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The construction of a conceptual framework of industry in the United States and the development o f a completely new secondary curriculum, called American Industry, are reported. Major emphasis is placed on the need of the secondary school to aid all people in developing an understanding of American Industry, the procedure used in identifying those knowledges necessary to understand American Industry, the specification of behavioral objectives, the development of a logical course sequence, and the development of instructional materials for teacher and student. The project formally defined American Industry as "an institution in our society which, intending to make a monetary profit, applies knowledge and utilizes human and natural resources to produce goods or services to meet the needs of man." Models and illustrations accompany the narrative description of the development of the conceptual framework, the curriculum materials, and the general operating characteristics of the course. (CH)

Developing American Industry Courses For The Secondary School

AMERICAN INDUSTRY PROJECT
STOUT STATE UNIVERSITY
MENOMONIE, WISCONSIN
USOE CONTRACT NO. OE-5-85-060

DEVELOPING AMERICAN INDUSTRY COURSES FOR THE SECONDARY SCHOOL

by

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March 1968

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DEVELOPING AMERICAN INDUSTRY COURSES FOR THE SECONDARY SCHOOL

I. Introduction

The dual task of constructing a conceptual framework of industry in the United States and developing a completely new secondary curriculum based upon that framework might be described as a monumental undertaking. The challenges implicit in this undertaking have been accepted by the American Industry Project and the description of this effort forms the substance of this paper. A teacher education program has also been designed and pilot tested for this new area of study. The material to be presented, however, considers only the identification of the body of knowledge represented by the conceptual framework and the development of the secondary program called American Industry.[1]

Major emphasis is placed upon:

A. The need of the secondary school to aid all people in developing an understanding of American industry.

B. The procedure used in identifying those knowledges necessary to understand American industry.

C. The specification of behavioral objectives, taxonomically structured.

D. The development of a logical course sequence.

E. The development of instructional materials for teacher and student.

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[1]In this paper American industry refers to the enterprises found in the United States that exist for the purpose of making a monetary profit. American Industry refers to the courses being developed by the American Industry Project.

II. Rationale

The American Industry Project is in the process of developing a secondary school curriculum which focuses upon the knowledges necessary to understand American industry. With the forces that American industry exerts in the molding of our society, it must be recognized as basic to the American way of life.

Technological advancements of industry affect our lives daily. New processes demand unique and more complex cognitive and manipulative skills. Labor saving products create new opportunities for thought and leisure. Automated machines using sophisticated electronic equipment result in efficient mass production. These changes are examples of how American industry interacts with society. It is also apparent that students are affected and must understand those forces which influence their lives. American industry has been identified as one of those forces and must be studied in order that students have an adequate understanding of their environment. Since American industry touches the lives of all people in our society, it is felt that American Industry courses are a part of general education.

The American Industry program is centered about two broad objectives:

A. To develop an understanding of those concepts which directly apply to industry.

B. To develop the ability to solve problems related to industry.

As a basis for meaningful curriculum development, it was necessary to identify a logical structure of generalized knowledges of industry. A conceptual structure for these knowledges was selected for four basic reasons:[2]

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[2]Nancy Smith Nelson, "The Conceptual Approach to Teaching" (Madison: School of Home Economics, University of Wisconsin, 1964), Unpublished.

A. Simplicity is provided, making details meaningful and more easily remembered.

B. Conceptual organization provides a stable way of structuring knowledge.

C. Relationships are revealed, which in turn provide a unity of knowledge.

D. Conceptual understanding allows for transfer and the application of knowledge to various situations.

The starting point for the development of the structure involved the formulation of a definition of American industry. Care was taken to use defining attributes which lent themselves to conceptual analysis. The Project formally defined American industry as:

"an institution in our society which, intending to make a monetary profit, applies knowledge and utilizes human and natural resources to produce goods or services to meet the needs of man."

