enquiry:

3.1. School education in India

An important stage in the methodology is the understanding of the system of education, for it gave further insight into the controls that regulate the basic education in India. This is done through an intensive literature study of the government policies on school education (“National Curriculum Framework 2005”, n.d.).
As the figure below indicates, two aspects that have brought education to an appreciable level are the educational frameworks that mandate the academic performance & the infrastructural controls. Since societal expectation & perception of basic education has been achieved it is apparently an equation at rest. From point of view of recent researches on environ-behaviour studies school environs have a large role to perform. But this pertinent aspect is unexplored & understated in both sets of policies.

**Fig.1. The system of education in India**

### 3.2. Building performance evaluation

Post occupancy evaluation as a relevant technique, involves a careful & systematic approach to measuring the performance of a building by involving each user group & each important design element of the building under examination. Friedman et al (1972) state that individual judgments by the designer & the layperson must not be abandoned but must be augmented by more complete & rigorous techniques. For a comprehensive & all-inclusive evaluation, 3 elements of building performance were identified & treated hierarchically in their application to the POE process (Prieser et al,1988). Following figure represents the classified fields:

**Fig.2. The elements of POE; Source: Prieser et al**
3.3. Concept of child centricity

For a typology intended principally for children in various age groups, the aspects of the learning environs that make a school conducive & friendly to the child users are various & mostly in the realm of ‘soft’ issues. Performance assessment by means of POE was oriented for the following selected child centric issues, identified for environs of a school, through a review of literature. “It is important to do research with children, rather than on children. Children’s participation in research can be ensured by working with them to select methods that are appropriate to them & to the research aim” states Aziz, N., & Said, I. (2011, pg.76).

Literature review was chosen to elucidate the spectrum of knowledge available on children’s experience of their environs & its impact on them. The selected parameters are argued in a nutshell. Non-compliance of these parameters can marginalize the student users in a typology specially meant for them. The incorporation of these parameters helped shape the methodology for examining the user friendliness of the school environs.

3.3.1. Context & location

Proximity of the school is a valid issue in the planning of urban centers. If the schools are located far away, it entails enduring long bus journeys: a strenuous daily activity for very young students.

3.3.2. Visual expression

As a part of marketing strategy, school buildings are made to don a smart & contemporary look. This in many cases leads to large, institutionalized, sterile & monotonous built volume albeit being a signature building. But as Day (2007) emphasizes, ‘What is an aesthetical appeal to the adult, need not be a sense-nourishing experience for the young. Sterile buildings are actively harmful. They deserve no place near children’. Raising children in concrete boxes, without much sensory variation or relationship to nature suggests we believe sterility will not hurt them & that nature is not very important (Olds, 2001).

A welcoming school building with warm & comforting surroundings is an essential child friendly parameter.

3.3.3. Child scale

School environs can never feel welcoming to the child without homely scale. “Scale affects the ability to relax, and hence sociability. In big spaces, children easily feel lost, too exposed” (Day, 2007. pg.50). Scale maladjustments in school environs can magnify competitiveness, domination and aggressive shouting. Alienation grows with increasing numbers (Day, 2007. pg. 44). Visual expression & child scale are complimentary factors and can put the student at ease at the outset of the routine school day.

3.3.4. Spatial configuration

With response to restricted land, most urban facilities including school buildings are multistoried, calling for dexterity in spatial planning for appropriate visual connectivity, natural light & ventilation & noise pollution within building spaces. Flaws in the incorporation of such aspects can be detrimental to the teaching-learning process.

3.3.5. Spatial cognizability & legibility

Cognisance of the built surroundings reduces environmental confusion & can encourage confident learning experiences. Research on sketches drawn by children of their environmental experiences are a very powerful tool & make for excellent data on the growing users response to their environs (Lynch, 1977). Built surroundings are a powerful yet silent teacher, so much so that it can be safely termed
‘hidden curriculum’. Although direct causal links are difficult to decipher, its impact is nevertheless profound (Marshal, 1999). Spatial cognizability & legibility also add to a sense of comfort in the young users.

