

## THE PROVISION OF BUILDINGS AND EQUIPMENT

### Buildings

Despite the admirable efforts of the Unesco Regional Building Centres and some national organisations, the general standard of school building in developing Commonwealth countries remains very low. Much of the research undertaken has been directed primarily at producing more cheaply schools of conventional design. Investigations have concentrated on materials and construction methods rather than a reappraisal of needs and the evolution of new types of educational building. It may be that some authorities might be prepared to encourage experiment in the provision of buildings for handicapped children in the expectation that pilot ventures in this field would have relevance for the general educational programme.

Government (and government-assisted) building projects are dogged by tradition. Standard plans and established construction methods using conventional materials produce known, measurable and accountable results. Ministries of Works, frequently obliged to rely on inferior quality contractors, are reluctant pioneers. Special education may offer a means of breaking the deadlock by making possible experiment on a limited scale in an area not yet controlled by the traditionalists.

One major revolution could take the form of the use in government-assisted projects of "temporary" materials, mud, wood and sandcrete. The distribution of handicapped children in rural areas will vary over a period of time. Provision made on an expensive scale in permanent materials can easily be found to be in the wrong place as the pattern of need changes, or in the wrong style as the methods teaching and training develop. There would, therefore, be much advantage in promoting buildings for special education which combined flexibility with economy. The anticipated building needs of the overall education system over the next two decades are most obscure, because of population movement and new educational methods. It would, therefore, be possible for the expenditure on pilot building ventures in special education to be recouped by savings over the whole education system as a result of innovations tested on this limited scale.

When considering developments in special education it must be assumed that there will in future be the minimum number of schools and ancillary buildings erected for the exclusive use of the handicapped. That implies two considerations for architects and educationists: general educational buildings should limit as little as possible the full enjoyment of their facilities by the handicapped, and, secondly, special buildings for the handicapped, in forms such as resource centres, deaf units and hostels, should be simple, economical and transportable. Buildings which can be used freely by handicapped children need not cost more than those for normal children provided that designs incorporate the necessary features from the very beginning. Most developing countries, for example, would find little difficulty in standardising on single-story buildings, or buildings of more than one storey which allow for each child to spend his day as far as possible at one level. Wider doorways, handrails, washing and toilet facilities accessible to the physically handicapped, lever-type door handles, louvre windows rather than casements, these and many other details helpful to the handicapped should add only minimally to total costs (1). All children would benefit if architects approached school design from the height and

scale of the child rather than the teacher; this single consideration would do much to help both the handicapped child and his normal schoolfellow.

The system of prefabricated modular rural schools pioneered in Mexico seems to offer a valuable method of providing special classes and units in the most economic and effective way (2). Objection has been raised in the past on the grounds that centrally manufactured, prefabricated parts militate against the interests of local contractors (3), but the overall advantage to be gained outweighs this. The Mexican system is based on the provision from government funds of a light steel roof structure and metal roof, windows and frames, furniture and equipment. The local community provides the base plinth and the wall in-filling to certain minimum standards but using such local material as may be available. This operation has resulted in the establishment of light steel and plastics industries, while numbers of otherwise unemployed school leavers have been formed into teams of steel-erectors, travelling the countryside with the packaged schools. The modular form of construction provides for complete flexibility in the dimensions of the buildings which may be erected, while accommodation for the teacher is also included as part of the scheme. Such an arrangement seems ideally suited to the construction not only of special education annexes and units, but of resource centres, and, in many areas, ordinary schools. The final advantages of such buildings is that they can be easily repaired with replacement standard parts, altered in size and shape at little cost to meet changing needs and, if necessary, moved to new sites, leaving only the plinth and wall in-filling as lost investment. For specific assessment work or remedial teaching a mobile combined resource-room and classroom might be appropriate in some areas.

### Equipment

Equipment for handicapped children falls into two overlapping categories, medical and educational. The purpose of both types is to enable the exceptional child to develop on terms as near equal as possible to his normal colleagues. Many of the basic aids for the handicapped are compensatory in just this sense. They compensate through conscious provision for some of the experiences familiar to ordinary children but of which handicapped children are deprived. Devices enabling a handicapped child to sit upright or move independently, for example, give him the opportunity to acquire some of the experiences available to all normal children. The bulk of these aids fall into the "medical" category although their educational role is unmistakable. Aids to mobility and aids to communication, devices which increase the opportunities for independence for the handicapped child, are essential if later formal education is to have any real meaning. In a sense these aids fulfil the same function as pre-school, headstart programmes for the inner-city child. Many mildly handicapped children, particularly those mildly mentally handicapped, do in fact originate in deprived communities, so that pre-school preparatory programmes are doubly important for them if they are to benefit in any degree from the educational process.

