
Educational Policies for the 21st Century in Southeast Asian Developing Countries

K.J. Ratnam
Universiti Sains Malaysia

Makalah ini membincangkan dasar pendidikan dan keperluannya bagi menghadapi masalah dan isu pendidikan di negara-negara membangun di Asia Tenggara sebagai persediaan untuk menghadapi abad ke 21. Hal-hal dasar yang berkaitan dengan kualiti pendidikan, persamaan pendidikan dan pengurusan dan model dasar pendidikan disentuh. Soalan-soalan mengenai kepentingan dan jenis pengetahuan dan kemahiran bidang pengajian dan kurikulum pendidikan satu perkembangan teknologi dalam pendidikan bagi keperluan kemajuan negara dan antara negara dibincangkan.

Civilization, as we know it, has existed for a few thousand years, while it is only during the present century that mass education has become a discernible feature of civilised society. Apart from its humanising and liberating influence, a measure of the value of education can be seen in the fact that its early democratization in the industrial countries was a critical factor in their economic advancement. Without mass education there would almost certainly not have been the same depth to the economic, technological, social and cultural transformation of these countries and to their achievement of high levels of material well-being. The argument could certainly be made that it is disparities in access to education rather than to technology that lie at the root of many present-day inequalities, not only between rich and poor countries but also between the more and the less privileged sections within individual countries. The broadening of educational opportunities must therefore be seen as a necessary (although surely not a sufficient) condition for the redressing of these inequalities. In the absence of policies that deliberately set out to achieve this, participation in the modern industrial sector of developing countries will continue to be narrow and self-selective, undermining equity objectives and impeding economic growth and self-reliance. This in turn will have a significant bearing on any restructuring of the present unequal and unbalanced world economic order.

The educational gap between industrial and developing countries is not, however, confined to problems of spread and access alone. Greater parity will also have to be achieved in the quality of education, determined by such things as the content of learning, the professional competence of teachers, the availability of ancillary facilities and the attention given to vocational training. It is these which ultimately will determine the overall level of competence in any society.

Against this background, and given both the changing texture of their own societies and the certainty of continuing scientific and technological advance in the world, how should the developing countries of Southeast Asia go about equipping their future generations for life in the twenty-first century?

But first it may be necessary to point out that although the title of this paper refers to the "developing countries of Southeast Asia", the points made here have relevance for all developing countries because of basic similarities in the conditions prevailing in them. Specific needs, the priorities arising from them and the resources available for educational development would of course vary from one developing country to another, sometimes to a great extent, but this would also be true within Southeast Asia. The policy issues which occupy the minds of educational planners in Singapore and Brunei, for example, would be quite different from those which concern their counterparts elsewhere in the region, for obvious economic and demographic reasons. Even among the remaining countries in the region population size and levels of economic well-being differ greatly, resulting in problems of varying complexity and magnitude.

Another factor worth mentioning would be the influence of ideology on educational policy. Differences in approach between say Cambodia or Vietnam and Malaysia or Thailand cannot be fully understood without at least some reference to this.

These considerations notwithstanding, educational goals would in general have to be the same for all Southeast Asian countries. The most important of these, for economic as well as for social and ethical reasons, must be the provision of universal primary education, to ensure basic literacy for all. Clear targets would also have to be set, beginning now, to achieve near-universal secondary education, up to say age 15, and to make vocational education available both for those who do not proceed to the higher secondary level and for those who do not proceed academically beyond it. The content of vocational education, however, would have to be monitored continuously to accommodate changing skill requirements and to facilitate the adoption of new technologies. Together with the acquisition of knowledge, which must remain the main purpose of education, increasing emphasis would have to be given in future to the acquisition of modern skills. Without these skills, and without a system for upgrading them, any advantage gained through investment not only in industry and technology but even in education would at best be short-lived.

