

TOWARDS LABOUR EFFICIENCY THROUGH PRACTICAL EDUCATION IN SCHOOLS

B. H. MEHTA

Believing that the literary character of our system of education has increased educated unemployment and labour inefficiency, the author of this article makes a plea for the introduction of the Activity Principle in education. While he does not advocate Labour Schools, Dr. Mehta suggests that the tool and the workshop should supplement the book and the classroom. To aid those interested in this type of education, he has drawn up a model activity course for children between the ages of three and fourteen.

IN spite of the long span of world history, the democratisation of education has been very slow in developing. What is now known as the modern school, with its trained staff, a well defined curriculum, clear aims and well thought out methods, was little known even to the civilized and progressive West a few centuries ago. Education was then mainly theological, and contained a smattering of the classics and the fine arts for the benefit of children of the fortunate few. After the French Revolution, education came to be discussed, principles were formulated, and it was considered worthwhile to educate larger numbers of children. As education came to be gradually democratised through State initiative and effort, its aims and objects widened, and the curriculum was framed to achieve definite predetermined results. When large numbers of children went to school, and that too at the age of seven or eight which was then considered a very early age, the education of the child in the three R's was naturally considered fundamental and of very great importance. The aim of education was purely objective, the psychology of the child was not understood as the science of psychology had hardly emerged out of the woods of "soul and matter" confusions, the* training for work and marriage was hardly considered essential as the Industrial Revolution was just born, and the institution of marriage was in the grips of tradition, and the number of even poorly trained teachers was hardly adequate to shoulder the burden of any ambitious scheme of child training.

Gradually as the concept of the nation was more definitely developed, education came to be allied with the fundamental socio-economic-political structure of the State and society, and the type of education was conceived to suit each strata of society, whilst its quality varied according to the economic class to which a child belonged. More recently the patterns of education have varied with the more clearly defined aims and ideals of highly nationalistic governments and societies and the requirements of the very complex and scientific economic orders prevailing in various countries. Thus in Russia,

Germany, Britain, U. S. A., Italy, Japan and other countries, who shape their own destinies, education develops on more or less same principles but moulds of training are evolved to suit their own formulated nationalistic ambitions.

India perhaps knew a particular type of education in the hoary past, and that education had practically died out or had been suppressed after the decay of Brahmanism and Muslim rule, and especially after the impact with Western civilisation and the establishment of British Rule. The foundation of education under the British Raj was again laid with purely objective aims. The plan of education was prepared top downwards, with an implied adoption of the principle that the end justified the means. It was the goal of a University career that determined what type of education was to be given in the very early years. The government, of course, was not at all anxious for democratising education or for making it practical. It only wanted a particular class to carry on the subordinate services involved in the administration of the country, and their own few institutions, supplemented by schools maintained through missionary effort, public philanthropy and a little bit of private initiative were enough for this purpose.

Education has become widespread only during the last twenty to thirty years, particularly after the growth of Local Self-Government. Unfortunately this new wave of democratic education which accompanied political unrest and social awakening in the country did not conceive of any new scheme of education. The continuation of the old plan has led to the preservation of wrong objectives in education which has brought about educated unemployment, and other disastrous consequences, one of which is the inefficiency of labour.

New Education in the West.—Educational theory and practice have developed very rapidly in the West, especially after the last war. The new principles of education are based upon our present knowledge of child psychology, experimentation with regard to technique, and an understanding of the importance of social, economic and political forces in human life. Modern education does not merely tinker with old systems. It demands a radically new outlook and a realisation of the great creative possibilities of the human individual and the complex nature of his functions in a highly advanced state of civilisation. Thus is born a new slogan: *Education of the Whole Man*—a complete preparation of the individual from the earliest years for a proper and efficient functioning in every aspect and department of life. Naturally, in such an education work plays a vitally important part as it deals with one of the two major natural functions of the human being.

