This annotated bibliography is composed of 100 citations covering the period from 1960 to 1970. All entries are journal articles related to the interpretation of industry or operational aspects of technology in industrial arts. Listings are arranged alphabetically according to author under the general divisions of Philosophy and Rationale, Curricular Programs, Courses, and Teacher Designed Experiences which include mass production, research and experimentation, and occupational orientation. (GR)
ANNOTATED BIBLIOGRAPHY
OF
PERIODICAL ARTICLES RELATED TO THE
INTERPRETATION OF INDUSTRY
1960-1970

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BIBLIOGRAPHY RELATED TO THE INTERPRETATION OF INDUSTRY AND TECHNOLOGY IN INDUSTRIAL ARTS

I. Philosophy and Rationale


A new dimension is added to the curriculum dialogue on industrial education.

Bateson, Willard M., & Jacob Stern, "The Functions of Industry as the Basis for Industrial Education Programs," JITE, Fall, Vol. 1, No. 1, P. 3.

Need for and process for updating Industrial Education Programs.


Results of a survey indicating how industry views industrial arts.


Elements of Industry


This Georgia program of career orientation begins in the elementary school and is continuous through a continuing education program.

Earl, Arthur W., "Let's Call All of It Technology," IAVE, Vol. 54, No. 4, April, 1965.

Perhaps by comparing technology to other fields of American education, insight can be gained into the effectiveness of a unified profession under a single name. The acceptance of a single name, such as technology, would put our various fields in balance with the other areas of education, like science and mathematics, that have always been united under a common name.


Determining Course Content in Industrial Education.

If orienting youth to industrial practice is one of I-A's major objectives, why aren't we doing a better job? Also, how can we do a better job?


The authors suggest that industrial arts in overlooking the socio-psychological forces which exist in mass production industries when industrial arts teachers attempt to carry out mass production activities in the I.A. lab. What needs to be done, according to the authors, is to provide the student with the opportunity to recognize and deal with these forces.


What industrial arts teachers must do to gain the support of industry.


Dr. Johnston suggests that industrial arts is not providing students with an accurate interpretation of industry and utilizes a chart to compare I.A. and Industry in regard to control of raw materials, space utilizations, production methods, employee selection, and product purpose.


Describes a program of work-study designed to introduce non-college bound students into industry. The program was financed by the cooperating industries and the students enrolling. Eighty students entered a nine week program with the understanding that they would become full-time employees upon completion.
From a philosophical point of view the point is made that industrial arts should interpret society from a technological standpoint and deal specifically with the affects of technology on man. "Our students must relate to man, to society, and its institutions in the midst of change. If he (the student) cannot relate to technology and accept it, he cannot accept society, and confusion is the result."


A brief report of the establishment and progress of I.A.C.P.


The three phase program outlined is unique in its organization. Students work in groups of 4 or 5 to develop a prospectus for the manufacture of a product they have selected. Each group presents its prospectus to the entire class. Two or more are selected for manufacture. This final phase is carried out after school or during summer session utilizing what ever work force can be recruited at a nominal wage.


Areas of overlapping interests, how to assist the space industries through Industrial Arts.


Challenges the use of the project in industrial arts.


The American Enterprise System is described as a pyramid and a case is presented for industrial arts accepting the mission of interpreting this total pyramid to junior high students.

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Dr. Olson makes a case for industrial arts accepting as its responsibility "the interpretation of technology for the American school".


This article is a follow-up on the January-February 1969 article entitled A Logic-Base. Three primary objectives of industrial arts are identified. Within the scope of these objectives the six functions (1) technical, (2) occupational, (3) consumer, (4) cultural, (5) recreational, and (6) social are accepted as the categories of action through which industrial arts moves toward its goals.


If we check the definition of technology, it would appear that industrial arts today is indeed a "study of technology." The author disagrees, however, because we are falling short on two purposes.


Discusses the need for keeping up with industry and what some schools are doing to encourage this.


This article preceded the Winter 1969 article by Dr. Pratzner (JITE).
It is suggested that the direction industrial arts curriculum should take is toward a program which would emphasize the development of the individual student's self-concept. The objectives of industrial arts are examined and suggestions are made for their revision.


