

Designing Schools for Learning

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Despite the fact that recent statistics from the Ministry of Education reveal a 25% reduction in the number of students entering primary schools (from 25,919 in 1991/92 to 19,466 in 2000/01), construction and refurbishment of schools continue apace in Trinidad and Tobago. However, more attention should now be given to the design of school facilities, because design elements can impact significantly on many aspects of schools. This article will specifically examine the ways in which school facility design can influence teaching and learning. In order to fully understand the desirable features of school facility design we should first look at the more important learning theories.

Among the many learning theories there are three that are highly relevant to school design—constructivism, multiple intelligences, and brain-based learning.

Constructivist theories place emphasis on students' active engagement on real-world learning tasks that are designed to promote thoughtful reflection and discussion. The teacher gives general guidance and support, as students solve problems, inquire, experiment, and design and construct, in order to gain deep understanding.

Gardner's theory of multiple intelligences recognises that students process information in different ways, and therefore teachers should provide multiple forms of stimulation to address the peculiar needs of individual students and develop students' latent capacities.

In explaining brain-based learning, Prof. David Perkins of Harvard suggests that although we are born with neural intelligence that allows some people to process signals faster than others, we all have experiential and reflective capacities that are changed by experience to allow new neural networks to develop. Teachers can invoke reflection by introducing contradictory information, or by presenting students with problem situations. We can now examine how these principles can guide school facility design.

A number of studies have found that smaller schools have more purposeful school climates and the students therein are more likely to participate in extra-curricular activities. Students develop a sense of belongingness in small schools, which motivates them to engage in learning activities. Several studies suggest that student populations should not exceed 75 at preschool, 400 at elementary, and 800 at the secondary level. In our situation, some of our secondary schools accommodate as many as 1,600 students. We may have to consider the school-within-a-school concept, where a large school is organised into smaller schools around house systems or programmes. Students in each smaller group take their classes together in designated areas of the school, and share the same teachers.

The grounds surrounding the schools could be designed to constitute an environment for learning. For example, a variety of local trees could be planted on the school grounds, so that students could have direct experiences with these natural resources and appreciate

their importance. Furthermore, the shade beneath the trees can provide students with places for contemplation, reflection, and discussions.

Many schools in this country benefit from the school-feeding programme. The provision of properly supervised dining facilities could ensure that students are not only fed, but that they develop good manners as well. Flexible multi-purpose halls can be designed which could be easily converted to dining halls.

Larger classrooms are required for activity-based learning tasks. A large classroom has space for group work, practical activities, display centres, technological support, and storage. Because different teaching methods will be used, the design of the classroom and its furniture must allow flexibility, so that arrangements can be easily changed. For example, light, flat-topped tables and comfortable chairs should replace the present heavy two-seater desks used in primary schools. The light tables could be used for individual work, and they could also be combined to provide larger work surfaces for practical group activities. The furniture should facilitate easy rearrangement for group discussions, role-plays, debates, and other activities.

One might rightly conclude that the practical work and discussions in one classroom would distract students in other classrooms. The existing barn-type schools where each class is separated by a chalkboard should be immediately remodelled to include individual soundproofed, self-contained classrooms.

Student-centred teaching requires substantial technological support, such as solid manipulatives, science equipment, electronic kits, audio and video recorders, models, and computers with Internet access. For teaching to be effective, these items must be at hand, in the classroom, not in a central store. There is a tendency to locate all the computers in a dedicated computer laboratory; this is acceptable if the computers are used to teach about computers, however, if the purpose is to use computers as tools to facilitate learning, the computers should be in the classroom. Furthermore, the software should allow students to communicate, inquire, construct solutions to problems, and test their solutions.

As students work on projects, they will create outputs such as reports, essays, stories, mathematical 3-D models, posters, and printouts. There should be provision for displaying these productions as students become highly motivated and gain esteem when their creations are seen and appreciated by significant others. There should also be central display areas situated near the administrative offices. Furthermore, all schools should have a prominently located honour roll that records the names of outstanding past students in areas that are not confined to sports. Central buildings of the school should be named after high-achieving students, not after principals and staff.

The elements of school design outlined in this article can facilitate student learning and values orientation. However, proper design must be accompanied by deliberate efforts to fully exploit the potential of the redesigned facilities. Consequently, teachers and principals must be retrained in the use, management, and supervision of such

environments. Although one envisages that ancillary staff will be assigned to assist in maintaining the facilities, for students to develop appropriate values, they should be involved in restoring the classrooms, returning equipment, and in keeping the facilities clean and orderly. Additionally, one expects that there will be questions about the high initial and recurrent costs involved in this approach to school design. However, in this case the expenditure would be addressing a matter of high priority in education—the improvement of teaching and learning.

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