

## Design Criteria: Community Secondary School

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The participation in education is very low in Bangladesh. Only about 58 percent of the present primary age-group children are enrolled in the schools. The rest of the children remain out of the schooling. Only 14 percent of the children attending primary schools go on to the secondary level. Again the secondary education is the terminal education for a large majority of students. At present, there are 8,960 secondary and 2,269 junior secondary schools, out of which only 172 are managed by the government. Rest of the schools are under private management. The government schools are designed and constructed by the Facilities department of the ministry of education. But the design and construction of the majority of the secondary schools are managed by the local school committees.

The occupancy rate of the school campuses are very low. With one shift of classes only, the school buildings are underused. There is a scope for increasing the occupancy rate by about seventy five percent. The community school programmes can make the school campus available for all section of people for a fuller use of it (fig.1). The community school might be the focal point for many community activities.

To provide employment and meaningful vocational courses along with conventional education for regular, dropouts and out of school children, the administration is keenly interested to introduce community schooling. The provision of education and full employment for all by exploring and utilising local resources is considered a social goal. A community secondary school by its nature would be committed to bring the various conventional courses, vocational trades, development activities and recreational facilities into a closer harmonious relationship, and all working together, requires a new type of spaces in the school. With a view to making the community school curriculum relevant to generation of more employment, while considering the local demands, economy culture etc. a number of courses may be arranged, on the common and familiar trades

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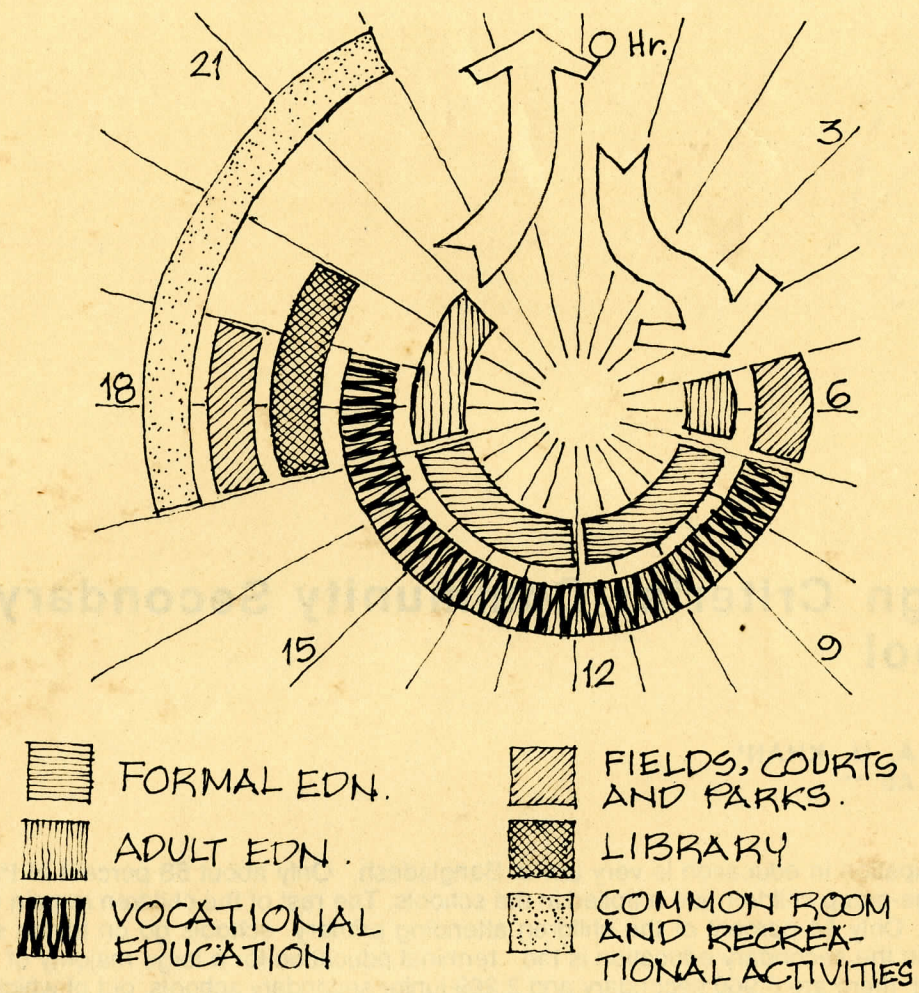