As at present, post-secondary educational policies in the next century would have to be guided by manpower requirements so as to ensure an approximate balance between supply and demand in important areas of employment. The temptation should however be resisted to relate educational policies, and even the output of different kinds of graduates and technical personnel, too closely to projections made whether by Government, industry or "international experts". In the rapidly changing social, economic and technological environment of the coming decades these projections may prove even less reliable than they sometimes have in the past. By responding too readily and uncritically to external judgements, educational and training institutions can sometimes make adjustments to their curriculum which they may later have cause to regret. Thus, while it may be perfectly legitimate and even necessary for external (or market) considerations to influence the formulation of educational priorities, the accommodation of these priorities ought to take place within a context where basic academic objectives, as well as the objective of maintaining the right balance between "educational" and "training" functions, are not overlooked.

It has long been recognized, although there are some who still appear to need persuading, that education is a value in itself, something which elevates human beings and which is therefore worth having for its own sake. The notion of education as the transmission of skills also has a long history, but this has acquired fresh and enlarged significance through the premium which now rests on the mastery of complex skills arising from technological advance. It is however only during the second half of this century that education has seriously come to be regarded not only as consumption but also as investment, both private and public. What R.H. Tawney said almost sixty years ago: "What a wise and good parent will desire for his children, a nation must desire for all children"¹, has now become an underlying assumption of public policy almost everywhere, to a point where it is often the state which bears the primary responsibility both for planning and for financing education.

The economics of education is an important field of study, involving more than just cost-benefit analyses. It looks at the role of education in productivity, income distribution and economic growth; it raises questions about how much money should be spent on education, how this should be distributed between different levels and types of education and between different cost items such as salaries, buildings, equipment and student subsidies; it evaluates how investment in education compares with other forms of investment; it measures how education and training affect the rate of return on investments in physical capital and technology; and it looks at such diverse issues as the brain-drain and consumption aspirations. These are matters that cannot be ignored in any comprehensive evaluation of education, but they are also of a highly technical nature and may require another person, and possibly also a different occasion to get a proper airing. Furthermore, as observed by M.J. Bowman²,

.....the view of education as an investment in the creation of future income streams is a special view of education. It says nothing about education as a pleasurable (or painful) 'consumer' experience while in school. It says nothing about education for citizenship or political ends generally. What it says about education as either a private or societal investment in the acquisition of a future income stream depends upon how we define 'income' and, in applied economics, on what elements of income get measured - directly or indirectly. In practice what is most easily measured in money income, but there is also the 'real income' potential of the capacity to 'do it yourself', whether this is home carpentry or filling out your own income-tax form. Where income in kind is an important part of total real income, as in subsistence farming, incorporation of such earnings in income estimates becomes essential; this is an important consideration in attempts to compare income positions or assess economic returns to schooling in less developed countries.

Although my focus will be on the more general aspects of education and educational policy, there is one resource-related issue that cannot be overlooked. For many Southeast Asian countries population size will almost certainly continue to be an important factor in educational planning, because economic and social changes are not likely to take place fast enough to offset its influence³. Indonesia, the Philippines and Thailand, for example, which

had populations of 159 million, 53 million and 50 million respectively in the mid-1980's, are likely to have these numbers doubled during the first quarter of the next century and possibly doubled again by the middle of that century. What this means for educational planning is that the number of schools (or classrooms) and teachers would in all probability have to be more than doubled in the next twenty-five to thirty years since the percentage of children going to school should also have increased by then⁴. The resources which this will require - in terms of buildings, equipment, teachers etc. - are bound to be immense and the problems of obtaining these resources ought not to be underestimated.

This resource problem is one that will confront most Southeast Asian countries in the years to come. Some countries may find a partial solution through greater participation of the private sector in education but this participation would have to be managed in such a manner as not to further aggravate the inequalities which now already exist between rural and urban areas or between poorer and richer regions, with regard to educational opportunities. It should, however, be borne in mind that even if the rural share of the population were to decline, along with agriculture's contribution to the national economy, educational targets may not automatically come within easier reach, as we have seen in many Latin American countries.

