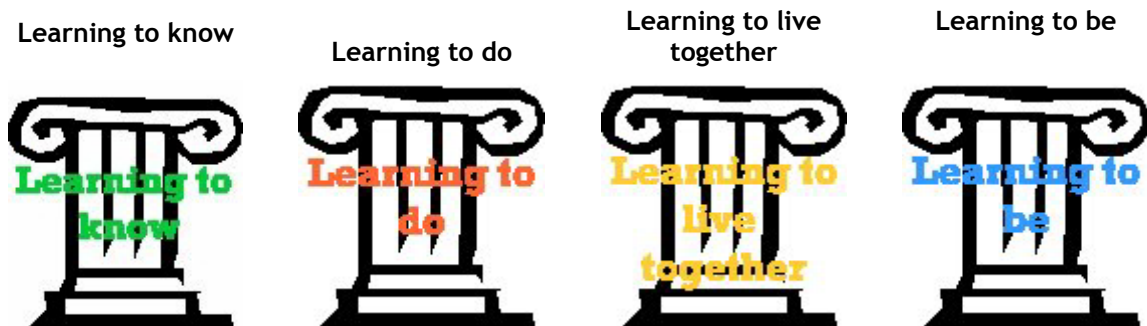


The Four Pillars of Education



These four pillars of knowledge cannot be anchored solely in one phase in a person's life or in a single place. There is a need to re-think when in people's lives education should be provided, and the fields that such education should cover. The periods and fields should complement each other and be interrelated in such a way that all people can get the most out of their own specific educational environment all through their lives.

Learning to know

This type of learning is concerned less with the acquisition of structured knowledge than with the mastery of learning tools. It may be regarded as both a means and an end of human existence. Looking at it as a means, people have to learn to understand the world around them, at least as much as is necessary for them to lead their lives with some dignity, develop their occupational skills and communicate with other people. Regarded as an end, it is underpinned by the pleasure that can be derived from understanding, knowledge and discovery. That aspect of learning is typically enjoyed by researchers, but good teaching can help everyone to enjoy it. Even if study for its own sake is a dying pursuit with so much emphasis now being put on the acquisition of marketable skills, the raising of the school-leaving age and an increase in leisure time should provide more and more adults with opportunities for private study. The broader our knowledge, the better we can understand the many different aspects of our environment. Such study encourages greater intellectual curiosity, sharpens the critical faculties and enables people to develop their own independent judgements on the world around them. From that point of view, all children - no matter where they live - must have a chance to receive an appropriate science education and become friends of science throughout their lives.

However, since knowledge is multifarious and capable of virtually infinite development, any attempt to know everything becomes more and more pointless. In fact, after the basic education stage, the idea of being a multi-subject specialist is simply an illusion. The initial secondary and university curricula are therefore partly designed around scientific disciplines with the aim of giving students the tools, ideas and reference methods which are the product of leading-edge science and the contemporary paradigms.

Such specialization must not exclude general education - not even for future researchers who will work in specialized laboratories. A truly educated person nowadays needs a broad general education and the opportunity to study a small number of subjects in depth. This two-pronged approach should be applied right through education. The reason is that general education, which gives pupils a chance to learn other languages and become familiar with other subjects, first and foremost provides a way of communicating with other people. If specialists rarely set foot outside their own scientific circle, they are likely to lose interest in what other people are doing. Regardless of the circumstances, they will find working with others a problem. On the other hand, general education, which forges spatial and temporal links between societies, tends to make people more receptive to other branches of knowledge. While the history of science is written by historians, scientists find it useful. By the same token, lawyers, sociologists and political scientists increasingly need basic economics. Lastly, some breakthroughs in the advancement of human knowledge occur at the interface of different specializations.

Learning to know implies learning how to learn by developing one's concentration, memory skills and ability to think. From infancy, young people must learn how to concentrate - on objects and on other people. This process of improving concentration skills can take different forms and can be aided by the many different learning opportunities that arise in the course of people's lives (games, work experience programmes, travel, practical science activities, etc.).

The development of memory skills is an excellent tool for countering the overpowering stream of instant information put out by the media. It would be dangerous to conclude that there is no point in people's improving their memory skills because of the vast amount of information storage and distribution capacity available. While some selectivity is undoubtedly required when choosing facts to be "learned by heart", there are numerous examples of the human memory's ability to outperform computers when it comes to establishing connections between memorized facts that apparently have very little to do with each other. The specifically human ability of associative memorization is not something that can be reduced to an automatic process; it has to be carefully cultivated. Furthermore, specialists in this field agree that memory skills have to be developed from infancy and that it is dangerous to discontinue various traditional exercises in schools simply because they are considered to be boring.