Importance of Early Education.—Early theories of education gave the greatest importance to the culmination and final stages of training of the young person. Modern education rightly realises that the development and

training of the child for its full development must begin as early as possible. This should be especially more so in societies which are victims of ignorance for ignorant and poverty-shaken homes cannot provide proper care and environment for the child in the early years. It is not therefore surprising that the element of work is introduced even in Nursery School curricula. At the same time, it is but natural that any undue emphasis on the work-element in education will expose it to the charge that it is ultra-utilitarian and materialistic. The golden mean is to bring about a happy combination of mental development, training for work and cultivation of proper skills and habits, not as a mere compromise, but as an ideal condition for the full growth of the child. The importance of training for work-life cannot be exaggerated in a world dominated by science and industry where a highly complicated economic system prevails. This training is essential not only for personal welfare, but for national progress and the progress of civilization.

Educational Theories and Practical Work.—Important educational institutions in the West have introduced the work-element in education from very early years, because of the importance and recognition of fundamental psychological and physiological theories and principles. If work is an important element in human life, then the child should be *habituated* to work as early as possible. Work actually means a co-ordination of the brain and finger activity, both working under the stimulus of pleasurable emotions. The behaviour training and development of the child should not overlook work-life.

Efficient work implies a healthy physical growth of man. Physical structures must be well developed and must attain full growth to perform their natural functions efficiently. The structural development of man takes place quickly and more during the early years and hence the importance of paying attention and guiding the physical development and growth of the child. This physical development especially implies the training and development of the senses, the acclimatisation of the limbs to work, and the correction of the physical environment in order to make it the most helpful agency for the development of the child. As important as physical health is mental health, and the emotional and mental development should also begin in childhood. The child's mind can be impressed at an early age, acceptable trends may be developed in its expression of desires, and interests may be acquired early in life which may prove useful in later years.

Activity Principle in Early Education.—Pioneers of early education like Froebel, John Dewey, Montessori and others recognised the importance of the work-element in early education, especially through a programme of active play. A study of these methods and their technique followed, and the

Activity Principle and the Principle of Accustomed Environment were laid down as of fundamental importance. The entire early education of Austria was based on these principles before the Hitlerian conquest of the country. Schools in Russia, Germany and other countries also based their educational programmes on the same principles. The Activity Principle implies that the child acquires experience and develops personality through a programme of active work, and that book lessons and class rooms are the least suited to early development as they lead to the repression of natural interests and desires. Play is a fundamental child interest and its extensive use in a programme of activity creates a curriculum which makes a natural appeal to the child.

Besides, in the early years the child must develop by establishing active and conscious contacts with the physical environment of which it is a part, and should be gradually introduced by an acquisition of experience to more important and complex forms of environment to which it will belong in future. Thus the school environment must especially maintain direct contact with the home, the field or the workshop, and the general social and political background of a community.

Very interesting technique has been developed together with corresponding equipment in Kindergarten, Montessori and Labour Schools. Whilst it is possible to use these because of their capacity to command the interest and enthusiasm of the child and at the same time provide the necessary development and training, it is possible to evolve a course of training which will prove of great use to work-life and which can be extended through the Primary and Secondary Schools. Such a practical course, based on the Activity Principle, will provide a threefold experience of (1) Substances, (2) Tools and Implements, and (3) Processes which are the basic factors in agricultural and industrial life. Substances and tools are brought into the child's environment in graded series, and these are made objects of play and experimentation in a well-thought out programme of active work.

Substances.—When the child sees, handles and manipulates substances and tools in such a manner and for a length of time as to permit the objects to make a fairly permanent impress on its mind, it will acquire knowledge of those substances and tools. This knowledge will include a proper grasp of the shape, size, consistency, surface and other characteristics and qualities of the object. The substances and tools may be generally divided into three separate series. The first series will include substances and tools which may be used between the ages of $2\frac{1}{2}$ and 6 years, the second series for children between 7 and 11 years, and the third series for those over 12 years.