A conceptual structure of the knowledges necessary to understand American industry was then developed. The structure consists of two sub-sets of concepts:[3] (1) those concepts which apply to any industry regardless of product or service and (2) those concepts of our society that directly influence American industry in a manner that gives it a uniquely American character. (Figure 1) After this had been completed, conceptual models and definitions for each concept were developed.[4] The production model is

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[3]Concept is referred to as "a psychological construct resulting from a variety of experiences (detached from the many situations giving rise to it) fixed by a word or symbol, having functional value to the individual in his thinking and behavior." (Face and Flug, 1965, p. 10)

[4]Conceptual Structure, Models and Definitions of American Industry, 1967. This contains the graphic representation of the basic concepts (Figure 1) and the definitions of each. It also contains the models (Ex. Figure 2) and definitions depicting the sub-concepts for each basic concept.

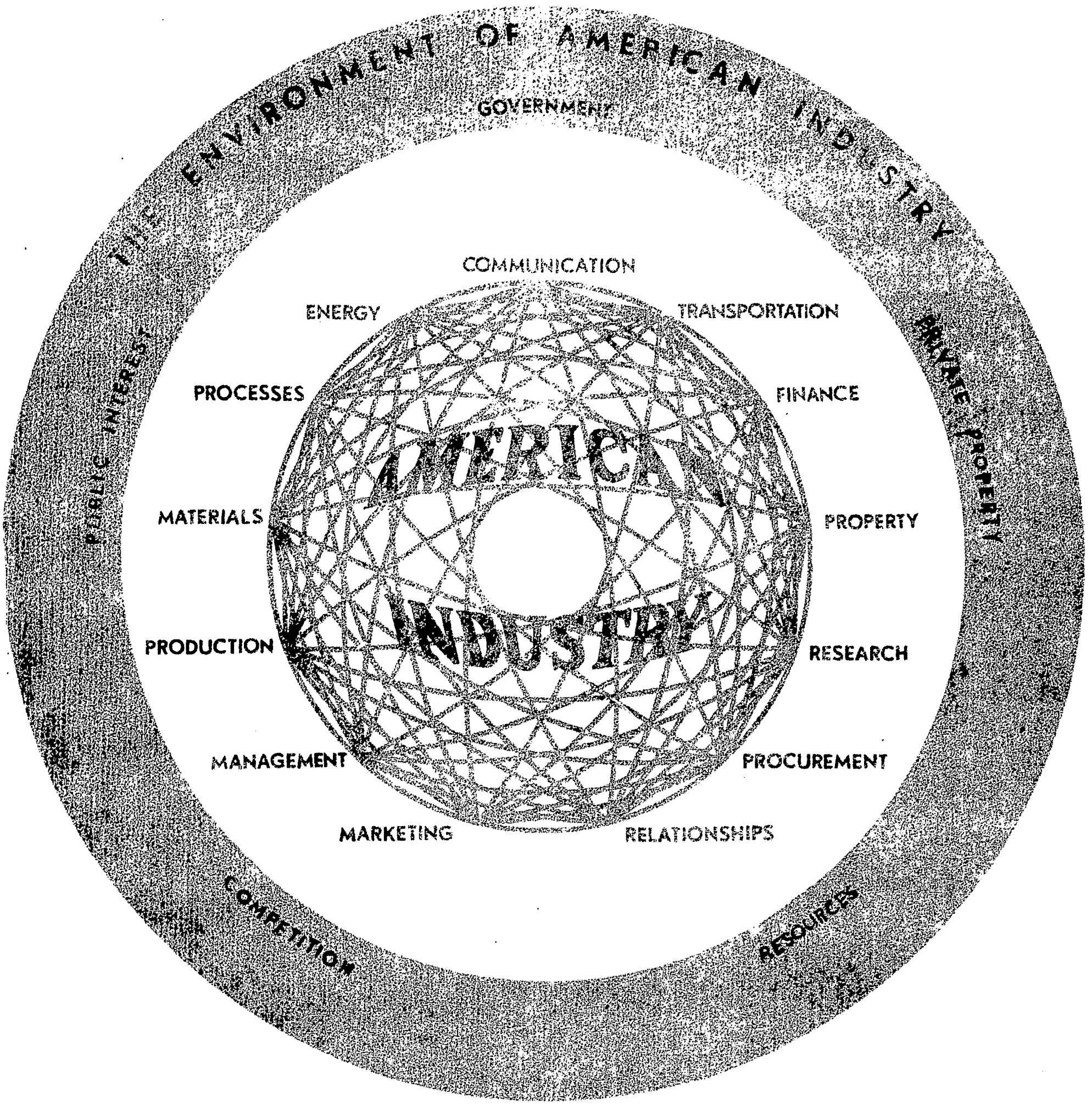
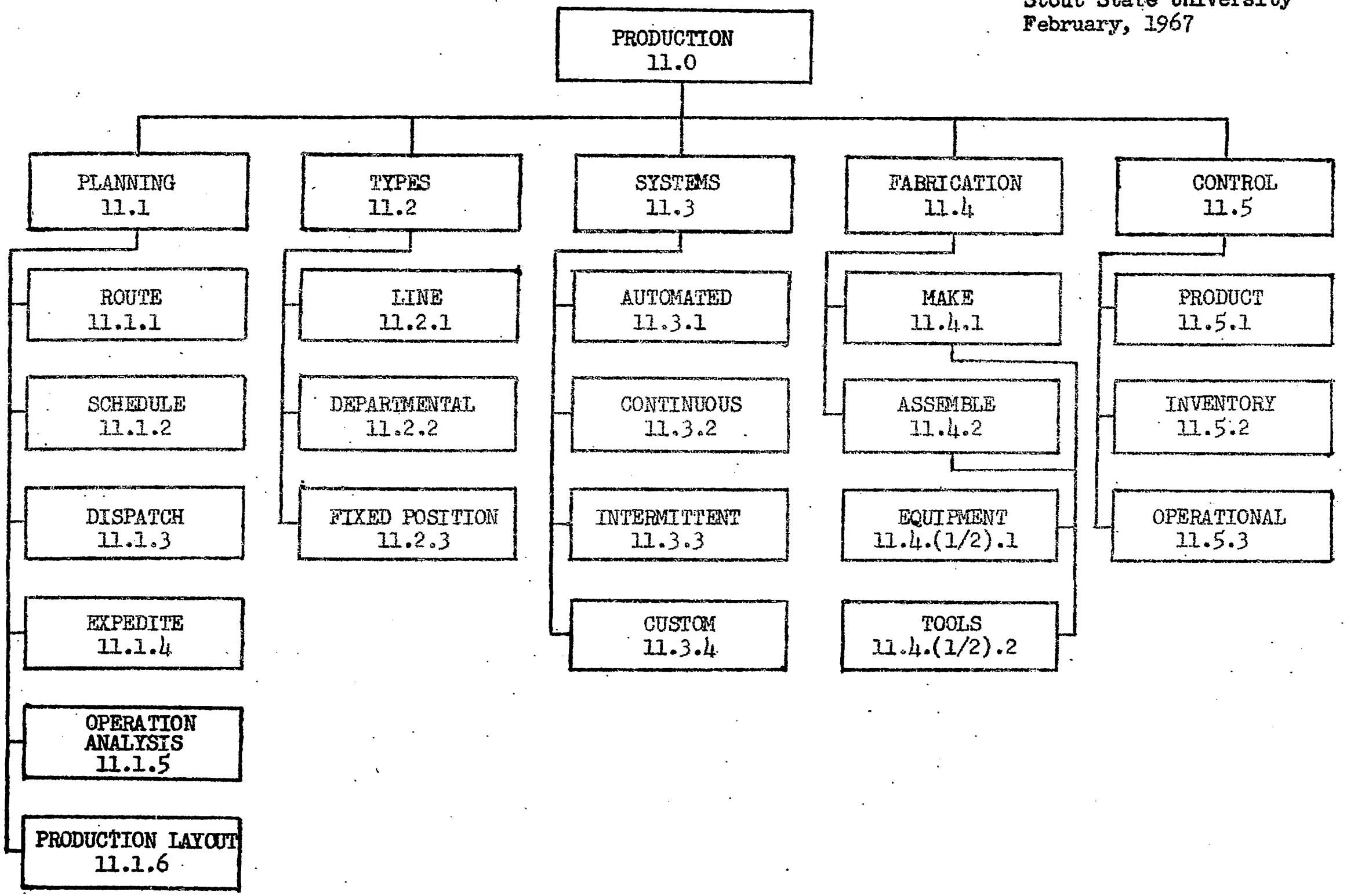