Thinking is something children learn first from their parents and then from their teachers. The process should encompass both practical problem-solving and abstract thought. Both education and research should therefore combine deductive and inductive reasoning, which are often claimed to be opposing processes. While one form of reasoning may be more appropriate than the other, depending on the subjects being taught, it is generally impossible to pursue a logical train of thought without combining the two.

The process of learning to think is a lifelong one and can be enhanced by every kind of human experience. In this respect, as people's work becomes less routine, they will find that their thinking skills are increasingly being challenged at their place of work.

Learning to do

This question is closely associated with the issue of occupational training: how do we adapt education so that it can equip people to do the types of work needed in the future? Here we should draw a distinction between industrial economies, where most people are wage-earners, and other economies where self-employment or casual work are still the norm.

In societies where most people are in paid employment, which have developed throughout the Twentieth century based on the industrial model, automation is making this model increasingly "intangible". It emphasizes the knowledge component of tasks, even in industry, as well as the importance of services in the economy. The future of these economies hinges on their ability to turn advances in knowledge into innovations that will generate new businesses and new jobs. "Learning to do" can no longer mean what it did when people were trained to perform a very specific physical task in a manufacturing process. Skill training therefore has to evolve and become more than just a means of imparting the knowledge needed to do a more or less routine job.

From certified skills to personal competence

The major part played by knowledge and information in manufacturing industry renders obsolete the notion of specialist skills on the part of the workforce. The key concept now is one of "personal competence". Technological progress inevitably changes the job skills required by the new production processes. Purely physical tasks are being replaced by tasks with a greater intellectual or cerebral content such as the operation, maintenance and monitoring of machines and design and organizational tasks, as the machines themselves become more intelligent.

There are several reasons for this increase in skill requirements at all levels. Instead of being organized to perform specified tasks in juxtaposition in accordance with Taylor's principles of scientific labour organization, manufacturing workers are often divided into work teams or project groups on the Japanese model. This approach represents a departure from the idea of dividing labour into similar physical tasks which are essentially learned by repetition. Furthermore, the idea of personalized tasks is taking over from that of employee interchangeability. There is a growing trend among employers to evaluate potential employees in terms of their personal competence rather than certified skills which they see as merely demonstrating the ability to perform specific physical tasks. This personal competence is assessed by looking at a mix of skills and talents, combining certified skills acquired through technical and vocational training, social behaviour, personal initiative and a willingness to take risks.

If we add a demand for personal commitment on the part of employees in their role as change agents, it is clear that this kind of personal competence involves highly subjective innate or acquired qualities, often referred to as "people skills" or "interpersonal skills" by employers, combined with knowledge and other job skills. Of these qualities, communication, team and problem-solving skills are assuming greater importance. The growth of the service industries has resulted in an increase in this trend.

The shift away from physical work - the service industries

In advanced economies there is a shift away from physical work. The implications of this trend for education are even clearer if we look at the development of the service industries in both quantitative and qualitative terms. Most of the active population (60 - 80 per cent) of the industrialized countries is

employed in the service sector. The main defining characteristic of this extremely broad category is that it covers activities which are neither industrial nor agricultural and which, despite their diversity, do not involve any tangible product.

Many services are defined primarily in terms of the interpersonal relationship involved. Examples of this are found both in the rapidly expanding private service sector which is benefiting from the growing complexity of economies (every kind of expertise imaginable, security services or high-tech consultancy services, financial, accounting and management services) and in the more traditional public sector (social services, health and education services, etc.). In both these cases, information and communication play a vital role. The key aspect here is the personalized acquisition and processing of specific data for a clearly defined project. In this type of service, both the provider and the user influence the quality of the relationship between them. Clearly, people can no longer be trained for this sort of work in the same way as they learned how to plough the land or make a sheet of steel. These new jobs are about interpersonal relationships; workers' relationships with the materials and processes they are using are secondary. The growing service sector needs people with good social and communication skills - skills that are not necessarily taught at school or university.

Lastly, in the ultra high-tech organizations of the future, where relational inadequacies might cause serious dysfunctions, new types of skills will be required, with an interpersonal rather than intellectual basis. This may provide an opportunity for people with few or no formal educational qualifications. Intuition, common sense, judgement and leadership skills are not confined to highly qualified people. How and where are these more or less innate skills to be taught? The problem is akin to that raised by the idea of vocational training in developing countries. Educational content simply cannot be inferred from a statement of the skills or abilities required for specific tasks.

