

## **Technology Education for All**

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There is a common-sense way in which we have known since independence, and even before, that in order to develop the country's potential and create more sustainable industries and jobs, the society requires people with some level of competence in science and technology. Over time, we have established an engineering faculty at The University of the West Indies (UWI), a range of technical institutes which now fall under the umbrella of the College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT), the new Trinidad and Tobago Institute of Technology, and a range of private institutions offering technical courses, as well as YTEPP and youth camps.

The 1968-1983 education plan brought this concern with education for science and technology fully into the domain of the secondary school system, and resulted in a whole new sector of junior secondary and senior comprehensive schools. But the World Bank, which loaned us money to build these schools in 1968, was by 1990 condemning that approach to preparing young people for the world of work.

In Trinidad and Tobago today, at the post-secondary level, there is talk about more technical schools to prepare workers for the energy sector. At the secondary level, there is talk about an entirely new technical curriculum for the group of new schools being built under the Secondary Education Modernization Programme (SEMP). This new curriculum is referred to as technology education, and one of its fundamental tenets is that children should not be skilled for any single job but be equipped with understandings that would facilitate adaptability and flexibility.

As we forge ahead with new educational arrangements for coming to grips with the brave new world of science and technology, it would repay us to assess our situation critically and ask some very fundamental questions: Have all the arrangements for education in science and technology produced enough people who are inventors and adaptors of processes and technologies? What new goods have we produced and what new processes have we developed for using indigenous materials? I think the answer is - very little.

While our best efforts have been at the post-secondary and tertiary levels, I have heard experts in the field say that people who are trained at these levels end up simply serving the maintenance needs of the manufacturing or energy sectors. In addition, we have not as yet determined what we should be doing at the primary and secondary level. This is where we must begin and make technology education available for all.

If we accept that technology is the application of knowledge to solving the problems of daily living (which would include producing goods and services for sale and consumption, as well as solving social and political problems, and legal and organizational problems), then we understand that the development of technology requires a habit of mind, a favourable disposition towards one's environment, and a familiarity with materials and processes. It requires a connectedness to one's environment

so that there is a propensity to link knowledge to some social purpose, a commitment to that purpose, and an affinity to practical involvement. In broad terms, it takes place within a culture and is nourished by a kind of praxis among knowledge, action, and outlook. This can be gleaned if we examine the inventors of the steelpan or the craftsmen who made the industrial revolution in England. And they did it without formal schooling!

As a society we have many barriers to achieving the habits of mind, outlook, and practical involvement. The historical attitude has been that solutions to our problems lie outside and can be imported lock, stock, and barrel. Lloyd Best always makes it clear that there are two related problems here: self-knowledge and cultural confidence. In fact, technology is considered as an exogenous factor in our thinking about development here. Manufacturing in Trinidad and Tobago consists largely of importing foreign equipment and materials to make some product.

The separation between science and humanities in our education system is counter-productive in this regard. In fact, the approach to teaching science, which in our educational culture can be reduced to rote learning, leads to the “pure science person” whose knowledge is divorced from any specific society or community. Traditionally we have also separated theory from practice and head from hand. The best students in our secondary schools are not involved in any meaningful applications of their theory. It is simply for examination purposes. Also, in our tradition, bright people are seen as people who work with their heads while not-so-bright people work with their hands. Therefore, all attempts at introducing technical and practical work in schools in Trinidad and Tobago have always met with solid resistance. This is due to the fact that the public has respect only for the grammar-type education offered by traditional schools, which could make their children doctors and lawyers.

Two other factors make our predicament serious. Childhood socialization is changing in ways that deskill children. Long ago, children made tops, kites, and skateboards or scooters complete with wheels. These can now be purchased from the stores. Complex group games which children played and which developed certain technical and social competencies are no more. Preparing meals and making certain products at home helped give children experiences of handling materials and experimentation. People are now more prone to order “take away.” Children are increasingly spending more time on individual play with the new high-tech toys.

Modern work can also be very deskilled. This means that the experimentation and practice of using knowledge and materials to respond to needs is likely to be less forthcoming in the workplace. Therefore, informal options for inducting children and adults into the habits of mind and practice required for the development of technology are being reduced.

At the level of the school system we therefore need technology education for all. This requires, firstly, education that develops a problem-solving outlook in children. It also requires a correction of the imbalance between science and the humanities, and a self-knowledge which asserts that there are things of value here which can be developed to

sell to the rest of the world. Children must be habituated into the process of converting resources into outputs of goods and services. Central to this education must be the experience of apprenticeship where children experience the handling of materials and resources in providing some good or service in a real-life setting. Here students must see that technology is a practical response to the needs of people by the application of knowledge, insights, and imagination. This approach is even more necessary in the new information order.

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