Schmitt, Marshall L., "A Progress Report on Teaching the Art of Industry", School Shop, February, 1968, Vol. 27, No. 6, P. 41-43+. Suggests that industrial arts has entered an "era wherein industrial arts pivots around a study of the history and theory of industry and technology". Sites several examples of innovative programs.

Sredl, Henry J., and Travis, Evan, "Mass Production: Unit of Study on Method of Teaching", IAVE, May, 1968, Vol. 57, No. 5, P. 43-44. The need for providing students with a realistic interpretation of industry is reviewed. The advantages of mass production activities are listed.

Stadt, Ronald W., and Vensen, Thomas R., "Industry and Criticism", JITE, Fall, 1965, Vol. 3, No. 1, P. 36-41. The article examines the question of industrial arts being the agent responsible for communicating industrial criticism -- "Should I.A. cause students to develop the ability to evaluate industry and its relationship to other institutions?"

"Analyzing Industry and Organizing Content for I.A.", JIAE, January-February, 1966, Vol. 25, No. 3, P. 25-27. As educational director of the American Institute of Baking, Mr. Stadt points out that there are many ways to analyze industry: size, degree of mechanization, type of institution, vertical integration, horizontal integration, materials, processes, products, and location. Industrial arts must deal with all of these concepts if it is to provide a sound program.

The authors describe the proposed program for junior high school industrial arts which is being developed at Southern Illinois University.


The point is made that the traditional boundaries between classes of materials is being swept away with the ever accelerating introduction of new materials -many of which are combinations of materials previously classified separately. The author takes the position that this is one reason why industrial education must make efforts to identify the essence of industry.

Streichler, Jerry, "How Can We Put Industrial Education on Step With Technology?", IAVE, November, 1963, Vol. 52, No. 9, P. 16-18.

Discusses the needed articulation between Trade and Industrial Vocational Education, Vocational-Technical Education, and Industrial Arts Education. It is suggested that a "National Science Foundation" for technological education be established to conduct research, simulation, articulation and communication activities on a national level.
II. Curricular Programs


The program outlined in this article is based on the work of Delmar W. Olsen and John Mitchell. It includes a study of (1) manufacturing industries, (2) construction industries, (3) power industries, (4) electrical and electronics industries, and (5) service industries.


The authors present a new tack— one well worth considering— as a solution to a problem that's been with us for a long time.


This is a report of the progress of the Industrial Arts Curriculum Project which outlines the course entitled The World of Construction which has been developed.


This article is a preliminary report of the AVA Committee on Innovative Programs in Industrial Arts. Descriptive information about eight locally developed programs is presented.


Author advances a proposal to update the terminology in industrial arts education.


Summarizes two major approaches being taken by innovative programs: (1) Integrative Programs, (2) Interpretation of Industry Programs.


Summarizes two major approaches being taken by innovative programs in industrial arts: (1) Occupational-Family Program, (2) Technology-Oriented Programs.
The focus of this article is seven of the innovative programs which are being developed at institutions of higher learning.

Twenty-five innovative programs in industrial education are classified and reviewed and a report of research intended to compare the various approaches is given.

Dr. Duffy outlines a six year sequence of courses which would incorporate many of the important industrial concepts into existing programs without the need for completely changing our present programs.

A brief description of eight innovative programs which are being developed at various institutions of higher learning is presented.

Dr. Hackett traces the development of industrial arts to the efforts of engineers (Woodward and Runkle) to introduce the teaching of tool skill only as they facilitated other learning--understanding of technology. A sequence of industrial arts courses is suggested that offers separate paths for the college bound student and those who will go immediately into the labor force upon graduation.

The course was designed to provide laboratory experiences in instrumentation, electronics, and industrial chemistry. It was offered to a selected group of college bound students. Through the cooperation of local industry many highly technical areas of study were included in the program.
The Industrial Arts Curriculum Project is described and samples of the materials developed are included.


