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An Enrichment Program: Industrial Arts and Elementary Education

By

Richard M. Coger

Technological advancements in our industrial society have considerably changed the contents of and the teaching methods employed in elementary education. As a result, each generation of teachers must acquire more knowledge and more improved skills than the preceding one. Likewise, each new generation of learners must acquire more knowledge and more complex abilities than the preceding one. If our society is to continue to prosper or even survive, the teacher, next to parents, must be considered the most important person in helping to mold the lives of students. Industrial arts for the elementary schools purports to augment the teachability of each child.

Industrial arts was introduced in the elementary school in this country in 1902, at Eastern Michigan University in Ypsilanti, Michigan. It was taught by Alice I. Boardman during the summer of that year. She was a specialist and consultant in manual training and kindergarten methods. In 1915, the words "manual training" were changed to "industrial arts."

In spite of the fact that this type of program has been in educational circles for more than half a century, it has never attained the full order of educational statesmanship. In this writer's reasoning, the stalemate is due mainly to the doctrine most educators have proclaimed in relation to manual dexterity.

During the 1920's, the doctrines of Pestalozzi and Froebel dominated the thinking of educators concerned. Since then, new methods of teaching and additional insights into the nature of learning have been developed. The thoughts of Gestalt psychology and Dewey's philosophy have been in the forefront. Bonser, Mossman, and Newkirk's contributions to the total program within the frame of the philosophical approach merit mention also. However, the area lacks the leadership with which these thoughts may be intromitted into a workable solution.

Carter Good's *Dictionary Of Education* defines elementary industrial arts as "informative and manipulative work offered in the first six grades, involving tools, materials, processes, and products of industry as they relate to home and community life." Industrial arts in the elementary schools exists mainly to enrich the total program of learning activities. One does not have to "make room" for it to accomplish such an objective. Its activities can be correlated easily with existing courses, for it is a vital and integral part of general education and not an addition. In the social studies, for example,

children may learn how man has used the natural resources of his environment to meet his basic physical needs, and how he has created and perpetuated institutions and cultures to make life more secure, meaningful, and satisfying through modern technology.

Children learn many behavioral patterns. The most important ones are: social, emotional, and personal adjustments; information, concepts, and principles; and principles of problem-solving. These patterns may be developed by using three-dimensional models. For example: the students will better understand the Colonial Period by carving on leather some designs applicable to that period. This plan works well for concentrated individual work, group planning, sharing, cooperation, discussion, problem-solving, or evaluation. With rare exceptions, there should be daily contact with such basic areas of human experiences.

Elementary industrial arts promotes better understanding in interpreting the industrial aspects of our society. It shows the interrelatedness of various subjects. It also promotes recreational values and leisure-time interests. The intrinsic values and leisure-time interests. The intrinsic value it offers can be taught in the kindergarten as well as in the elementary school. This enrichment program has proven its worth in the Child-Centered Curriculum, in the Separate-Subjects Curriculum, in the Broad-Fields Curriculum, and in the Society-Centered School. Manipulation of materials, expression, and experimentation with form are basic in this program. The child learns a concept or expresses an experience in three-dimensional form.

On the lower level, students may learn to identify materials by using them. On the intermediate level, students usually have enough coordination to work with materials. It is generally wise to begin with clay. With this material a student can express the dimensions of a can, the bigness of a wolf, or the roundness of a snake. Some other useful materials are paper and wire. The upper elementary students are more or less capable of working and experimenting with materials, tools, and, to an extent, a few machines. Many experiments can be developed from the following areas: leather, electricity, metals, textiles, woods, enameling, ceramics, graphic arts, transportation, jewelry, and plastics.

On the upper level students are in their "age of realism" This is the period in which they become fully aware of themselves and their industrial society. They like to belong to gangs of their own sex and to think independently of adults. The content of a given lesson can be centered around experiments in the foregone areas in relation to various industrial processes, tools, materials, and a few machines. Some of the machines, which any child on this level can operate safely under supervision, are the jigsaw, drill press, and forming machine. Any tool, if used properly, is safe.

As displayed in Table I, industry is divided, generally, into six divisions: manufacturing, construction, communication, transportation, power, and servicing. Manufacturing is centered around the

processing of raw materials into useful objects through some form of fabrication. Activities in construction are the erection of public buildings, highways, homes, and the facilities therein. Communication deals with the graphic representation and the recording and transferring of thoughts and ideas. The transportation area is the movement of goods and people by air, land, sea and, more recently, space. Transportation is closely related to manufacturing and servicing. The area of power deals with energy provided by harnessing or containing natural resources. And the activities of services deal with maintenance and repair of machines, tools, and appliances.

TABLE I: DIVISIONS OF INDUSTRY¹

Divisions of Industry	Some Areas Within Each Division	Some Areas For Activities Within Each Division
Communication	printing, publishing, radio and television broadcasting, telegraph, and telephone. machinery, textile products, metal industries, chemical products, stone, glass, clay, lumbering, furniture making, rubber, plastics, instruments making, leather and leather products, papermaking, and mining	movable-type printing, stencil printing, offset printing, papermaking, bookbinding, telephones, radios, television
Construction	federal and state highways, public and private buildings, bridges, and dams.	textiles, woods, plastics, leatherscraft, ceramics, enameling, mass production, foundry, machines
Power	gas, electricity, petroleum refining, mining, heating, apparatus, local utilities, and other public services	highways, concrete sidewalks, public and private buildings
Transportation	water, railway and bus lines, pipelines, highway passengers, air, local, interurban, and interplanetary travel	generating electricity, mechanical power, electric motors, mechanics, pneumatics, hydraulics
Servicing	automobiles, bicycles, airplanes, rockets, tractors, home appliances, and factory equipment	cars, buses, trucks, trains, bicycles, ships, boats, airplanes, rockets bicycles, automobiles, buses, trucks, ships, trains, boats, airplanes, rockets, tools, small engines and motors, machines, appliances

Note: The above table was developed to support the writer's ideas. It is not meant to be complete.

¹This information was taken and condensed from Harold G. Gilbert's presentation at the 27th AIAA Convention in Tulsa, Oklahoma, 1965, entitled "Introducing Elementary School Children to Industrial Processes."

It should be noted that the success of a program of this nature depends mainly on the ability of the teacher to organize various activities in the classroom. These activities should be designed to *enrich* the teaching of a given subject, and to make learning more meaningful and enjoyable. This requires experimentation on the part of the teacher during the preplanning stages.

"Environmental Learning" on the lower, middle, and upper grade levels *can* make a definite and rewarding contribution to the overall program of elementary education. Through various experiences in the laboratory a child has the opportunity to learn industrial processes, identify materials commonly found in his society, develop recreational interests, accept individual differences, "learn by doing," realize the need for planning in any endeavor, and learn the importance of the rules of safety. This program will give the students an opportunity to investigate, experiment, and acquire a basic understanding of our social industries. Working with three dimensions will be a new experience for most students and a rewarding one.

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