Fig. 1 Occupancy time in community secondary school.

like : a. Agriculture and horticulture b. Farming-dairy, poultry and duckery c. Pisciculture d. Sericulture e. Bee keeping f. Pottery and roof tile/ceramics k. Sewing, knitting, tailoring and garments l. Weaving and dyeing m. Carpentry, masonry and building crafts n. \* Mechanical and agricultural equipments o. Electrical and house wiring p. First aid, nursing and drug dispensing. Besides the formal and vocational education, a number of social, economic and development programmes can be initiated. These programmes may include the literacy and adult education, health and family planning programmes, IRDP programmes, co-operative programmes, agriculture extension services programme etc.

Many socio-economic, educational and cultural agencies are working in the localities of the schools for the promotion of socio-economic and other conditions of the people. Coordination of these agencies and linkage with community school programme will minimise duplication.

A set of design criteria can be evolved and an attempt to standardise secondary school design may be made, giving due importance to indigenous materials, techniques and local needs. Considering the need of vocational training to generate employment for rural youths and making school campus available for all sections of people for its maximum use and making it a focal point for many community activities, a prototype community secondary school design is attempted (fig. 2).

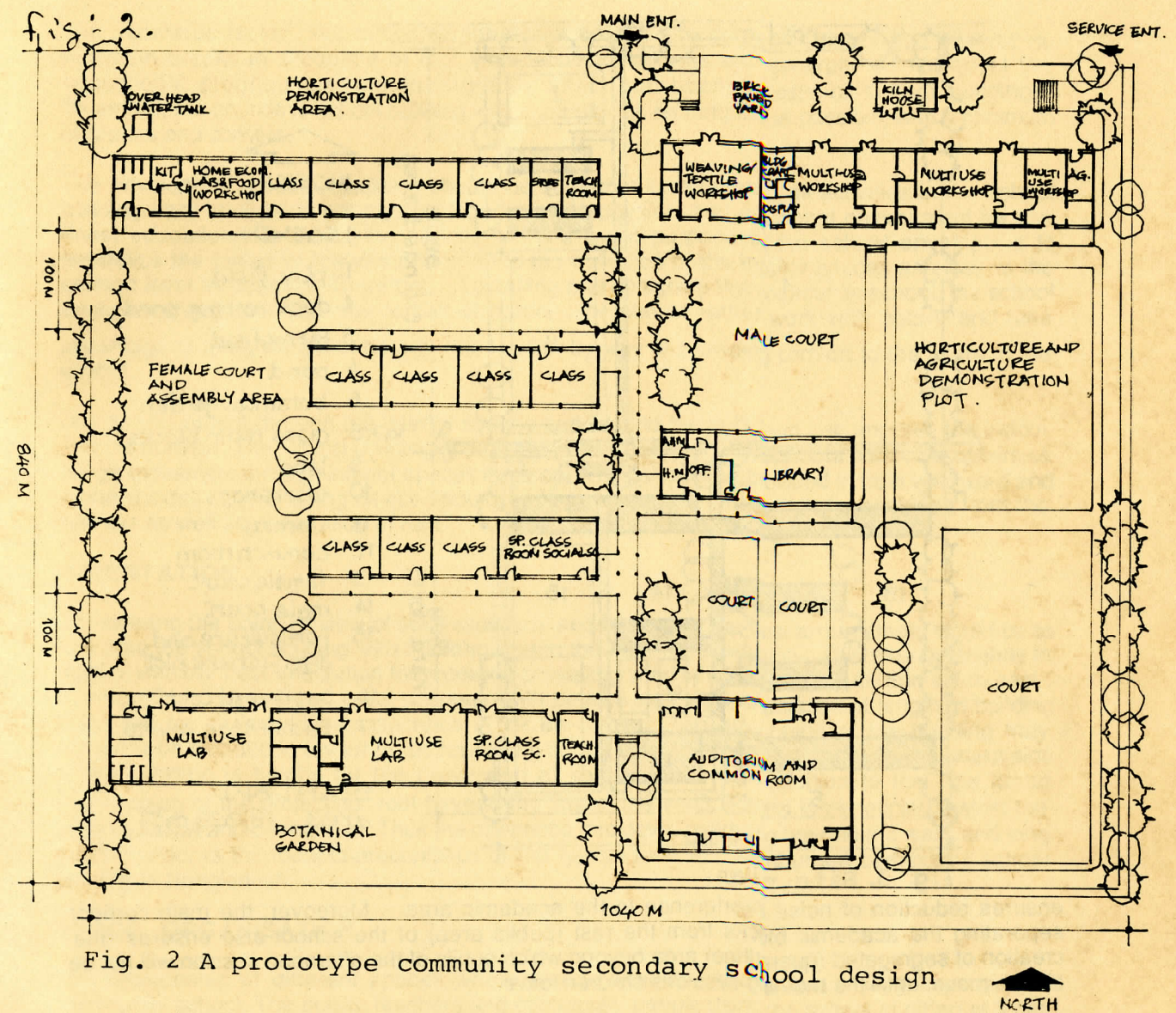


Fig. 2 A prototype community secondary school design

### COMMUNITY SCHOOL CAMPUS PLANNING

The school campus should be located at a suitable place, easily accessible from all sides either by road or water way. The layout of the community secondary school deserves to be compact for deriving optimum economy. Proper attention should be given on the locational aspect of some of the functions and activities like entrances, workshops, common room, administrative offices, teachers' room, kitchen, kiln house and toilets etc. (fig.3). Primary activities and functions like formal education, administration, library, common room, workshop, outside playing courts, botanical and agricultural gardens etc. should be grouped in an area in a 'hard form'. The other spaces for the play ground, pond, farmstead etc. are to be arranged in the 'extended area' which may be available adjacent and around the school site.

The main corridor might divide the site into two definite zones separating the formal educational area from the rest of the school site. All the rooms are to be connected by the corridors to the main circulation. The separation of the common room and workshop (source of most noise)