To summarize, the goals of social transformation aside, the nature of economic activity in Southeast Asian countries in the decades to come will be such as to require an increasing proportion of their people to be educated, and at higher levels.

If the single most irresistible feature of the last hundred years has been the rate at which science and technology have advanced, it seems almost certain that this rate will accelerate even further during the next hundred. Indeed, even the changes that have already occurred have been so profound that it is not only the content but also the structure of knowledge that has altered. Quite understandably the problems of coming to terms with this have been of particular significance to upper secondary (senior high) and university education, although the way in which basic scientific knowledge is introduced and handled at earlier levels will also require some rethinking. This brings us to the related questions of curriculum improvement and academic standards.

The problem facing modern education is not simply that knowledge has expanded (when has it not?) but that it has expanded so fast in recent times as to place a heavy and sometimes undue strain on curriculum planners. A concomitant problem, faced by developed and developing countries alike, is how far the curriculum can (or ought to) go in responding to rapid changes in knowledge. Lack of stability in the curriculum, even when caused by the need to introduce "improvements", can itself undermine quality.

In their desire to keep abreast of advancing knowledge, curriculum planners, especially at the secondary and tertiary levels of education, have tended to choose the unimaginative option of increasing the volume of information to be conveyed. The underlying view seems to have been that since there is now that much more to be learned, that much more therefore needs to be taught. This to me has been a passive and mistaken strategy: there is a limit to how far one can go down this particular road, in a world where knowledge is said to double every ten years or so, before becoming inevitably caught up in a form of curriculum gridlock. Its in any event doubtful whether this strategy, while increasing the

burden of learning, has anywhere produced students who on the average are either "better educated" (as opposed to better informed on factual matters) or more capable of handling their adult roles. After all, how much does any of us remember, or need to remember, of the mass of information that we were taught in our earlier years? As the American psychologist B.F. Skinner put it, "Education is what survives when what has been learned has been forgotten"⁵.

It is therefore perhaps not all that surprising that while at all levels of education we now impart far more knowledge than we did a generation ago, the complaint is all too common that those who emerge from the highest level, that is, who graduate from our universities, are not as good as their predecessors were a generation ago. The reasons for this, if indeed the complaint is well founded, no doubt go beyond the content of the curriculum, to include such things as the "massification" of higher education and general cultural changes.

This issue is by no means confined to Southeast Asian or even to developing countries and was in fact one of the dominant themes addressed at a recent meeting of the British Association for the Advancement of Science. At that meeting Sir Sam Edwards, the Director of the Cavendish Laboratory at Cambridge University, complained of the "rat race of science" to which students at British universities were being subjected. As reported in London's Sunday Times of 10 September 1989, he was in no doubt that the cause of the problem lay in work load:

Our students face a catastrophic wall of information under immense pressure for three years....I am sitting on a pyramid of horror at Cambridge where students have to work desperately hard to keep their heads above water.

I have myself heard many stories of how students with extremely high entrance qualifications have "failed to fire" in their university studies because of this overload, resulting either in their changing their courses of study or in their obtaining grades well below their potential. What the curriculum seems to have achieved, not only in these cases but across a fairly wide spectrum of university students, is the remarkable feat of turning cream into milk.

Paradoxically, what the expansion of knowledge has actually done is to strengthen the case, not for increasing the quantum of what is taught but for laying proper foundations for learning. It is only by mastering the basics that the students of today, and, even more, those of tomorrow, will be able to handle the complex web of modern knowledge.