Figure 1

A CONCEPTUAL STRUCTURE
OF THE KNOWLEDGES NECESSARY
TO UNDERSTAND AMERICAN INDUSTRY

AMERICAN INDUSTRY PROJECT
Stout State University
February, 1967



graphically presented in Figure 2 as an illustration. Production was defined as "those activities of an enterprise which are primarily concerned with the generation of specified goods or services." Each concept and sub-concept was defined similarly in terms of their respective attributes. This total structure was used as the basic reservoir of knowledge in developing American Industry curriculum materials.

III. Development of Concepts, Models, and Definitions

A first structure was developed by the American Industry Project staff, the Project's participating teachers, and cooperating members of the faculty of Stout State University. The initial structure was viewed as a tool of inquiry, to be reshaped as insights were gained. Several cycles of investigation and refinement resulted in the conceptual framework shown in Figure 1.

Following a review of available literature and some initial consultant contacts, consultant information packets were prepared. These packets were designed to aid in fully developing and validating the concepts, concept definitions, and structure of American industry. They contained an introduction to the American Industry Project, guidelines for the consultants using them, and copies of the structure, models and definitions previously developed. Over two hundred industrialists, labor leaders, and educators reviewed these packets, each offering suggestions influencing the refinement of the original structure.

A sample of the universities, organizations, and enterprises from which consultants were obtained would reveal representation of such institutions as: University of Minnesota, University of Chicago, University of Wisconsin, California Institute of Technology, United Auto Workers--Milwaukee, Carnation

Company, American Federation of Labor--Congress of Industrial Organizations, North American Aviation, American Marketing Association, Oscar Mayer and Company, and Minnesota Mining and Manufacturing Company.

With the definition of American industry as a guide, the American Industry Project staff systematically analyzed the consultant responses and refined the conceptual structure, the concept models and definitions. This team effort by the staff utilized the system represented in Figure 3. Reflecting upon the definition of American industry, major concepts were first reviewed and revised where appropriate. Then, starting with the definition of a specific concept, the definition was challenged to determine if it appeared to be logical and complete. If the consensus was that the definition was not appropriate, the concept was redefined. If the initial definition was found to be logical and complete, the next step included a review of additional information, at which time samples were collected of instances or examples that represented the concept area. These samples were reviewed to determine if the definition subsumed all instances or examples.

If the definition did not embrace all examples, the appropriateness of excluded examples was challenged. By challenging the anomalous examples it was determined whether to redefine the concept, or, if inappropriate, discard the examples. At this point, it was assumed that a logical and complete definition had been developed. The qualifications of the concept were then challenged. If the concept did not qualify as a major concept, the information was filed for inclusion in other concept areas and development of this concept stopped. However, if the concept did qualify as a major concept of American industry, the examples that were collected earlier were sorted into meaningful categories. Based upon the categories which had been identified, sub-concepts were identified and defined.