3.3.6. **Hierarchy**

By Piaget’s classification of the development of spatial imaging abilities, the need of different age groups is different. The need to actively investigate & learning by doing of early school years transforms through the growing years into the motivational support of the surrounds that the teen years demand, necessitating spatial distribution on hierarchical lines.

3.3.7. **Defensible space**

Is an intrinsic human need & has been researched & written upon widely in the academia. Oscar Newman’s (1972) definition of defensible space encompassed territoriality, natural surveillance, image & milieu. Although discussed mostly with reference to housing developments, the concept stands for users of every building typology. It is one of the key concepts for learning environs, since it is of great advantage of the child user especially from the point of view of bullying (Heyman, 1978).

Hierarchy & defensible space are supportive aspects. Together they instill within the user a sense of ‘being in control’ leading to a feeling of security & assuredness that is so essential in the growing years.

3.3.8. **Interior Aesthetics & Ambiance**

The impact of interior environment on the growing users is immense & supported strongly by research. Day (2004) explains this relationship poetically when he says that growing children need life-rich foods, but nutrition doesn’t enter us by mouth but through all the senses. The importance of living lines, instead of dead, of mobile forms & spaces instead of rigid, of friendly child scale & touch inviting materials, is too great to be left to practicality or to profitability criteria. These are health giving, formative influences for growing children. In discussing an environment for children, Zhang & Li (2011, pg.43) state, “An environment with high variability is full of surprises, while challenge provides children with an opportunity to feel accomplishment & complexity creates a sense of mystery”. This observation is true for interior environs, albeit discussed for neighbourhood environments for children. Appropriate interior aesthetics & ambiance have a pivotal role to play in the learning environs.

3.3.9. **Personal space**

Is acknowledged as a basic behavioral trait of humankind. Studies have shown that personal psychological bonding with place impacts our behaviors. Place identity was more strongly associated with environmentally responsible behavior (Vaske & Kobrin, 2001). Place attachment, place identity & place dependence are concepts that of a sense of place that can be applied to wide spatial range (Shirotsuki, M., Otsuki. S. & Sonoda, M. 2010, pg. 16 & 22). The need to personalize is an intrinsic human trait that leads to ‘rootedness’.

Interior aesthetics, ambiance & personal space conjoin to develop a sense of belonging in the growing young towards their learning environs. Respect for ones place & work is a prerequisite. Drab, lifeless & ‘academically inclined’ spaces are uninspiring & instill a lack of attachment to school, which in turn is associated with an increased risk of anti-social conduct states Piaget.

4. **The pilot survey**

Wide spread research on various aspects of built environs for teaching-learning engagements are available, but most studies are non Indian. They definitely impart a vision, but stop short of any practical
contribution given the diverse climatic & cultural settings of the land & its people. There is felt need for intensive & relevant Indian ground study. The pilot survey assisted in bridging this gap.

4.1. Nature & conduct of the survey

The pilot survey involved 250 students of a well established & much sought after school in Nagpur city. The respondents were in the age group of 13 to 17 years. The nature of inquiry was in the form of a creative task wherein the students were urged to express freely through drawings, sketches, poems or essays as they willed. The direction of responses was guided by a set of wide ranging informal queries on their use of ‘school spaces’ & their opinion on ‘school experience’.

4.2. Learnings from the pilot survey

This survey assisted in identification & pin pointing of pertinent issues on ground. Following tabulation (Table 1) identifies the typical characteristics of urban schools & the abstract qualities that they nurture in terms of a response to the experiences they thrust upon the student users.