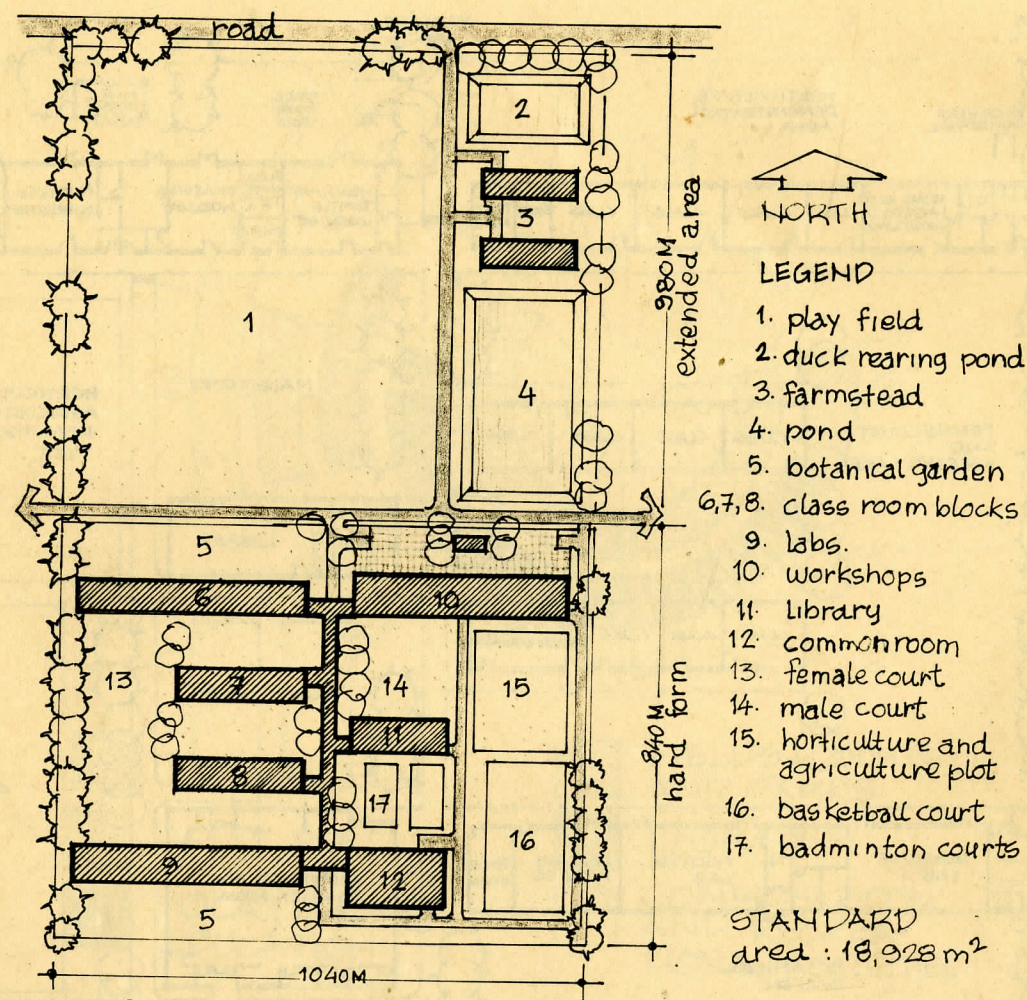


Fig. 3. Site plan.

ensures reduction of noise interference to the academic area. Moreover, the main corridor separating the academic blocks from the rest (public area) of the school also ensures the creation of segregated (quarantine) area beyond which pupils of the afternoon session will not be able to move, until the morning sessions children leave.

Entries should be on both sides of the main corridor which facilitates access to the school from more than one direction.

#### DESIGN CONSIDERATION

The school planning should begin with a clear and accurate realisation of the actual physical and emotional needs of the students and should never in any phase of planning compromise in meeting those needs. The school need not be grand and gandy but should be simple in plan while safe and economical in construction. The community school building should provide an environment of maximum attractiveness for students and teachers engaged in learning process and this should be achieved harmoniously within the existing limitation of financial means of the community.

There are some economics of school architecture, independent of type of education. In order to achieve the reduction on initial and maintenance costs, it is necessary to use simple geometry of envelopes, simple and common materials and simple construction techniques.

The geometric factors like minimum number of breaks and corners in floors and envelopes, minimum breaks in silhouette of roof lines, low roof ceilings etc. generally do not affect the educational programmes, but they greatly affect construction costs of school buildings. Therefore, the economic school building will be roughly as rectangular as possible, with a minimum of breaks and corners.