CONCEPT DEVELOPMENT

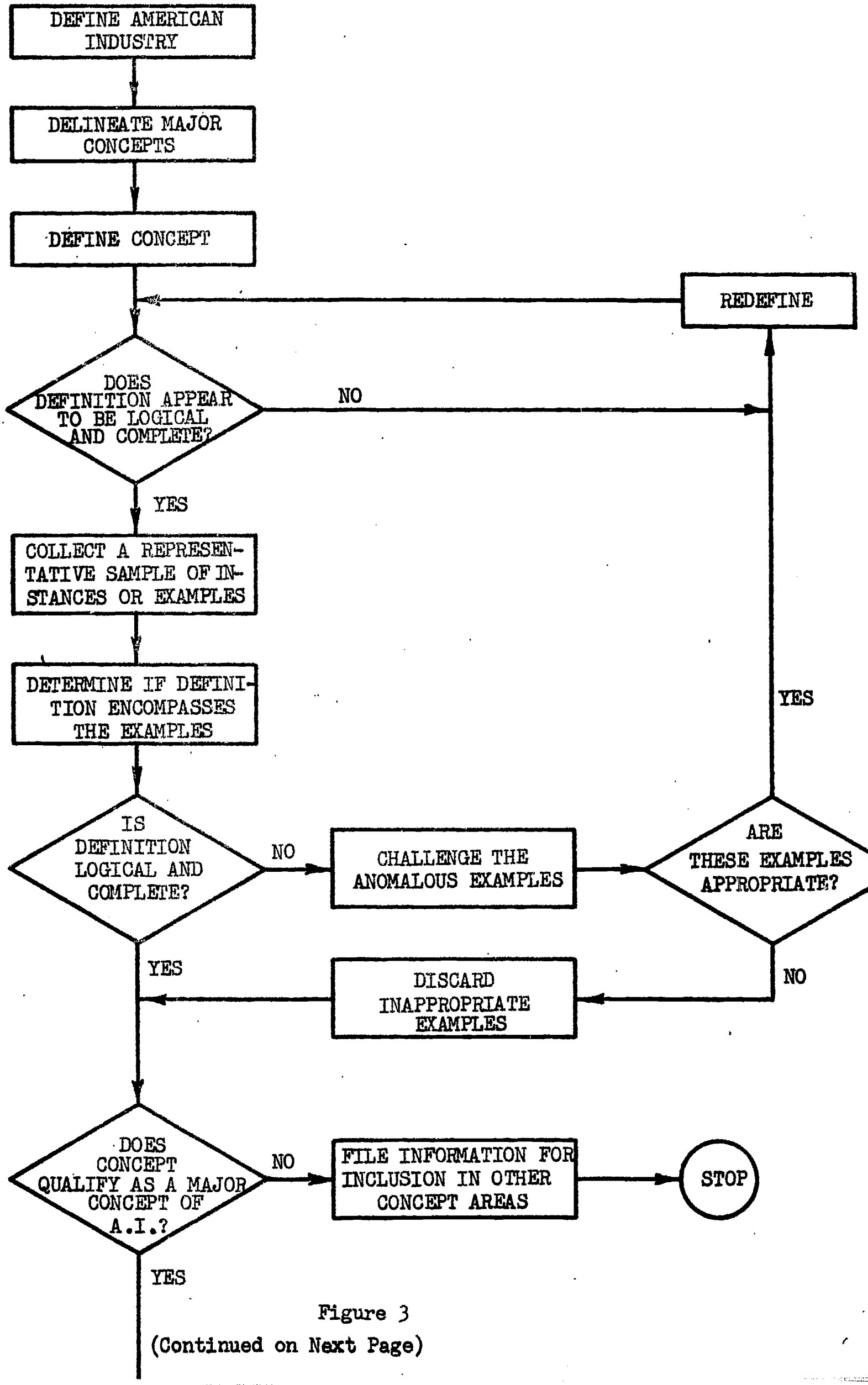
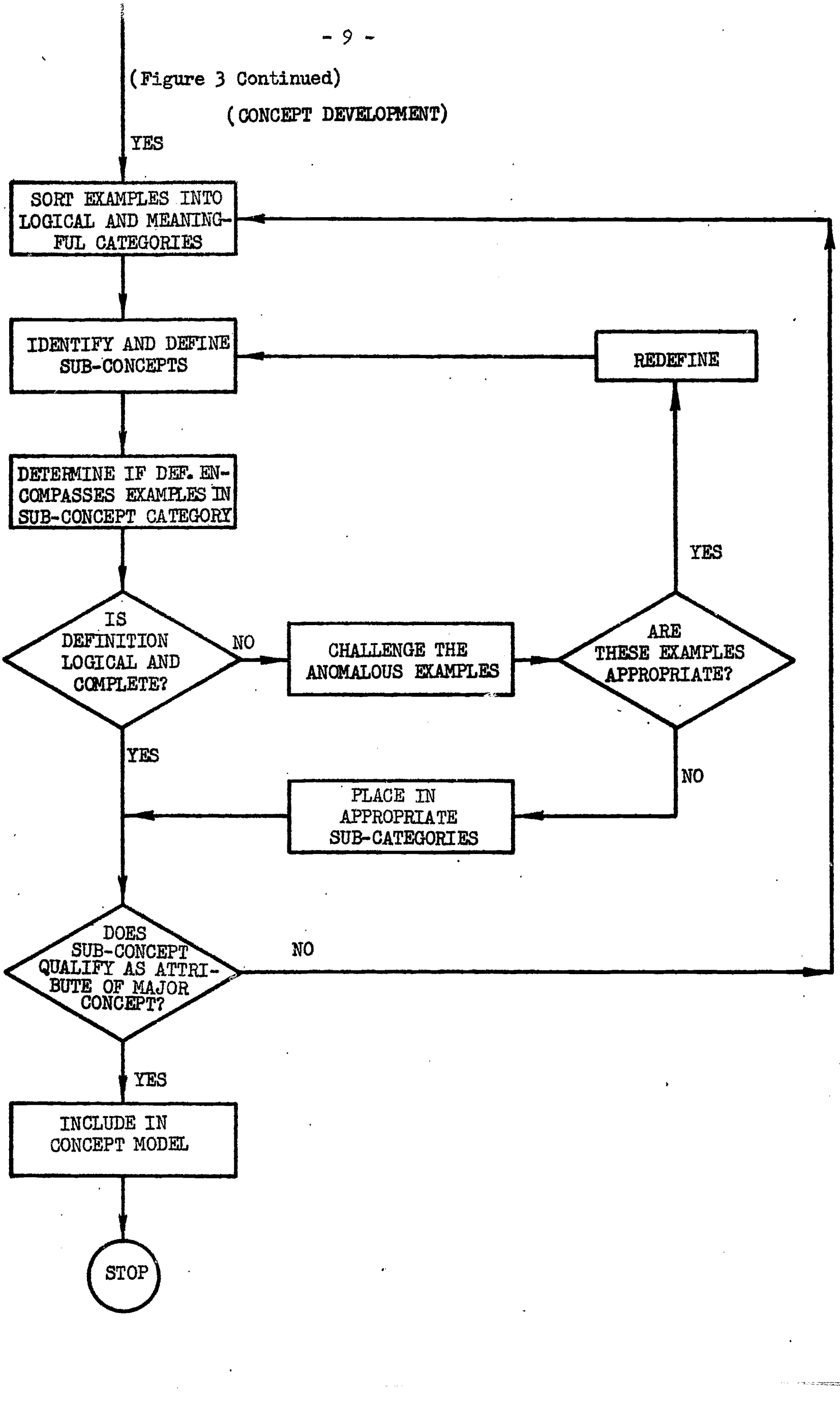