Table 1. Relationship between characteristics of a school & qualities they nurture

| #   | TYPICAL CHARACTERISTICS OF AN URBAN INDIAN SCHOOL | QUALITIES THEY NURTURE IN THE STUDENTS |
|-----|-------------------------------------------------|---------------------------------------|
| 1   | Uniformity                                      | i) a sense of identity                |
|     | This is brought about by the mandatory          | ii) respect across genders            |
|     | dress code, common prayers & by                 | iii) multi-cultural tolerance         |
|     | encouraging boys & girls by an at par          | iv) discipline                        |
|     | participation in all activities                |                                       |
| 2   | Size of schools                                 | i) students strive for individuality   |
|     | Due to large intake & restricted space,         | ii) stiff competition in every sphere of activity |
|     | occupancy levels are high in density           | iii) lack of personal space           |
|     |                                               | iv) need for defensible spaces        |
|     |                                               | v) lack of sense of belonging towards the school amongst many students |
| 3   | General lack of maintainance                    | i) causes physical discomfort         |
|     | Schools displayed a general apathy              | ii) ingrains an ability to adjust & carry on one’s work, albeit needs discouragement in some elements such as the habit of non-use of toilets for prolonged durations |
|     | towards maintainance of infrastructure.        | iii) lack of sense of dis-satisfaction |
|     | Toilets & classroom furniture were in a         | iv) lack of perception of the need of environmental aesthetics |
|     | dilapidated condition                          |                                       |
| 4   | Extreme emphasis on academic performance        | i) on a positive note, this inculcates the ability to think on one’s feet without any external supports, even environmental |
|     | (exam oriented)                                 | ii) but leads to a superfluous attitude rather than a dedicated outlook towards ones living & built enivrons |
|     | It is usually assumed in India, that excellence | iii) tendency towards a tensed disposition |
|     | in academics is independent of need of a        | iv) bane for slow learners & dreamy students |
|     | physically, emotionally & psychologically        | v) possibility of developing a psychological complex, leading to a negative self esteem |
|     | supportive learning environ. Acknowledgement of | vi) due to lack of importance given to ‘softer’ aspects of life, undermining the importance of such aspects |
In addition to the issues stated above, the students evaluation of their learning environs & the physical design of the school revealed the absence of the many child centric aspects that make the environs inclusive, comfortable & nurture a sense of belonging in the students. The users reiterated having to negotiate with their environs while resolving their needs.

The study brought forth the lack of communication on this vital issue. The evaluation of spaces by the major users, the students, is never a matter of consideration at all levels: from policy planning to actual design. The total absence of design guidelines leaves the creation of this facility at the whims of the designer & the clients.

Given the existing physical & spatial circumstances of the facility, the humanization of the school seemed an urgent need essential to the happiness & contentment of the young who are nurtured within its spaces. The pilot survey helped identification of variables that required investigation such as visual expression & scale, way finding, visual connectivity & physical comfort in using the building etc. Scale predominated s a major issue due to the large size of the school.

The pilot survey was a significant step in the research process as response to its outcomes helped in the design of an appropriate methodology for further research.

5. Evolving an appropriate research methodology

Investigation of the ground situation paved way for a wide based study of urban school environs. Methodology encompassed the following stages for a logical build up to the POE exercise.

5.1. Contextualizing the location for groundwork in India

The context to base this study was identified in keeping with its generic status. The city of Nagpur marks the geographic centre of India. It has historical moorings: an old city core & the rapidly spreading new extensions. The current population is in excess of 4 million. Its cross section comprises of a cosmopolitan populace engaged in various trades. Nagpur is home to a moderate industrial base, government offices, educational institutions & agrarian trade. In terms of its general characteristics, it exemplifies the typical Indian grade II metropolitan city.

5.2. Determining the focus of study

The study focuses on the urban schools of Nagpur city, affiliated to the Central Board of Secondary Education (CBSE) & following standards laid down by Government of India. The norms of the CBSE are well regulated & encompass schools across the nation. The CBSE mandates for academic as well as infrastructural requirements are more comprehensive & stringent than the state government norms (CBSE., n.d.). For purposes of research, this level operational ground makes for ease of comparison.

5.3. Defining the participants

Nagpur has approximately 40 CBSE schools at different levels of affiliation. For a detailed evaluation study, 14 well-established schools, with a minimum of 10 years since establishment & with a good academic track record were identified. The underlying condition was that a registered/chartered architect had designed the school facility.