Most of the world's production centres round natural substances and other materials manufactured from more elementary substances. With the

spread of science an infinite variety of raw materials are used, and also a large number of artificial substances are produced for use in manufacture. The child is introduced to a list of most important substances graded to suit its ability to use them in play and experimentation. The following list of substances will give a general indication for the framing of suitable Activity Programmes:

First Series : 2 to 6 years.

<i>Name of Substance</i>	<i>Age for First Introduction</i>	<i>Suitable Activity</i>
Sand	2 years	Sand Play.
Water	2 ,,	Gardening & Water Play.
Clay	2½ ,,	Plasta Modelling.
Paper	2½ ,,	Folding, teaming, cutting, making.
Glass	2½ ,,	Play with Beads.
Wood	3 ,,	Block and Brick Play.
Earth	4 ,,	Gardening.
Manure	4 ,,	Gardening.
Seeds	4 ,,	Gardening.
Cork	4 ,,	Nailing and Shaping.
Pith	4 ,,	
Colours	4 ,,	Brush Work.
Soft Cardboard	4 ,,	Cutting and modelmaking.
Twine	4 ,,	Bead necklace making, parcel tying etc.
Cane	4 ,,	Elementary basketing.
Wool	5 ,,	Design weaving in canvas.
Tissue Paper	5 ,,	Tracing.
Cotton thread	5 ,,	Sewing.
Cardboard	6 ,,	Cutting and modelmaking.
Cloth	6 ,,	Cutting and sewing.
Rope	6 ,,	Knotting.
Soft wood (Indian)	6 ,,	Nailing and sawing.

Second Series: 7 to 11 years.

Rubber, leather, plain glass, tin, copper, brass, kerosene oil, turpentine, linseed oil, methylated spirit, lime, etc.

Third Series : 12 to 14 years.

Pig iron, cast iron, different types of metal wires, sheet steel, tool steel, tempered steel, different types of wood, pressed wood, ply wood, celluloid, fibre, different types of leather, gasoline, heavy oil, grease etc.

Tools.—The human capacity for inventing and using tools is a distinct

factor in human evolution. From the primitive stage to modern industrial production, human achievements in the economic sphere are due fundamentally to the use of tools, implements, and machinery. It is therefore but natural that the tool should be as indispensable to the child as the book, slate and pen. For practical work, tools can also be graded into three series. The first will include tools and implements which help the child to play. The second list will include tools used to manipulate substances included in series 2. The last list will deal with specialised tools used in specific arts and crafts.

Series 1.

Sand Play Tools:—Sand Box, shovel, sand tapper (2 to 5 yrs.).

Gardening (Elementary):—Pick axes, shovel, basket, watering can (3 to 5 yrs.). Seed drill, fork, hand hoe, etc. (6 to 12 yrs.).

Clay Modelling (Elementary):—6 primary tools (2½ to 6 yrs.), remaining set of tools (7 to 12 yrs.).

Colouring Materials:—Brushes and water colour.

Domestic Tools:—Scissors, knife, needle, cork-screw, soda-opener, tin-opener etc.

Carpentry (Elementary):—Small hammer, pliers, burnishing awls, coping saw, footrule.

Bead Weaving Loom and requirements of toy-making, needle-work, knitting, and of such other special crafts as are introduced as handiwork.

Series 2.

This group will include mainly tools for carpentry, cane work, toy making, pulp making and *papier mache*, canvas and rug work, and more advanced programme of clay modelling, sewing, painting, gardening, weaving etc. Tools that need to be specially handled in this series include:—

Carpentry:—Warrington hammer (7 yrs.), claw hammer (9 yrs.) and heavier special hammers (after 10 yrs.).

Driller, screwdriver, pincers, wooden mallet, vice (7 yrs.). Hand vice (10 yrs.), key-hole and tenon saws (9 yrs.), spoke saw (11 yrs.).