Work in the informal economy

The nature of work is very different in the economies of developing countries where most people are not wage-earners. In many sub-Saharan African countries and some Latin American and Asian countries, only a small proportion of the population is in paid employment. The vast majority works in the traditional subsistence economy, where specific job qualifications are not required and where know-how is the fruit of tacit knowledge. For this reason, education cannot simply be modelled on the types of education that seem to fit the bill in post-industrial societies. Besides, the function of learning is not confined to work; it should meet the wider aim of achieving formal or informal participation in development. This often involves social skills as much as occupational skills.

In other developing countries, a thriving unofficial modern economy based on trade and finance may exist alongside a small official economic sector and agriculture. This parallel economy indicates the existence of business communities capable of meeting local requirements.

In both these cases, there is no point in providing the population with high-cost training (since the teachers and the educational resources have to come from abroad) either in conventional industrial skills or in advanced technology. On the contrary, education should be brought into endogenous development by strengthening local potential and the spirit of empowerment.

We then have to address a question that applies to both developed and developing countries: how do people learn to act appropriately in an uncertain situation, how do they become involved in shaping the future?

How can people be prepared to innovate?

This question is being asked in developing and developed countries. It basically comes down to knowing how to develop personal initiative. Paradoxically, the richest countries are sometimes restrained in this respect by the excessively coded and formal way they are organized, particularly as regards their educational systems, and by a certain fear of risk-taking which may be engendered by the rationalization of their economic model. Undoubtedly, sport, club membership and artistic and cultural activities are more successful than the traditional school systems at providing this kind of training. The discovery of other societies through study and travel may encourage such behaviour. From this point of view in particular, a great deal may be learned by observing the economies of developing countries.

In all countries, lastly, the growing importance of small groups, networking and partnerships highlights the likelihood that excellent interpersonal skills will be an essential job requirement from now on. What is more, the new working patterns, whether in industry or in the service sector, will call for the intensive application of information, knowledge and creativity. All things considered, the new forms of personal competence are based on a body of theoretical and practical knowledge combined with personal dynamism and good problem-solving, decision-making, innovative and team skills.

Learning to live together

Violence all too often dominates life in the contemporary world, forming a depressing contrast with the hope which some people have been able to place in human progress. Human history has constantly been scarred by conflicts, but the risk is heightened by two new elements. Firstly, there is the extraordinary potential for self-destruction created by humans in the twentieth century. Then, we have the ability of the new media to provide the entire world with information and unverifiable reports on ongoing conflicts. Public opinion becomes a helpless observer or even a hostage of those who initiate or keep up the conflicts. Until now education has been unable to do much to mitigate this situation. Can we do better? Can we educate ourselves to avoid conflict or peacefully resolve it?

While the idea of teaching non-violence in schools is certainly praiseworthy, it seems quite inadequate if we look at what is really involved. The challenge is a difficult one since people have a natural tendency to overestimate their own abilities or those of the group to which they belong and to entertain prejudices against other people. Moreover, the general climate of competition that prevails in both domestic and international economies tends to turn competitiveness and personal success into modern values. In fact, this competitiveness is nowadays translated into a relentless economic war and a tension between rich and poor that breaks apart nations and the world and exacerbates historic rivalries. Regrettably, with its incorrect interpretation of what is meant by competition, education sometimes helps to sustain this state of affairs.

How can we do better? Experience shows that it is not enough to set up contacts and communication between people who are liable to come into conflict to reduce this risk (for example, in inter-racial or inter-denominational schools). If the different groups are rivals or if they do not have the same status in the same geographical area, such contact may have the opposite effect to that desired - it may bring out hidden tensions and degenerate into an opportunity for conflict. If, on the other hand, this kind of contact is organized in an egalitarian setting and common aims and projects are pursued, the prejudices and latent hostility may give way to a more relaxed form of co-operation, or even friendship.

The conclusion would seem to be that education should adopt two complementary approaches. From early childhood, it should focus on the discovery of other people in the first stage of education. In the second stage of education and in lifelong education, it should encourage involvement in common projects. This seems to be an effective way of avoiding conflict or resolving latent conflicts.

Discovering other people

One of education's tasks is both to teach pupils and students about human diversity and to instil in them an awareness of the similarities and interdependence of all people. From early childhood, the school should seize every opportunity to pursue this two-pronged approach. Some subjects lend themselves to this - human geography in basic education, foreign languages and literature later on.

Moreover, whether education is provided by the family, the community or the school, children should be taught to understand other people's reactions by looking at things from their point of view. Where this spirit of empathy is encouraged in schools, it has a positive effect on young persons' social behaviour for the rest of their lives. For example, teaching youngsters to look at the world through the eyes of other ethnic or religious groups is a way of avoiding some of the misunderstandings that give rise to hatred and violence among adults. Thus, teaching the history of religions or customs can provide a useful reference tool for moulding future behaviour.