Viewed in these terms, the problem is not merely one of what to teach, but also of how much. Already acute during the closing years of this century, this problem could reach critical levels if an attempt is not made soon to re-evaluate certain key educational goals and the best ways of achieving them. The purpose of such a re-evaluation should be to establish a framework within which a sound basic education can be provided in schools that recognizes the state of modern knowledge, establishes the foundations for learning by emphasising the principles which underlie both theories and observed facts, portrays knowledge as an open rather than as a closed system, and provides the grounding for pursuing higher knowledge in the case of those who proceed to tertiary education.

The problem is also likely to arise, early rather than late in the next century when, for reasons I have already touched on, the question will be posed as to whether traditional disciplines are the most appropriate vehicles for the efficient transmission of knowledge. An increasing proportion of knowledge requires new and more flexible approaches to learning, often requiring the services of what now are often regarded as 'sub-disciplines'. It would therefore be worth exploring more thoroughly than has been done so far whether, especially at the university level, disciplines such as biology, physics and chemistry should not be taught conventionally only for the first one or two years (to complete and to round off the foundations laid earlier) and for the remaining years to be devoted to so-called 'sub-fields'⁶. Many of these sub-fields have become so extensive in themselves and have so much basic knowledge of their own that, especially in the sciences, it would be a mistake to regard such a policy as leading to overspecialization at the expense of the traditional goals of undergraduate education. If anything, it is only through such an approach that we may be able to save many university curricula from the overloading and lack of coherence that now seem to characterise them⁷.

Already such hybrid fields as biophysics, biochemistry, environmental science, urban and regional planning, development studies and so on occupy an important place in university curricula. Many high-profile disciplines of today, such as computer science, operational research, mass-communications, microelectronics, and, in most places, even management did not come into their own until after the Second World War. Similar developments have also taken place in professional fields (one can think of a host of new specialties in the medical sciences alone), although in their case many new 'disciplines', including some hybrids, are still primarily postgraduate specializations.

In suggesting a fresh look at the way in which we package and transmit knowledge I am only too conscious of my own long-held view that major curriculum changes ought only to be attempted sparingly and that one of the diseases from which modern education has most suffered is over-experimentation with the curriculum - arising as much from changing philosophies of education as from the need to revise content. But this is an issue which I shall have to leave for another occasion.

In general, then, the curriculum at any level ought to be able to meet the requirements of the state of knowledge at any given time without becoming too burdensome and hence beyond the capacity of students and teachers. On the one hand, in order to measure up in the modern world, the countries of Southeast Asia would have to assiduously propagate a scientific orientation among their citizens, and the primary responsibility for this must fall inevitably on the educational system. But loading the curriculum with new layers of factual knowledge is not the best way of achieving this and may even be counter-productive by placing undue stress on the learning capacity of the average student. Especially at the school level, an important objective of the curriculum should be that of familiarising students with methods of inquiry because this has an important bearing on how people assimilate and handle knowledge. Overemphasis on factual knowledge, especially when accompanied by overloading, may only produce bookish generations with limited awareness of the uses and applications of knowledge, with fewer intellectual and living skills, and with less awareness of the surrounding world. Such generations would almost certainly be less inclined to creativity, including scientific and technological creativity, and to cultural and intellectual pursuits. Even the most taxing educational system should be deemed to have failed if all it can produce is what Alexander Pope called :

"The bookful blockhead, ignorantly read,
With loads of learned lumber in his head."

In some scientific subjects, but perhaps even in subjects like history, it may be useful to incorporate future-oriented approaches, even if only minimally.

Those formulating educational policies should also recognize that not all learning skills lend themselves easily to measurement through examinations and that an over-preoccupation with examinations can adversely affect the quality of the classroom experience. It can also undermine other values, such as the stimulation of curiosity and the development of extra-academic interests, which we commonly associate with education. For any curriculum to succeed, teachers must have the capacity to involve their students more than passively in the subjects of study and in the learning process generally. It should at no time be forgotten that an important goal of the educational system should be to provide maturing generations with evaluative, interpretive and even speculative skills.