Gimlet, wood files, punches, mitrecutting tools, marking gauge, squares, smoothing planes, chisels, compass and dividers (after 12 yrs.).

Cane Work and Basketry:—Cane clippers and splitter, wire nipper, basket pricker, pliers, etc.

Leather Work:—Modelling tools, training tool, dresden tool, ball tool, beveller, incising knife, paring knife, leather worker's hammers, thonging punch and chisel, awls, etc.

Weaving:—Weaving looms, heddles, warping boards, shuttle, warp sticks, shed sticks, beaters etc.

Tools essential for handicrafts like Linocraft, Raffia, Book-binding etc. can be added to this list.

Series 3.

This group deals with tools to manage harder substances like metals, plastics, etc. and also include experiments in applied science in mechanics, chemistry, electricity, etc.

They require special arrangements for vocational bias courses in schools. Over and above handling the more advanced type of tools for wood, metal and special handicrafts, the provision of easily worked machines will introduce especially the young boy to the equipment of industrial plants. Some of the machines included in vocational bias courses of western schools include: Fret and scroll saws, small circular saws and band saws, power drills, wood working and metal working lathes, small printing machines, typewriters, sewing-machines, plastics working machinery etc.

Just as wood working receives special attention in the Second Series metal working ought to find a place of importance in the Third Series. Special outfits like the Meccano, Primus, etc. provide the young with good opportunity of mechanical play; and in the absence of these outfits, the young persons should be sufficiently familiar with the following articles that find universal place in modern workshops:—(1) Plates, girders, angle girders, and rods which constitute the frame work; (2) Wheels of all kinds like flanged wheels, fly wheels, pulley wheels, bush wheels, pinion wheels, gear wheels, contrate wheels, sprocket wheels, etc. which are fundamental for the movements of machinery.

Miscellaneous accessories like collars, couplings, springs, hinges, chucks, assembling accessories like screws, nuts and bolts, washers, grub screws and cement for metal glueing, and driving mechanisms including string and pulley wheel, wheel and belt, and sprocket wheel and chains; these together with experiments in the use of manual power, steam power and, if possible, even electric power ought to complete the workshop experience of the young boy.

A mere knowledge of substances and tools is not adequate to give enough work experience to children. They require to be habituated to manual labour and domestic duties, and the use of substances and tools need to be co-ordinated to a planned practice of handicrafts where the most important knowledge of actual *processes* and practice of making articles is required. To create an activity programme, it is possible to make use of curriculum adopted in different methods of teaching including Kindergarten, Montessori, Scouting and Labour School curricula.

A model activity course is given below to provide a general idea of how the knowledge of *substances*, *tools* and *processes* can be imparted to children in a series of activity lessons which will be interesting and appealing to the natural aptitudes of children. In this course *play* and *work* become more or less synonymous, and children secure the joy of actual achievement. The Activity Course presents a unique opportunity for self-expression and group work practised in actual work conditions. Activity courses must suit the children and their habitat, and dominance should be given to local handicrafts. The following model course is generally suitable to modern city conditions and it may be modified and improved to suit other conditions.

A MODEL ACTIVITY COURSE FOR CHILDREN BETWEEN 3 AND 14 YEARS

Age : 3 to 5 Years

Action-play without apparatus: —

Holding, moving, putting, turning, pulling, pushing, lifting etc.

Digging sand pit and sand play.

Filling water, sand, earth, stones, etc. in boxes, baskets and pits dug in the ground.

Throwing solids, and pouring liquids.

Cleaning—Washing face and hands and cleaning teeth, brushing hair.

Carpentry:—Hitting, Driving and Drilling—Driving a nail in cork and soft wood, hole making with awl, removing nail with flat plier.

Block play with standard sized building brick-blocks.

Clay—Modelling shapes.

Colouring—Use of brush and prepared primary colours. Colouring on paper.

Cutting and Tearing—Paper and cloth tearing, use of edgeless scissors.

Latching and Tying etc.—latch door, tie granny knot, stringing beads and working on bead looms, buttoning etc.