Lastly, recognition of the rights of other people should not be jeopardized by the way children and young people are taught. Teachers who are so dogmatic that they stifle curiosity or healthy criticism instead of teaching their pupils how to engage in lively debate can do more harm than good. Forgetting that they are putting themselves across as models, they may, because of their attitude, inflict lifelong harm on their pupils in terms of the latter's openness to other people and their ability to face up to the inevitable tensions between individuals, groups and nations. One of the essential tools for education in the twenty-first century will be a suitable forum for dialogue and discussion.

Towards common goals

When people work together on exciting projects which involve them in unaccustomed forms of action, differences and even conflicts between individuals tend to pale and sometimes disappear. A new form of identity is created by these projects which enable people to transcend the routines of their personal lives and attach value to what they have in common as against what divides them. In sport, for example, the tensions between social classes or nationalities can eventually be welded into a spirit of solidarity by the commitment to a common cause. In the world of work, too, so many achievements would not have been possible if people had not successfully moved beyond the conflicts that generally arise in hierarchical organizations through their involvement in a common project. Formal education should therefore set aside sufficient time and opportunity in its curricula to introduce young people to collaborative projects from an early age as part of their sports or cultural activities. But this approach should also get them involved in social activities: the renovation of slum areas, help for disadvantaged people, humanitarian action, senior

citizen help schemes and so on. Other educational organizations should take over these activities from the schools. Another point is that, in everyday school life, the involvement of teachers and pupils in common projects can help to teach a method for resolving conflicts and provide a valuable source of reference for pupils in later life.

Learning to be

At its very first meeting, the Commission powerfully re-asserted a fundamental principle: education should contribute to every person's complete development - mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality. All people should receive in their childhood and youth an education that equips them to develop their own independent, critical way of thinking and judgement so that they can make up their own minds on the best courses of action in the different circumstances in their lives.

In this respect, the Commission embraces one of the basic assumptions stated in the report *Learning to Be*: the aim of development is the complete fulfilment of man, in all the richness of his personality, the complexity of his forms of expression and his various commitments - as individual, member of a family and of a community, citizen and producer, inventor of techniques and creative dreamer'.

This human development, which begins at birth and continues all through a person's life, is a dialectic process which is based both on self-knowledge and on relationships with other people. It also presupposes successful personal experience. As a means of personality training, education should be a highly individualized process and at the same time an interactive social experience.

In its Preamble, the report *Learning to Be* (1972) expressed the fear of dehumanization of the world, associated with technical progress and one of its main messages was that education should enable each person 'to be able to solve his own problems, make his own decisions and shoulder his own responsibilities.' Since then, all progress in different societies, particularly the staggering increase in media power, has intensified those fears and made the imperative that they underpin even more legitimate. This dehumanization may increase in the twenty-first century. Rather than educating children for a given society, the challenge will be to ensure that everyone always has the personal resources and intellectual tools needed to understand the world and behave as a fair-minded, responsible human being. More than ever before, the essential task of education seems to be to make sure that all people enjoy the freedom of thought, judgement, feeling and imagination to develop their talents and keep control of as much of their lives as they can.

This is not simply a cry for individualism. Recent experience has shown that what could appear merely as a personal defence mechanism against an alienating system or a system perceived to be hostile, also offered the best opportunity for making social progress. Personality differences, independence and personal initiative or even a task for upsetting the established order are the best guarantees of creativity and innovation. The rejection of imported high-tech models, the harnessing of traditional implied forms of knowledge and empowerment are effective factors in endogenous development. New methods have evolved from experiments at local community level. Their effectiveness in reducing violence or combating various social problems is widely recognized.

In a highly unstable world where one of the main driving forces seems to be economic and social innovation, imagination and creativity must undoubtedly be accorded a special place. As the clearest expressions of human freedom, they may be threatened by the establishment of a certain degree of uniformity in individual behaviour. The twenty-first century will need a varied range of talents and personalities even more than exceptionally gifted individuals, who are equally essential in any society. Both children and young persons should be offered every opportunity for aesthetic, artistic, scientific, cultural and social discovery and experimentation, which will complete the attractive presentation of the achievements of previous generations or their contemporaries in these fields. At school, art and poetry should take a much more important place than they are given in many countries by an education that has become more utilitarian than cultural. Concern with developing the imagination and creativity should also restore the value of oral culture and knowledge drawn from children's or adults' experiences.

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