A taxonomy of the elements of industry is presented which contains nine major categories. Also several suggestions are made as to how it should be utilized.


Describes a curriculum project at Wisconsin State University-Platteville which is designed to update industrial arts programs.


Discussion of five solids representing our most important industries.


The Research and Experimentation Program developed at the University of Maryland is described.


The rationale of the American Industry Project is reviewed briefly followed by a discussion of the system used to evaluate the effectiveness of the curriculum materials produced.


The procedure followed in the development of the Richmond Plan is reviewed.

This is a follow-up to the September, 1969 article. The categories of technology established by the Enterprise: Man and Technology Project are discussed.


Six criteria for industrial arts are discussed followed by a brief outline of the new undergraduate teacher education programs being initiated at Southern Illinois University.


Dr. Yoho presents systems analysis as a new way of thinking about curriculum development. Several SNAP MAPS are presented for the readers reaction.


A report on what San Jose State College industrial arts department is doing in their program of studying industrial materials. Using scientific approach and equipment they investigate and research basic materials.


A plan for industrializing industrial arts.


A four-phase program for revamping I.A. programs as an orientation to the world of work. Phase one would provide a general interpretation of the significance of tools. Phase II would introduce a sampling of current technological processes. Phase III simulates conditions as they exist in industry. Phase IV allows the student to concentrate on the technology of his choice.
III. Courses


An industrial arts course which is designed to give students an insight into the technology of modern mass production is described. The introduction to the course involved the students working in small groups to prepare presentations of topics they had selected i.e. American Industry-Its Purposes and Importance to Our Way of Life, The Technology of Primitive Man and Early Civilization and The Functions of Manufacturing were taught followed by a production line experience.


Students from industrial arts classes in the areas of drafting, metalworking, woodworking, and power mechanics cooperated in the production of garden tractors.


The course described was established for college bound high school boys. It involved them in the delimiting of a research problem, conducting a scientific study of the problem, developing a project in relation to the problem, and writing a paper on the findings.


A course designed for the junior high school is described which emphasizes the problems, products, processes, occupations, and contributions of present-day industry. The method of presentation utilizes a combination of lecture-demonstration, individual project, seminars, and group activities.


Production methods were applied in an advanced woodworking course. Student selected a disk as the product they wished to produce and then completed the following steps of the manufacturing process: (1) Design & drawing, (2) prototype, (3) jigs & fixtures, (4) part manufacture, (5) assembly and (6) finishing and sales.
IV. Teacher Designed Experiences

A. Mass Production


An organization in which each student is a shareholder in the company and the teacher serves as director is outlined. The product was selected from designs submitted by individual students. The class developed the entire production procedure to produce monogrammed bookholders for each of the members of the class.


An outline of the procedure through which the class solved the problems of mass producing insulated ice bowls is presented along with the steps of procedure which they developed.


Through the corporation of the business education teacher and the American Industry teacher this educational experience provided the business education students an opportunity to see how the typing of orders, etc. was related to an industrial enterprise. The classes were team taught and involved the development of a product, the formation of a company, and the production of a product.


Six objectives of a study of mass production are suggested, along with a discussion of the following topics (1) Role of the teacher (2) product development (3) Operations breakdown (4) jigs and fixtures (5) routing and assigning of personnel (6) pilot run (7) production period, and (8) follow-up.


An architectural drawing assignment which requires the class to work as a group of architects in the development of a residential subdivision is described.

The author makes several points concerning the limits which industrial arts teachers should impose on mass production projects. He then outlines a procedure for carrying out a mass production project.

Green, Earl, and Mills, "Interpretation of Industry in the Junior High Schools," IAVE, October, 1965, Vol. 50, No. 8, P. 44.

The project described was completely planned by the teachers involved because of a lack of time. There might be a good way to begin with junior high students.


The author outlines a five unit course in manufacturing for the seventh grade and in table form compares 7th grade manufacturing with "traditional" 7th grade course.


The author suggests a procedure for involving students in the use of the scientific method to solve practical problems including sample handouts provided for students to guide their work.


This article summarizes some of the outcomes of mass production experiences and suggests activities which could be carried out on the secondary level.