CBSE specifies the maximum intake in each section of a grade at 45 students. The sample size for the evaluation response was fixed at 3 sections; approximately 135 students per school. Thus a total of 1890 students belonging to IX/X grades (14-17 years) constituted the response group.
In the 10+2 school system, these are the senior most with a prolonged exposure to the school environs and thus in a better position to grasp & respond to the complex issues of evaluation study. These issues are never a part of school studies at any stage.

5.4. Customizing the POE

The three-pronged classification suggested by Preiser were tailored specifically for evaluation of Indian school environs. Supported by Sanoff’s definition, aspects were re-organized & the following (Fig. 3) summarizes the 5 C-s (constituents) of a school environ & corresponding parameters that comprised the POE protocol for this study.

Fig. 3. Defining the 5-Cs for POE

The 5-Cs encompass an umbrella of issues that require to be examined for a comprehensive POE of learning environ exemplified by the school building & keeping in focus the identified child centric issues.

5.5. Identification of tools for POE

To assess the wide spectrum of concerns stated above, the evaluation methodology has to be multipronged & operate through many tools. The following 10 tools were identified through literature review & the pilot survey conducted. The contributions of each tool are discussed briefly. These are based & adopted from Sanoff’s method of school evaluation.

5.5.1. Study of occupancy data for each sample school

This data made grounds for some basic comparisons between the 14 sample schools in terms of total occupancy, ratio of boys to girls, travelling distance to these school, fees for an academic year & age of the building etc.

5.5.2. Direct observation of school activities

A school day is ordered by the timetable. Activities are thus systematized. Direct observation of the use of spaces for regulated activities helped identify the manner in which students of different age group
& gender use school spaces & issues regarding the spatial environs. It assisted in understanding the
typology of school with respect to its major users: the students.

5.5.3. Walk through evaluation
This tool aids in a personal experience and feel of the spatial setting of the school environs, thus
facilitating a scale for verifying the user’s evaluation. It assists in an understanding of issues such as
quality of construction, level of maintenance, attitudes towards the built environs, micro-culture of the
school etc.

5.5.4. Analysis of spatial design through architect’s drawings
A study of architect’s drawings identified essential spaces of learning environs & their critical
attributes. Table 2 shows the tabulation, which is the basis of evaluation study.

Table 2. Identification of school spaces for study & their attributes

| SPATIAL CLASSIFICATION | ACTIVITY AREAS UNDER STUDY | IDENTIFIED CRITICAL ATTRIBUTES OF SPATIAL PATTERN |
|------------------------|---------------------------|--------------------------------------------------|
| 1 Outdoor spaces       | 1.1 Playground            | i) Way finding                                   |
|                        | 1.2 Canteen               | ii) Legibility                                   |
| 2 Enclosed open        | 2.1 Assembly              | iii) Degree of enclosure/ openness               |
| 3 Transitional         | 3.1 Entrance Foyer        | iv) visual connectivity                          |
|                        | 3.2 Corridors             | v) child scale                                   |
|                        | 3.3 Staircases            | vi) defensible space                             |
| 4 Indoor spaces        | 4.1 Classrooms            | vii) hierarchy                                  |
|                        | 4.2 Library               | viii) visual expression                          |
|                        | 4.3 Activity rooms        | ix) flexibility                                  |
|                        | 4.4 Toilets               | x) personal space                                |
|                        | 4.5 Laboratories          |                                                 |
|                        | 4.6 Computer room         |                                                 |
|                        | 4.7 Audio-visual room     |                                                 |

5.5.5. Photo documentation of use of school spaces by students
A very useful tool, documentation of school spaces, their ambiance & activities therein supported the
comparative analysis across schools.

5.5.6. Interviews with school principals
Many issues representative of the school were discussed such as gender differences, vandalism &
bullying, discipline, social & cultural activities, academics & the teaching learning process etc. Each
school has its own unique culture, interviews with the principals helped acquaintance with the culture of
the school. This interaction is a vital support to the evaluation process.