Toys fall into an intermediate category, combining as they do therapy and active learning. Increasing recognition is being afforded to the value of carefully selected toys to assist in the development of handicapped children, particularly at the earliest stages when motor skills are being developed (4). A recent innovation in this field is the concept of a toy library from which materials may be borrowed for the child to be used at home (5).

The possibility of such a system succeeding in a developing country will depend on a number of variables, not least the attitude of parents and availability of transport, but small-scale schemes might well be considered in some of the larger centres of population such as Accra, Hong Kong, Kampala, Nairobi, Port of Spain or Singapore. The advantages of such a system include making large toys available to parents who would not otherwise be likely to invest in them and bringing together a group of highly motivated parents who might later undertake additional activities. A toy library seems to have much to commend it to the various service clubs - Rotary, Lions, Apex - or volunteer bodies as a community service project.

More formal educational aids need to be developed commensurate with skills, materials and funds available in each developing country. The example has already been quoted in an earlier chapter of electronic equipment for the deaf deteriorating in the tropics because of the lack of air-conditioned storage space. At these early stages of special education development in the poorer countries the criterion for equipment should be cheapness and sturdiness even at the cost of some degree of performance. Nor should the more obvious aids be overlooked for blind children, a small animals collection, for example, simple models, outline maps and action exhibits can be assembled at minimum cost. Manufacturers, museums and private collectors can often be induced to donate suitable items (6).

Special education should aim to justify its case to financial authorities by leading the search for more effective methods of learning. Radio, for the physically-handicapped and blind; television, film-loops and cassettes for the deaf; programmed instruction, correspondence lessons, all deserve the fullest investigation. The experience of many newly independent countries in the educational use of the new media and new technologies has frequently been very disappointing. Special education now has the opportunity to learn from these errors and explore on a limited scale better means by which the undoubted potential of such aids can be realised.

Much could be achieved in the developing countries in the development, production and distribution of educational materials for handicapped children. Indian manufacturers, for example, have succeeded in producing hearing aids relatively cheaply, although foreign exchange problems and import duties on components which could not at first be produced locally raised the price and limited the production (7). The Committee on Technical Aids, Housing and Transportation (ICTA) of the International Society for Rehabilitation of the Disabled is at present engaged on an international survey on technical aids for children with physical handicaps and issues regular publications (8); these could provide a valuable service of information for adaptation in the developing countries.

The ICTA survey is a useful pointer to the activities which would be possible for the developing countries of the Commonwealth. The exchange of information, especially between developing countries whose possibilities and problems will be similar, could stimulate local and regional activities. Means by which this exchange could be achieved locally might include exhibitions and newsletters and internationally a journal based on a Commonwealth Association for Special Education. Economies often result from a large volume of production and this could be achieved even when the needs of each country are relatively modest by central production on a national or regional scale. The ILO and Unesco have both supported this principle, particularly when it is undertaken in workshops staffed as far as

possible by handicapped employees (9). Standardisation of sizes and parts would allow for maximum interchange and simplify improvements and replacements. For regional supplies to be effective, however, governments would need to eliminate taxes and duties on materials for the handicapped, in the same way as at present Contracting States to the Florence Agreement permit the free movement of Braille publications (10).

The provision of the material necessities for special education and vocational training for the handicapped should be undertaken with a considered understanding of the realities of the situation. Governments in developing countries can invest in this field only if it seems likely to yield a return in terms of direct benefits to the country or of public moneys saved. If those responsible for special education seek to develop buildings and equipment on the principles of "intermediate technology," using local materials adapted to local conditions, official support may become more generous. This generosity is likely to increase if the techniques evolved appear to relate to the needs of the remainder of the education system. Special education has the opportunity to prove its integral relationship and value to education in general by providing the opportunity for experiment which can later be transferred into the system as a whole.

## Notes and References

1. Nellist, I. Planning Buildings for Handicapped Children, London, Lovegrove, 1970.
2. Secretaria de Educacion Publica, Mexico. Bulletins (from 1962).
3. In 1962 the writer had a prototype steel frame and aluminium roof structure produced in one developing country. The reaction of local contractors was such that the plan for making government grants for school buildings in the form of materials rather than money had to be deferred.
4. Morgenstern, F.S. "Toys for handicapped children," International Child Welfare Review, August, 1968, pp. 10-17.
5. Moorhead, C. "Toys for the handicapped," The Times Educational Supplement, 7 May 1971, p. 8.
6. Freund, E. "Making learning real fun for blind children." Unesco Courier, May 1971, pp. 28-31.
7. Kapur, Y.P. (Ed.). Research, Training and Rehabilitation in Speech and Hearing in India, Vellore, Deafness Research Project, Christian Medical College, 1969.
8. ICTA. List of Technical Aids for Physically Handicapped Children, Fack, Sweden, 1969; ICTA. Rehabilitation Engineering, Fack, Sweden, 1969.
9. See, for example, Cooper, N.E. "Creating employment opportunities for the handicapped in a developing economy," Geneva, ILO, (mimeo).