This book is intended as a unit of study within an industrial arts program. It makes many useful suggestions for the organization and carrying out of a mass production activity.


These 3rd graders organized a company, designed a product, and mass produced it.

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A procedure for involving students in the activities of financing, personnel organization, initial research, production planning, purchasing, production, advertising, marketing, and accounting is described.


Mr. Lutz describes a mass production project that developed in a junior high school setting. The problems of graphic communication through actual production of the product were solved by the students.


A simple metal machining project is outlined which will illustrate the principles of planning and production of manufactured items.


This project involved the students in the establishment of a company, selection and design of product, setting up a production line, and in distributing the product.


Outlines an industrial organization which can be used in industrial arts classes to show the relationships among finance, management, production, sales and inspection. The students produced 3 different styles of pencil holders in five different finishes. Sketches of jigs and fixtures are included.


Model construction is suggested as a means of simulating house construction work, encouraging students to plan and work together, and illustrate construction details in architectural drawing classes.

A unit in residential construction is described which is taught as part of a woodworking course. Model building of representative sections of homes is undertaken in order to teach the desired concepts.


Mr. Spencer suggests that mass production is not only an important concept of industry which we should teach but that it is an excellent opportunity to teach democracy, teamwork, and responsibility. He suggests beginning with a study of mass production then dividing the class into three committees corresponding to engineering, production, and business.


This simulated industrial activity is reported to have increased students interest in graphic arts by instilling a competitive spirit into class members.
B. Research and Experimentation


As an example of what might be learned from an in-depth study of an industry, the findings of such a study of the ceramics industry is related.


Outlines an 11th or 12th grade course in Research and Development and specifies basis upon which students might be selected who could benefit from experience in complex problem solving.


Presents an outline of the need for research and development in industrial arts and describes a program for implementation.


Reaction to "Project Problems" in the March-April Issue. Draws attention to the need to emphasize pride in workmanship and insists that programs which emphasizes Research and Development can still make use of project which will help instill pride.


Emphasizes the use of industrial arts classrooms as laboratories for research and experimentation in applied science. Suggests problems from the areas of wood, metal, plastics, automotives, electronics, adhesives, and finishes.
C. Occupational Orientation


A report on a classroom project to see how classroom instruction could most efficiently relate the industrial picture to students. In the experimental program arrangements were made for large group instruction. The instruction problem included teaching and demonstrating industrial methods and techniques as well as relating job levels and the skills necessary to become gainfully employed in them.


The program described has been developed by the Vocational Education Division of the Ohio State Department of Education. The intent is to provide youngsters with a more realistic understanding of the jobs and careers available. The approach is interdisciplinary in nature.


The unit of instruction outlined involves the student in math, handtool manipulation and care, planning, organization, and new materials and processes. Drawings for the devices used to help students understand light frame construction are included.


Information about five major categories of job families was developed using 35mm slides and audio tape. A self-testing feedback system was included which requires the student to stop the projector and answer certain questions.


This program, which has been initiated in 15 New Jersey schools, is six weeks in length and allows the students to rotate through home economics, industrial arts, science, health services, and business occupation experiences.

Dr. Maley takes the position that occupational education should be individual and society centered for the purpose of developing self-awareness and broad technological and industrial awareness. Ten elements of occupational education are presented followed by three broad areas of concentration for industrial arts programs.


The article explains a course entitled Occupational Laboratory which has been established in Dayton, Ohio for 10th grade students who are normally classified as reluctant. All items produced are distributed to non-profit organizations at cost. Of the 55 students who have gone through this program and subsequently graduated only 1 is reported as unemployed.


The programs involved occupational arts units taught on the seventh grade level in the areas of industrial arts, home economics, and business. Each seventh grader was required to enroll in at least one of these. At the ninth grade every student was involved in a seven-week unit called Occupational Information.


A review of three basic techniques through which the instructor can achieve the important I-A objective of orienting students to the world of industry.


Mr. Thomas suggests three types of information which should be provided to industrial arts students about occupations and three methods of presenting this information.