As problems come to be perceived and even shared across national boundaries, it must become a responsibility of the school curriculum to enable students to better comprehend the world around them and some of its important concerns. At least some civic obligations will, as they already do at present, call for more than a national or even regional perspective and educational policies would have to take this into account. Students should for example be given an understanding of issues pertaining to their own as well as the wider global environment, and of their responsibilities towards that environment.

As indicated earlier, it will have to be clearly acknowledged that the learning or acquisition of living skills is an integral part of education. While the main purpose of these skills may be to assist individuals to better handle inter-personal relations and to cope satisfactorily in their social and occupational settings, collective interests and welfare would also have to be given some emphasis. This part of education would naturally tend to have a high normative content and might even involve the explicit inculcation of specific key values. It therefore becomes all the more important that this dimension be handled imaginatively and sensitively, among other things by ensuring that it reinforces and is consistent with the other ways in which society transmits values to the young - for example through the family.

Realities of a different kind will strengthen further the need for Southeast Asians to have a working knowledge of at least one major international language. Proficiency in such a language would be particularly important for those who proceed to tertiary education and will continue to be an important criterion for employment in the modern industrial and commercial sectors.

To be able to hold their own in the twenty-first century, the countries of Southeast Asia would need to have citizens who, in addition to having the required professional, technical, entrepreneurial and other skills, are also culturally alert and receptive. But these citizens must also have the resilience, in technological and commercial as well as in cultural matters, that will enable them to adapt and change, innovate and pursue their collective interests, on their own terms. It needs hardly to be mentioned that the kind of education which people receive will have an important bearing on whether they do in fact become such citizens.

With the globalization of knowledge, it has come to be regarded as almost self-evident that for an educational system to be successful it must measure up to international standards. The arguments favouring the adoption of syllabi that are internationally valid cannot however ignore the need to preserve local orientations and content in some important areas of learning. A question that needs to be addressed is therefore that concerning the extent to which curriculum policies need to accommodate national considerations.

Admittedly most scientific disciplines would require a fundamental similarity of approach across national boundaries. But there would still have to be some differences in focus, for example in the study of ecosystems, plant and animal life, and even human diseases. It is in the humanities and the social sciences, however, that the question of local content will be (as it already is) most significant. In subjects like history, there would be the inevitable pull between education for knowledge and education for citizenship. There are few countries that do not recognize, at least implicitly, a social and civic role for education and the content of history teaching is often a good indicator of this.

It of course goes without saying that the history of early civilizations, major social movements and international power relations would deserve a place in everyone's syllabus. But it is equally important that enough room be reserved for the learning of one's own history because education is also a vital pillar of nation-building and social cohesiveness. Unfortunately history can also be used, as we know it to have been, to foster prejudice and to promote narrow ideological and sectional interests. Where it has been put to such contentious use we may question not only its educational but also its civic value. It is not merely that one man's history can be another man's fiction, which in itself need not be alarming, but that the roots of many present-day conflicts, both within and between countries, can directly be traced to divergent and self-serving interpretations of history.

Where the subject is taught separately, a balance would similarly have to be struck in the civics curriculum between universal and local concerns. There has sometimes been a tendency for this curriculum to focus too heavily on the structure and processes of government in individual countries and it would be desirable to give it a wider educational function. This could be done by giving greater emphasis to universal values, cross-cultural issues (especially where these are important) and to social obligations and responsibilities.

Even in subjects like geography, where basic principles and a considerable body of knowledge would tend to have universal validity, the need for local orientation cannot be avoided. It would not, for example, make good sense to require a student from Malaysia or Indonesia to learn as much about wheat cultivation in Canada or cattle rearing in Argentina as about rice cultivation or rubber production in his own and in other Southeast Asian countries. The factors which affect agricultural production would also have to be shown in their proper local context, involving such things as labour supply, land tenure, soil characteristics, irrigation, price controls, management etc.