The envelope of a school building should be such that it can protect all activities in the school building from environmental exposure and provide physical and emotional environment for the finest educational and working conditions. The basic purpose of the school envelope is to neutralize the forces of nature and to keep the condition of the interior spaces as close to the comfort level as possible. Therefore, in planning and designing the community school, the school designer should not fight the forces of nature; he should rather work with nature and take advantage of everything that nature has to offer by way of providing comfort to the users of the school.

The air movement through the interior spaces and around the built form can improve the indoor thermal comfort. The school building should receive whatever air movement it can. To maximise the air movement through interior spaces large openings should be provided in both windward and leeward sides. The shading device should be large enough to protect all the openings from the sunrays as well as penetration of rain.

#### ORIENTATION

Considering the point, of view of solar radiation, and heat gain, the best arrangement would be to orientate the school building with the long axis in the east-west direction. This may be slightly in conflict with the best orientation for receiving prevailing wind which is from south and south east. The conflict is not however great and even with precise east west orientation of length of building there will be an insignificant sacrifice of air movement. The orientation of the building may therefore be decided in favour of astronomical fidelity (fig.4). A long corridor at the southern side of the building is helpful for the prevention of solar radiation. In addition to this, the broad overhanging of the projecting roof beyond the line of the vertical walls is beneficial against the solar radiation and driving rain. Thus the openness, projected overhang beyond the walls and long open corridor is the ideal characteristics of the typical rural and semi urban community school building in Bangladesh.