5.5.7. Interview with architect of the school
All schools under study are architect designed. A lot of thought goes into designing any facility at the
designer’s end. The evaluation of school environs is enriched with an understanding of the underlying
thought process of the architect of the environs.
5.5.8. Questionnaire for students

From the user’s point of view, two tools of importance are the questionnaire & the creative exercise. A well thought out questionnaire is an important design task before initiation of any research study. Some issues in the design of the questionnaire for the learning environs are discussed:

- This is a precise response sheet, since the questions are pin pointed and address specific issues. Thus care is taken that the all-important issues of a POE are ingrained into the questionnaire. Aspects of built environs as classified in table 1 constituted the major divisions.
- The sequence of the questionnaire proceeds from the ordered & very specific questions to the thought provoking & at conclusion encouraged wishful thinking & dreaming about their ideal school. This order is as listed in table 1. Code regulated queries were not addressed here, as they were a part of the walk through evaluation.
- For example: The questionnaire starts with performance evaluation of selected spaces of the school for their overall quality. This is made more specific by dwelling on each space at length & evaluating it for its specific quality, such as quality of finishes, ventilation, lighting level, adequacy of space, aesthetics etc.
- Next question focuses on aspects of form & spatial organization of the school building. These include aspects such as: context, massing, way finding etc.
- The journey now makes the respondents enter the main learning space; the classroom. The series of queries include flexibility, nature & quality of learning spaces & interaction in classroom. The last part is designed as a rapid fire round with interrogation on the abstract qualities or behavioral traits such as hierarchy, child scale & defensible space.
- By this time the students have a good idea of the process & are in a position to appreciate the exercise. So it is time for the more thoughtful questions which involve a humane yet critical judgment of the relationship of the built environment & its affect on its occupants; the students themselves. A wish list helps bring out in full force all the aspirations they nurture within themselves for their learning environs.
- Most part of the questionnaire is bounded & specific. Since this is suited best for a statistical analysis. The questions are numerically evaluated on a four-point scale; poor, fair, good, excellent. An option of ‘don’t know’ is also made available. The abstract questions were answered as an YES/NO option.
- To encourage a freewheeling response, some spaces are allocated for an individual opinion. These loose-ended queries add perceptual depth to the ordered queries, but if not expressed crisply (as in many cases) they fail to value add the evaluation exercise. These do not help statistically even remotely, but impart an understanding of the user’s thought process nevertheless.
- The questionnaire is conducted as a guided activity. It is time bound to respect the concentration span & also fit into the school timetable. This activity has to be conducted in a spirited atmosphere, by making students understand its significance in their lives. Interested students mean a more involved & thoughtful responses. For a flawless conduct practice at the researcher’s end is essential!
- Since it is part of architectural research, the design & layout of the questionnaire must be visually appealing. These sessions are conducted without prior intimation to the students. The feeling of intimidation at this unexpected activity is smoothened to see a well-designed sheet & an absorbing introduction. The performing art element in the actual conduct of this activity cannot be under estimated!

5.5.9. Creative exercise for students

This is designed as a free wheeling exercise for the students. They were urged to express through sketches, drawings, poems or notes, their opinion on ‘school spaces’ & ‘school experience’. Twenty-seven questions encompassing pertinent aspects of school environs comprised this tool. The queries
requested & emphasized on a personal judgment. The liberal nature of the exercise resulted in a frank unbound assessment by the respondents.

This tool does not have any statistical worth but helped value add the ordered & restricted sequence of the questionnaire & gave a deeper insight of the users assessment of their learning environs.

6. Discussion on the pros & cons of the research methodology

The challenges of an Indian urban school are pinpointed in Table 1. Many of the characteristics of the school environ & the qualities they nurtured in the students are rooted in the nature of the physical environs. The study identified methods by which students would respond on their school experience.

POE involves users making for a participatory approach. The expected outcome of such a process is not limited to the physical design ideas, but it may also promote the development of children’s competence, attitudes & vision for better future of space & society (Atmodiwirjo & Yatmo, 2011. pg. 21).

