REPORT OF WORKING GROUP 5.: "TECHNOLOGICAL DEVELOP-
MENT AND ITS IMPACT ON EDUCATION IN THE THIRD WORLD"

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The working group on Technological Development and Its Impact
on Education in the Third World was organized by Professor
Michel Debeauvais, the Group Co-ordinator. 40 participants of the
Congress enlisted for this group – 25 from developing countries
and 15 from industrialized countries. Prof. Seth Spaulding,
Director, International Bureau of Education of Unesco in Geneva,
was nominated as the Chairman of the working group and Dr.
Bikas C. Sanyal of the International Institute for Educational
Planning of Unesco in Paris was nominated as the Rapporteur.
There were 20 written contributions. The presentations made in
the group and the discussion that followed led us to identify
several themes, all having special reference to the Thrid World.
These are:
  1. Technology and its place in the world of knowledge and the
  society
    at large.
  2. Technological development, economic growth and north-south
    relations with special reference to education.
  3. Technological development and its impact on the labour
  market and
    corresponding educational needs in the Third World.
  4. Application of new technology in the education system in
  the Thrid
    World, and finally
  5. Implications for educational policy in the Third World.
The report that follows considers each of the above issues as
discussed in the group.

1. Technology, the world of knowledge and the society at large.

Science represents mankind's search for knowledge in order to
gain some understanding of the mysteries of the universe. This
search was carried out in the past through a combination of
mathematics and astronomy. For natural philosophy, as science

was called in the past, the minor principles discovered in the process of the search for knowledge were only of secondary importance. However, the accumulation of knowledge did not restrict its contribution only to mental and spiritual satisfaction. The contribution of these discoveries in improving upon the material conditions of human life was soon appreciated. Technology, therefore, replaced the haphazard, trial and error improvements in techniques, by a systematic method based on the expectation for complete taming and control of natural forces. It was destined to guide and control the development of techniques to improve upon the conditions of human life. Today, subtle transformations have occured in the perception of science. Science, now, hardly becomes visible in any other way than through technical manifestations. In this form, it has given the human race the capability to change and manipulate nature. Knowledge for its own sake is losing its value. Science is losing its justification of its own and is merging with technological research and development. This development, according to some, has led to a relationship between technology and environment based on the maximal exploitation of natural resources and between technology and knowledge ruled by the criterion of efficiency. The evolution of technological development has also changed the relation between society and knowledge to a type where instrumentalism plays a dominant role. According to the same argument the role of human beings in the production process has been subsidiary to the technology used. According to others, technological progress is liberating human beings from the drudgery of work, providing improved health conditions, better nutrition, and better communication among people.

Countries suffering from lack of communication facilities in the past are benefitting from technical progress in the use of radio, television and satellites. However, such progress has so far been the monopoly of the industrialized countries.

Concerns have been expressed by some about the shortcomings of the high technological model for Third World countries which have been importing, in most cases, such technologies, sometimes according to their own decision, often according to the intention of the exporting countries. Frustrated about the ill-effects of exaggerated application of technology, one participant asserted that the complec relationship involving the human race, society, environment, technology and knowledge, should have the human being as the centre of development who will be able to control the technology used.

Educational policies should not be associated with policies violating

the criteria of survival, social order and balance of physical environment.

It has also been asserted that education has a role to play in incalculating the skills of exploring, exploiting, managing and conserving natural resources on the one hand and of negotiating technology transfer, adapting, designing and developing new technology on the other, to enable the clientele to help technological development. Education has the more important role in providing proper attitudes and values so that the recipients impose on the society conditions for meeting the criteria mentioned above.

2. Technological development, economic growth and north-south relations with special reference to education.

Technological development has no doubt contributed to economic growth. This development has led to new forms of international division of labour and internationalization of means of production, knowledge and expertise where industrialized countries have a more dominant role. What kind of products could be exported, what type of technology could be transferred, what part of the production process to be handed over to the recipient country are decided by the exporting country. The knowledge gap between the industrialized countries and the Third World countries is widening, the power gap to control the economies is also widening in favour of the industrialized countries as well as the gap in economic well-being is increasing. The new international division of labour is generating some amount of industrialization in the Thrid World countries. However, because of the stronger emphasis on efficiency than on equity, disparity among the social groups within a country is also widening. The Third World countries, being in a subsidiary position and having complex socio-political constraints have been unable to improve upon the quality of life of the masses. Poverty, disease, malnutrition and illiteracy still prevail. On the other hand, imported technology changes the life style of the privileged few, increases the expectation among others and develops the risk of social disruption. Often the multinationals have been over enthusiastic in exporting technology to the Third World countries at their own interest without looking into the interest of the countries, sometimes at a very high price contributing to increased financial dependence of the recipient countries. They had to borrow money to buy the technology, often failed to repay the debt because of inefficient production system on the one hand and lack of marketability of the products in the hard currency markets because of trade barriers on the other. This resulted in critical

debt burden. It has been argued that those countries which have been late comers in the industrialization process, have been able to take advantage of the lessons learnt by the initiators. However, often such lessons have not been available to the recipient countries resulting in the repetition of the mistakes. Overzealous exporters and importers have often ignored the lessons as well, contributing to the increase of dependence of the Third World countries on the industrialized ones. The increased transfer of technology had its implications not only for the Third World societies as such but also for the labour market and the education system as discussed below.