Surfacing—Use sand-paper on wood and recognise surfaces.

Assembling—Pinning together bits of paper, making heaps, tying bundles. Making paper toys by folding paper, stitching with cotton thread and wool.

Gardening—Sowing very large seeds and taking care of individual plants.

Age : 6 to 7 Years

Mixing—Grain, earth and manure, liquid to liquid, liquid and dis-soluble solids, liquidising solids.

Apparatus and accessories—Vessel, spoon, churning stick, ink, water colours.

Experiments—Glue making, Paste making, Ink making from powder.
 Cleaning—Dusting, washing, sweeping, erasing pencilled line, and boot polishing.

Carpentry—Use of saw, screwdriver and driller.

Cutting—Paper cutting, designing, etc. (soft and hard card-board).

Assembling—Glueing paper and wood.

Colouring—Crayon and pencil work, water colour.

Sowing large seeds in baskets already prepared, watering plants, growing seeds between blotting-papers, recognising different types of grain.

Measuring—Use of footrule to measure height, length and breadth.

Sewing—More advanced work.

Smoothing surfaces on sand stones.

Knotting—Tying eight elementary knots.

Age : 8 to 9 Years

Digging—Small pits using pick-axe and shovels.

Filling, Throwing and Filtering—Planting flower seeds in baskets.

Cleaning—Washing floor, cleaning utensils, erasing ink line.

Cutting—Cutting finger nails, cloth, vegetables, etc.

Making paper toys with glue and pastes.

Colouring wood with oil paints.

Measuring—Same as in 6 and 7 years, including areas.

Carpentry—Making wooden toys using glue and nails for assembling.

Knitting.

Sharpening pencil.

Tracing and copying.

Elementary leather work.

Introduction to metals by using metal counters in indoor games.

Cane work and basketry.

Age : 10 to 11 Years

Digging—Garden pits and flower beds.

Gardening—Preparing and sowing flower beds and vegetables and transplanting plants.

Watering plants.

Cleaning—Removing stains from clothes, erasing typed and stencilled letter with chemicals. Cleaning metals, tiles, china, floors, with proper requisites. Washing clothes.

Carpentry—Elementary joinery, cutting, sawing wood, cutting card-board, preparing minced meat, vegetables etc.

Make plaster of paris moulds, ordinary gum, and flour paste.

Transporting and looking after seasonal flower plants.

Measuring—Liquid and cubic contents.

Sewing simple articles, knitting and embroidery.

Sharpen the edge of a penknife.

Light a fire and cook simple dishes.

Make paper, wood and wire articles.

Spinning and weaving.

From the age of twelve it is desirable to introduce pupils to regular workshop and laboratory work. Elementary courses in carpentry and mechanics, and chemistry and electrical experiments as contained in Lott's Chemistry Sets and Electron Sets will prove of great interest to the young. Over and above this, it may now be possible to introduce actual handicrafts with only a small element of play with reference to handicrafts actually practised as handwork in the earlier years. Cane work and basketry, leather work, spinning and weaving, sewing, knitting, embroidery and elementary tailoring, clay modelling, painting, linocraft, plastics, book-binding, rug weaving and similar practices can now be undertaken by groups of pupils according to their respective interests.

Place in School Curriculum.—The establishment of purely Labour Schools for the education and training of workers is not desirable and is not suggested for adoption in India. It is possible to remould the existing school curriculum and adding to them a fair measure of practical work. The tool and the workshop should supplement the book and the classroom. Public opinion will take some time to value practical training, as a wrong notion has been cultivated that literacy and book training are meant for cultural training, whilst practical work should be reserved for the working classes. The importance of literary training is as erroneous as the importance of classical education was half a century ago. A beginning deserves to be made in every good school, whether Nursery, Primary or Secondary, to introduce 6 to 12 hours of practical work per week.