To enrich the universal aspects of a POE, especially in the absence of indigenous literature, the pilot survey was carried out. It paved the ground for a context-based research & aided in designing a suitable methodology.

This lead to the identification of the 5-Cs: pertinent constituents of school environs & their corresponding parameters. As a typology specially designed for children, the need for child sensitivity is felt appropriate. The nine points are a need-based selection from the wider spectrum of child centric parameters.

Building performance evaluation of learning environs through POE, with its basis as the concept of child centricity, defined the appropriate methodology. It encompassed several tools to bring forth a holistic view of the school environs. Several important aspects were covered in more than one way; this aided in cross checking & affirming the point under study.

The questionnaire & the creative task were the most user responsive tools. Scale was identified as a major issue, necessitating care in the design of these tools of direct response. The questionnaire helped organize issues in a concise & crisp manner so that the time for conduct was friendly to a school timetable slot & respected the attention span of the respondents. Most importantly, it helped all the above evaluation data to be collected in a manner conducive to statistical analysis. The creative task needs special mention because of the very involved nature of responses it evoked. These can be looked at as a positive contribution of this methodology.

On the other hand, the multi pronged data collection made it tough to get permissions from the private schools. Certain techniques such as access to drawings & photography during school hours are ‘intrusive’ in nature & required special permissions from school managements; also rejected in some schools. The creative task envisaged for a free wheeling response, is limiting in many cases due to the lack of ability of expression through the medium of drawing & sketching.

7. Limitations & implications of this research

POE is an accepted technique for assessment of building performance world wide. In India such evaluations are in a nascent stage, going by the lack of publications on this issue. The methodology of this study thus places emphasis on the physical & spatial attributes through actual ground survey, its environmental significance being derived from literature reviews.

The results of this POE shall lead to an understanding of what the user’s perceptional responses are to their learning environs, as exemplified by their school building. Thus one of the limitations of this research is its overt emphasis on the physical-spatial attributes rather than perceptional responses, which
are socio-economic, culture & lifestyle driven & shall be tested in the course of this enquiry. This endeavor shall contribute positively to the environ-behaviour studies in the Asian context.

Students are a major constituent of India’s population, which is the second highest on the globe, thus justifying this research initiative. Although the quest for an appropriate methodology for POE has been tuned for school going students, its implications on furthering the built environ-behaviour studies of educational institutions can be direct.

With requisite modifications, the tools themselves are applicable to other typologies in similar conditions. Although, this is a methodological limitation, from the standpoint of this paper.

POE as discussed earlier, is an emerging concept. This study can contribute positively in the development of a well-organized methodology for furthering built environ assessment research in the Indian context.

This paper contributes:

- in developing methodology to study child centricity
- in identifying variables in Indian context
- in developing of tools for POE in the Indian context

8. Conclusion

Research in the field of architecture is in a nascent stage in India & is almost non-existent. The reliance on foreign studies definitely imparts a vision, but stops short of any practical contribution given the diverse climatic, cultural & economic settings of the land & its people. There is felt need for intensive & relevant ground study given the existing physical & spatial circumstances of a majority of Indian schools. In such a context, the pilot study aided in identification of the unique issues & defined the research direction. It assisted in customizing the design for an appropriate research methodology, which is the spine of a research enquiry.

The pilot study highlighted child friendliness as an important aspect of learning environs in India. Methodology was structured to assess school buildings with this special focus. It can be applied, with some reforms, in the evaluation of various typologies, especially where child centricity is a concern.

This methodology is found appropriate in the identification of issues that the design of school environs need to address. It can enable recommendations of parameters for a pertinent, user-friendly & inclusive school design. In addressing so, the paper falls in line with the two-pronged theme of the conference, responding to the socio-economic issue of inclusivity in addressing the need of child centricity.

The process of evaluation by the major users of the school is essentially influenced by their cultural background & level of environmental awareness of their built surroundings. The study also brought forth the level of cognizance towards issues of environmental awareness in the school students in particular & the Indian society in general. In conclusion, this research emphasizes the need to look afresh at the design & development of the learning environs especially from point of view of child friendliness.

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