#### SPACE ORGANISATION

The relationship of different spaces where myriad activities take place is very important in community school. The pupils, teachers and community people using the school at different times are constantly moving from one place to another; therefore, in every detail of design, these spaces should have a feeling of being related to one another or there will be lack of unity. The design should be made in such a way that there is an order among the spaces, functions, and activities so that there is a feeling of invitation and transition among the different spaces.

#### MULTIUSE SPACES

In order to reduce the construction cost of school building and to improve the flexibility and intensity of uses of spaces, certain spaces need to be combined, believing that such a combination would not greatly interfere with the educational programmes of the school. A multi-use hall may accommodate several activities like music class, assembly, gymnastic activities, boy scouting and girls guide activities, community gathering and other extra curricular activities where seating of large number of students are necessary. The science subjects taught in the secondary school level need not have separate laboratory for each subject. In order to achieve better and optimum use of these laboratories, multi-use laboratories for two or more subjects can be designed in community school.

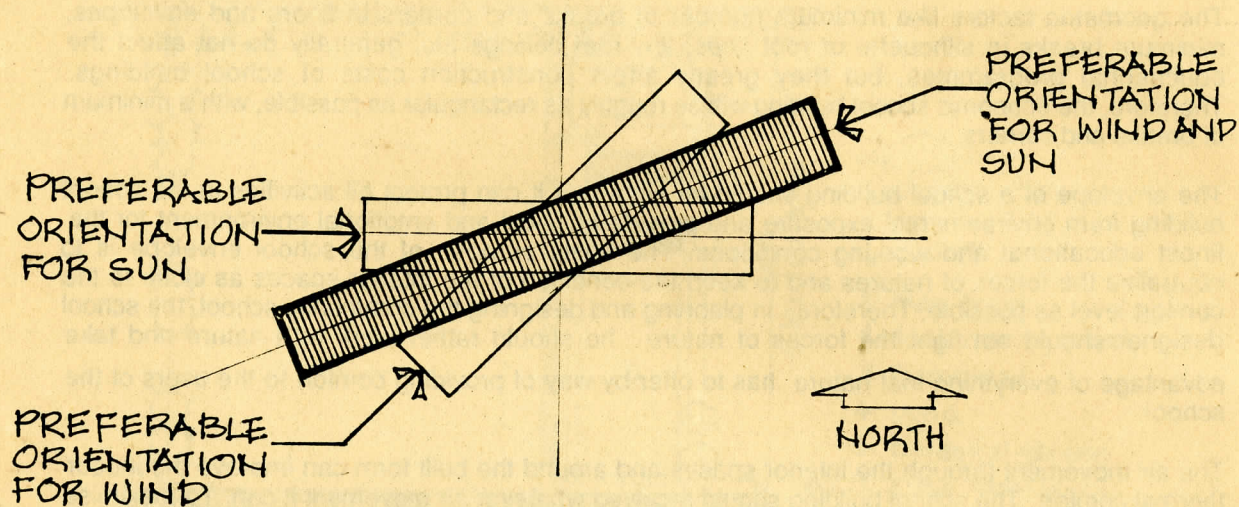


Fig. 4 Preferable orientation of school building.

### FORM

The basic form of the community school building is derived from the consideration of the logical arrangement of school activities, easy circulation, flexibility, economy, easy egress, social and cultural heritage of the communities. The simple elongated rectangular form with gable roofing having verandah on one side facing the court (or field) on the south has evolved over centuries to represent the basic (popular) form of the school building in Bangladesh. Ease of layout, art and technique of construction also lend support to this form.

### CONSTRUCTION SYSTEM

The use of simple structural system in community school building helps in balancing the construction budget. The structure of the buildings should be such as would allow growth and change within the building. A skeleton type structure is flexible and suitable for this purpose. The skeleton may be of concrete or timber, or combination of both. The frame structure may also be in pre-fab system for modular and versatile use. The infill panels may be from indigenous materials like bamboo, reeds, C.A. sheets, C.I. sheets etc. Bracing against wind and earthquake particularly in pre-fab structures should not be ignored or forgotten and should be adequate.

Temporary materials and components can easily be replaced by more permanent building materials and components. The system of construction and the materials should be such that it is possible to construct relatively inexpensive but more flexible community school buildings which can be progressively improved in stages, when more and more funds are available.

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