3. Implications of the technological development for the employment market of the Third World countries.

In many Third World countries technological development depends entirely upon imports of technology from the industrialized countries and industrial development is confined to intermediate and consumer goods. It has been observed that the qualifications and skills required for the production of these goods are becoming increasingly specialized and contributing to the polarization of the labour force. The requirement of high level manpower is decided by the muntinationals according to their investment, production decision and choice of technology, specially in the countries where 'twin-key' type of technology transfer takes place. In those countries where investment decisions are at least partly controlled by the national authorities, the conditions of import of technology oblige the host country to orient its choice and application of technology to the development of techniques and knowledge occurring outside. This reduces the autonomy in investment decisions and in formulating employment policies. The organization of work, recruitment and promotion policies get distorted. The segmentation of the labour market increases, with a tiny privileged sector and a large national sector. On the other hand, technological development, if properly assimilated and adopted in the country with local control, can generate new employment, improve the working conditions of the citizens and their life style. This requires sufficient preparation on the side of the Third World countries. If changes in technology take place without a proper choice of the economic sector and the product, if such changes occur for saving of labour, the size of employment will reduce the problem of unemployment. If it is applied to new products and to new economic activities, technological progress will help generate new employment. In Third World countries, where much of the naturel resources is still untapped, and a large part of teh economy

unorganized, technological progress may increase the size of employment, thus reducing the problem of unemployment, unlike the situation in the industrialized countries where the entire economy is organized and new products only replace the old ones while machines replace men. Technological development not only influences the structure and the functioning of the labour market, it also influences the education and training system of the Third World countries. In this area the role of the multinationals is important. The special kind of organization of work, production process and the technological call for workers with a special kind of skills. Imparting such skills has been the main responsibility of the multinaltionals and foreign institutions and agencies. Very often this new type of training has been different in content and structure from the type of education and training prevailing within the country and has not given due consideration to the educational philosophy and the culture of the country. It has covered a small segment of the society - selected from the urban elites and neglected the large sector of the population outside of its domain. Segmentation which started in the labour market, now has pervaded the education system as well. The dependence on imported technology has resulted in dependence in the field of education and training. It has also generated, according to some, a new kind of 'transnational intelligence industry' through foreign studies. The developed countries receive the students and train them the way they want, with values and attitudes favourable for the developed countries. These students once back in their countries become 'bridge-heads clients and relay stations' for the interests of the dominant countries. The number of foreign students has increased nine times during 1950-80 around the world. In 1981 73 per cent of all foreign students were from developing countries studying in the developed countries, the largest proportion belongs to Asia (43.5%), followed by Africa (19%) and Latin America (10.5%). Given the size of the higher education student population in Africa, the proportion of students abroad in relation to the continents is extremely high. However the lack of higher education facilities within the continent, the need for modern, scientific and technological know-how and the availability of this know-how in the developçed countries oblige the Third World countries to send their students abroad. Some educators of the European universities have delineated several aspects of the co-operation between universiteis of the Third World and European universities. According to them, the European universities hsould cater for the needs of the soiety and mankind by dealing with such vital issues as peace, ecology and technology for their own survival and legitimization. As to the co-operation with Third World countries the following criteria are suggested: common interests, possibility to co-operate on equel

terms, scope for improvement of horizontal communication,
possibility of establishment of a balanced network of
communication from dependency to interdependency and possibility
to profit from intercultural differences. This takes us to the next
issue of the discussions.

4. Application of new technology in the education system of the Third World

Technological development in industrialized countries has pervaded
their educational delivery system. This, in its turn has also
influenced the educational delivery system of the Third World.
The introduction of radio and television for education in the
Third World countries had mixed results. The educational
television in the Ivory Coast was not a successful experiment.
The radio clubs set up with foreign assistance in Niger and
Senegal for French language instruction was a success.
Unfortunately, similar application could not be made for national
language instruction due to lack of finance. The Third World
countries faced a dilemma as to wheter to adopt a foreign
language for official purposes or help to develop the national
language to retain cultural identity. It was suggested that the
national language be adopted for all, specially at the lower levels
of education and retain the foreign language for international
co-operation while developing and modernizing the national
language at the same time. It was also observed that before the
introduction of new technologies in education teachers should be
well trained. In most cases, teachers were ill-equipped and the
equipments were not well maintained because of the lack of skilled
manpower and spare parts. Concerns have been expressed that
due to international competition the export of new technologies
has been pushed too hard and too fast by the foreign companies
to the Third World countries without giving them sufficient time
to build up the infrastructure to use them effectively. It has
been suggested that before adopting a new technology, a critical
evaluation of the technology should take place through pilot
experiments while maintaining the traditional techniques of
teaching/learning and improving upon their quality. It has also
been noted that the content of education in the Third World
countries should be geared to the new technological revolution, if
these countries have to benefit from this. Emphasis should be laid
on the development of skills to explore, exploit, manage and
conserve the natural resources the countries possess. Emphasis
should be laid also on the acquisition of such skills as negotiating
terms of trade in technology, depackaging, adopting, designing
and mastering the technology that is being imported. It has also

been observed that large, urban universities in some Third World countries look for new techniques more than small, regional universities.

5. Implications for educational policy.

Finalyy, it was noted that the import of technological development in the education system of the Third World has given mixed results.
Given sufficient attention to (i) develop the local infrastructure (ii) negotiate local control on technology and (iii) establish proper criteria for formulating policies for education and for international co-operation, technological development could have a good impact on the education system of the Third World. The educational policies of the Third World should not, however, reject the traditional methods of instruction and should try to improve upon their quality while critically reviewing the new technology before adopting them to replace traditional methods.