The Teacher Problem.—A great difficulty will be experienced in obtaining teachers of the right type for teaching practical work in schools as long as technical courses are not part of the curriculum of the various Teachers' Training Institutions. The literary training of the teacher does not develop his aptitude for practical work, and therefore he lacks training, skill and efficiency which are the basic qualifications of teachers of practical courses. When technicians or craftsmen are appointed as teachers, they are found to be untrained for handling children and imparting to them the necessary training. The only solution of this important and difficult problem is to train as teachers persons who are already adepts in various arts and crafts.

School Workshop.—The classroom is not a fit place for practical work. A separate and properly equipped workshop with work-tables, work-benches and a fair equipment of good, durable and efficient apparatus and tools is indispensable for every school. Practical work naturally requires more space than the usual, ordinary classroom work. Western schools, and especially Secondary Schools, not only possess good workshops, but also separate and well equipped departments for carpentry, mechanics, printing, book-binding, leather work, etc. India is accustomed to a few separate workshops for vocational training, but a far advantageous method which will be of service to large numbers of pupils is to organise vocational departments in Secondary Schools.

Equipment.—In India most of the equipment for practical education comes from foreign countries, though it is possible to manufacture most of the imported articles in India. With the realisation of the need of practical training, educational equipment has already begun to be manufactured both in British India and in the more progressive Indian States. There is need to make only one mention of an important detail with regard to practical training, and that is to point out the unwholesome practice of using inefficient and worn out tools in schools and vocational training departments as a measure of economy. Nothing could be more harmful to the proper training of pupils in practical work than to habituate them to slack practices and use of tools which are not suitable for developing real skill and efficiency.

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It is not a Practical Idea for schools to wait till 100% digitalization to give students the taste of modern education. Integrated learning solutions are now an accepted reality in most schools. They are aiming to provide optimum digital infrastructure requirements while keeping traditional textbooks as the base. In fact, it is unfair for a group of students to remain unaware of the benefits of digital education just because of the connectivity and infrastructure issues. This proposes a platform to provide education through videos and tutorials to the students of rural areas where they can get it at affordable rates. Moreover, value-added certifications offered online can enhance the employability of the students.

13. Shifting from STEM to STEAM. Some people believe that school children should learn some practical skills like car maintenance, opening a bank account or learning about other traditional skills. To what extent do you agree or disagree with the above statement? Give reasons for your answer and include any relevant examples from your own knowledge or experience. You should write at least 250 words.

Sample Answer 1: According to some people, pupils should be taught few real-world skills at the young age. I completely agree that learning these talents can enhance the child's career and help them to sustain in the society. In education how much a child has succeeded in his aims, can only be determined through evaluation. Thus there is a close relationship between evaluation and aims.

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For the teachers, the objectives and courses of school subjects are ready at hand. His job is to analyse the content of the subject matter into teaching points and to find out what specific objectives can be adequately realised through the introduction of those teaching points.

(iv) Planning Suitable Learning Activities

a. Evaluation has to diagnose the weak points in the school programme as well as weakness of the students.

b. To suggest relevant remedial programmes.

every school every student. Inclusive practice in secondary schools. ideas for school leaders.

Mā te huruhuru te manu ka rere With feathers a bird flies. This leads you through a process of consulting with your school community about inclusive practices and students belonging at school. When you look at the Inclusive Practices Tools you will see there is a range of options for how your school can include the process in your planning. Consider what existing systems and processes support inclusive practice in your school.

• The student may have an IEP that outlines the goals they are working towards. How can the activities in this class contribute towards this?

• An assessment in one curriculum area may inform assessment in another.

Technical education is a planned program of courses and learning experiences that begins with exploration of career options, supports basic academic and life skills, and facilitates achievement of high academic standards, leadership, preparation for industry-defined work, and advanced continuing education. While vocational education and training prepares learners for careers that are based in manual or practical activities, traditionally non-academic and totally related specific trade, occupation or vocation. In other words, it is education designed to develop occupational skills. Vocational