For reasons touched on earlier, vocational training would have to receive greater prominence in the educational systems of Southeast Asian countries in the decades to come. Here too local considerations would have to be given proper regard. More than in conventional education, policies in vocational education would have to take into account changing market needs, production modes and technology, because these are the key

determinants of any society's skill requirements. Just as many traditional crafts and the skills associated with them have disappeared in the face of advancing technology and the mass production of goods, we may find that many of today's key industrial skills will become irrelevant in the future. The need for machine tool operators, for example, is bound to decline with the advent of tools which are themselves programme-controlled. Flexibility and built-in provisions for re-training would therefore have to become important elements in the planning of vocational training programmes.

In the context of Southeast Asian countries it would be a mistake to regard vocational training as being related only to industrial and office-based activities. Increasingly, rural dwellers would have to be given access to technical know-how on matters like crop management, the use of fertilizers, pest control and the use and maintenance of farm machinery. What is therefore important is that we should at all times avoid having fixed, limited notions of what in fact constitutes 'vocational training'. I am reminded in this context of an amusing incident narrated by Margaret Mead:

I once lectured to a group of women - all of them college graduates - alert enough to be taking a fairly advanced adult-education course on 'Primitive Education'... I described in detail the lagoon village of the Manus tribe, the ways in which the parents taught the children to master their environment, to swim, to climb, to handle fire, to paddle a canoe, to judge distances and calculate the strength of materials. I described the tiny canoes that were given to three-year-olds, the miniature fish spears with which they learned to spear minnows, the way in which small boys learned to caulk their canoes with gum, and how small girls learned to thread shell money into aprons. Interwoven with a discussion of the more fundamental issues, such as the relationship between children and parents and the relationship between younger children and older children, I gave a fairly complete account of the type of adaptive craft behavior which was characteristic of the Manus and the way in which this was learned by each generation of children. At the end of the lecture one woman stood up and asked the first question: 'Didn't they have any vocational training?'⁸

Policy-makers of the next century are likely to be attracted by the convenience and efficiency offered by future advances in educational technology. As is already being shown, some of these advances will have the unique characteristic of being equally attractive in situations of affluence and need. Thus, while those with sufficient resources may adopt new technology solely as a means of improving educational quality, those without the resources may rely on it to improve access to education and to overcome other shortcomings. For example, where trained teachers and basic amenities such as laboratories are in short supply, or where there are major difficulties in extending education to rural or remote areas, a partial solution may be found through the use of distance teaching methods that rely variously on direct broadcasting through an educational television channel, the use of video cassettes and even teleconferencing facilities. Attractive as some of these prospects might be, it is important that the adoption of these methods be

preceded by a proper evaluation both of their advantages and of their limitations, so that there is a clear appreciation of how far they can actually replace, rather than just augment, conventional methods. The same should apply with regard to computer-aided instruction, which is already receiving wide attention in many areas. As I have noted elsewhere⁹,

As long as education is seen as involving more than the mere transmission of skills and information, there will be an awareness of the risks of switching too fully or too quickly to techno-centric methods because these cannot achieve (and, if relied on excessively, could even undermine) some of the broader objectives of education.....Computer-assisted instruction can, if used properly and selectively, free teachers from the drudgery of teaching by rote. But before any action is taken to give it prominence, one has to look closely at the teaching profession, and especially at teacher-training to see if teaching by rote isn't in fact what teachers are best at because that is what they have been trained for. One has to be sure that notions about creating a situation in which teachers can perform creatively and with greater inspiration do not turn out to have been misplaced. Any significant use of computer-based instruction will have to be preceded by appropriate changes in the teacher training curriculum, to enable teachers to use the new facilities effectively and, more importantly, to ensure that they understand the implications which this must have for their professional role. In the final analysis, some of the most important questions in this regard are not technological but educational.

