

Part II: Making Efficient Use of Expensive Components

4. Special Buildings

(a) Why Costs are High

Practical subjects require such special accommodation as:

- workshops for woodwork, metalwork and electricity,
- drawing rooms for technical drawing,
- commerce rooms for typing and business studies,
- home economics rooms for cooking, home management and tailoring/needlework, and
- sheds for agricultural science and animal husbandry.

Sheds are likely to be quite cheap to construct, but the others are likely to be expensive. The reasons for this are:

- * *Space*: Specialist rooms must allocate more space per pupil than ordinary classrooms. This is because (a) the pupils need to be able to move, (b) the rooms need to hold specialist equipment, and (c) the rooms must store both raw materials and finished products.
- * *Structure*: Workshops often need floors that can hold heavy machinery. They may also have special lighting, temperature, humidity and dust-proofing requirements.
- * *Facilities*: Workshops and home economics rooms must have electricity and gas. They also need both supplies of water and systems for drainage or disposal.

The Costs of Buildings for Different Subjects

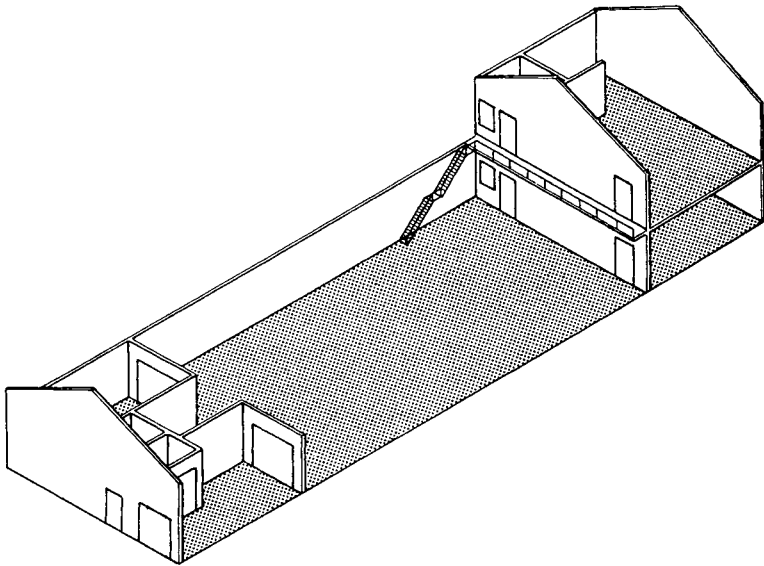
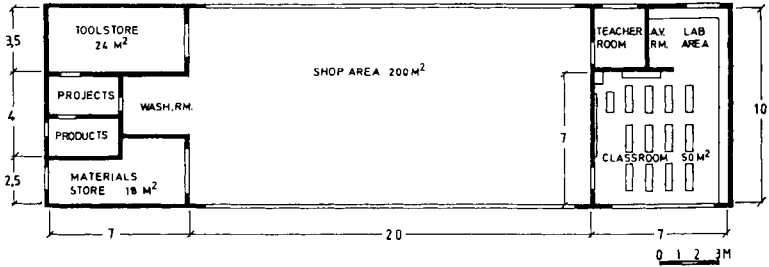
The two main determinants of unit building costs are the nature of the building and the space allocated per student. The following table summarises one plan for space allocations and costs in Trinidad & Tobago.

	Square Feet per Student	Cost per Square Foot (US\$)	Amortised Cost per Student (US\$)
Home Economics	255	18.80	96.1
Automechanics	216	11.00	47.5
Electrical	204	10.00	41.0
Carpentry & Joinery	200	11.20	45.0
Machine & Metals	200	11.24	44.8
Business Studies	192	20.80	80.0
Agricultural Science	168	25.00	84.0
Technical Drawing	162	10.00	32.4
Masonry	86	21.60	37.4

(b) How Cost-Effectiveness can be Improved

The costs of buildings can be reduced in the following ways:

- * **Multipurpose Buildings:** One building can be constructed e.g. to serve the sciences, woodwork, metalwork and home economics. Benches, tables, electricity sockets and gas outlets can be moved as required. Two such designs are shown on pages 32 and 35. Movable partitions help increase flexibility.
- * **Designs for Specific Schools:** Some designs may look nice on paper, but may not suit the needs of specific schools. Planners should obtain local advice in each case by consulting the teachers and local administrators. They should remember to allow for future school expansion or contraction.
- * **Materials and Contractors:** In general, use of local materials and contractors will save costs. Sometimes, however, administrators must be cautious: local materials may not be long-lasting, and local contractors may do poor work.



A Multipurpose Workshop Design recommended by Unesco

- * *Awareness of Future Technical Needs:* Designs must take account of the specific demands that will be placed on the buildings. In one school known to the author, welding machines requiring high rating electrical power have never been installed because the cost of rewiring the workshop is prohibitive.

In addition, buildings can be used more efficiently:

- * *Intensive Use:* Unit costs can be reduced if buildings are used intensively:
 - class sizes can be adjusted to the optimum level,
 - lessons can be held at lunchtimes and in the evenings,
 - adult education classes can be held in the schools during the evenings, weekends and vacations, and
 - all students can be required to take particular subjects; e.g. both sexes could be required to take woodwork and/or tailoring.
- * *Proper Use:* At the same time, buildings should be used for the specialist purpose for which they were designed. Theory subjects can be taught as easily in a classroom as in a workshop. If the workshop would otherwise be empty, then they can be taught in the workshop; but if another class would use the workshop for practical subjects, the theory should be taught in a classroom.
- * *Specialist Schools:* Alternatively, schools can specialise in one or a few subjects. Expensive equipment can then be concentrated in one centre.
- * *Sharing Resources:* Expensive buildings need not be constructed in every school: they may be placed in one school and shared by others. However, this is only feasible when schools are close together and students can travel easily and cheaply.

Sharing Buildings among Schools: The Advantages and Disadvantages

The main advantage of schemes to share buildings is that they save construction costs. Only one central school needs to have the buildings, and the others share.

The main disadvantages are:

- If the teachers are based in the central school, they may find it hard to get to know all pupils and to enforce discipline; but if all schools have their own specialist teachers, they have to teach other subjects to be fully occupied.*
- The host school may find itself paying for damage caused by pupils from other schools.*
- Timetabling becomes very complicated.*
- Students have to spend a lot of time on travel.*
- Travel may be so costly that nothing is saved by the scheme.*
- Pupils may not identify so strongly with their own schools, and loyalty may be hard to build.*
- Pupils may feel that practical subjects are not part of ordinary school life.*

However, school cluster schemes have been operated successfully in Barbados, Costa Rica, India, Thailand and Sri Lanka, for example. Administrators usually find it most cost-effective for students to spend a whole morning or afternoon (or even a whole day) in the host school rather than to send them for individual teaching periods.

A Multipurpose Metal Workshop used in Dominica