Regardless of the potential which technology holds for educational development, the highest priority should therefore continue to be given to teacher training. It would simply make no sense to plan for better education without also planning for better teaching. Steps would also have to be taken to ensure that the social and material rewards associated with the teaching profession are adequate to attract a sufficient number of young men and women of quality into that profession.

Finally, an underlying objective of all educational policies should be the development of civic consciousness, a capacity for cultural and artistic appreciation and a concern for such values as fairness, honesty and tolerance. These are all qualities which civilise us as individuals while enriching the societies to which we belong. They may not necessarily find a place in the formal curriculum, and in some cases may even be best left out of it, but their place in the overall educational process should not be lost sight of.

Cultural activities, once the preserve of a small elite, have now become broad-based largely through the expansion of literacy and the development of the mass media. The emergence of television as the dominant cultural medium of recent times has however led to the development of a popular culture that is qualitatively different from that of even the middle of this century. Leisure is now 'spoken for' more than ever before, and with less variety.

This in itself need not be a cause for concern but one unfortunate consequence everywhere seems to have been a decline in interest in reading among the young. With the growth of satellite transmission, and especially through its indiscriminate adoption, television could become even more influential as a purveyor of cultural fast-food, but this can be avoided. Intelligently used, the international transmission of television programmes can in fact help to reduce insularity and broaden the cultural and educational horizons of people everywhere. This could well become a factor to be taken into account in educational planning in the next century.

In general, we must learn to cultivate a balanced view of technology and technological progress. Indeed, an important purpose of education should be to help our societies to master rather than avoid technology. If we become fearful of technology and resent its role, we will not be advancing our interest in any way, even culturally. What is important is that we should know how to regulate the influence of technology in our societies, and our ability to do this will depend very much on the kind of education to which we expose our maturing generations. Our schools, polytechnics and universities must produce thinking, discerning, self-reliant individuals with a capacity to learn from observation and experience as much as from books.

The influence of technology will continue to be the dominant theme of the twenty-first century. It is likely to change our lives even more in the next century than it already has in the present one. But it does not have to alter us so thoroughly and so negatively as to leave us with societies where, to quote Herbert Read, "There will be lights everywhere except in the mind of man....."¹⁰

Notes

1. Quoted in *The Politics of Education: Edward Boyle and Anthony Crosland in Conversation with Maurice Coga*. London: Penguin, 1971, p.21.
2. Bowman, M.J., "The Human Investment Revolution in Economic Thought", in M. Blaug (ed.) *Economics of Education 1*. Penguin Books, U.K., 1968, pp. 104.5.
3. It may be more than coincidental that there is now an inverse relationship between population size and per capita wealth in the countries of ASEAN.
4. A further doubling of facilities in the following twenty-five to thirty years may not be necessary because by then other demographic processes may have led, as they have elsewhere, to a reduction in the proportion of the population that is of school going age.
5. Skinner, B.F., "New Methods and New Aims in Teaching", in Calder, N. (Ed.), *The World in 1984*, Vol. 2, U.K., Penguin Books, 1965, p. 72.
6. This would in fact constitute a qualitative change from the present practice in many universities of devoting the first one or two years to multi-disciplinary science (or social science/humanities) and the remaining years to specialization (or 'honours programmes') in individual disciplines such as chemistry and physics.
7. It was, after all, precisely this same approach that originally led to the teaching of biology, chemistry, sociology, international relations, etc, as separate subjects.
8. Mead, H., "Our Educational Emphases in Primitive Perspective", in Keddie, N. (ed.), *Tinker, Tailor....*, London, Penguin Education, 1973, 1973, p.97.
9. Ratnam, K.J., *Technology and Society*, Penang, Penerbit Universiti Sains Malaysia, 1985, pp. 59-60.
10. This was part of his gloomy prediction, made in 1964 for the year 1984, of the impending fate of the arts. Read, Sir H., "Atrophied Muscles and Empty Art", in Calder, N. (ed.), *The World in 1984*, vol.2, Penguin, 1965, p.92.

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