Figure 3

(Continued on Next Page)

(Figure 3 Continued)

(CONCEPT DEVELOPMENT)



The definition of the sub-concept categories was then challenged. As before when the major concept was challenged, the anomalous examples forced a redefinition of the sub-categories. It was then decided whether the sub-concepts qualified as an attribute of the major concept. If it did not, the information was recategorized. If the sub-concept did qualify, it was included in the major concept.

These techniques were used because they provided a method of organizing and analyzing our work. It is realized that other techniques may also fit with the development of conceptual course materials. However, by using the system described, the models and definitions for each conceptual area were logically developed. Figure 1 gives the complete structure and identifies the major concepts that emerged from the study outlined above. The development of the total structure took about two and one half years. At the present time, the School of Applied Science and Technology, here at Stout State University, is continuing to analyze these substantive areas of American industry.

IV. A Taxonomical Breakdown of Level I American Industry

Once the body of knowledge was defined, a taxonomical breakdown of the Level I American Industry course was developed.[5] (See Figure 4) This breakdown was prepared by Orville Nelson and the author in an effort to structure a hierarchy of learning which in turn provided the basis for starting behavioral objectives. Two techniques developed by Gagne' were used. First, his approach for mapping or structuring instructional content was used as a synthesis technique to obtain the logical sequence of the course. Second, this learning

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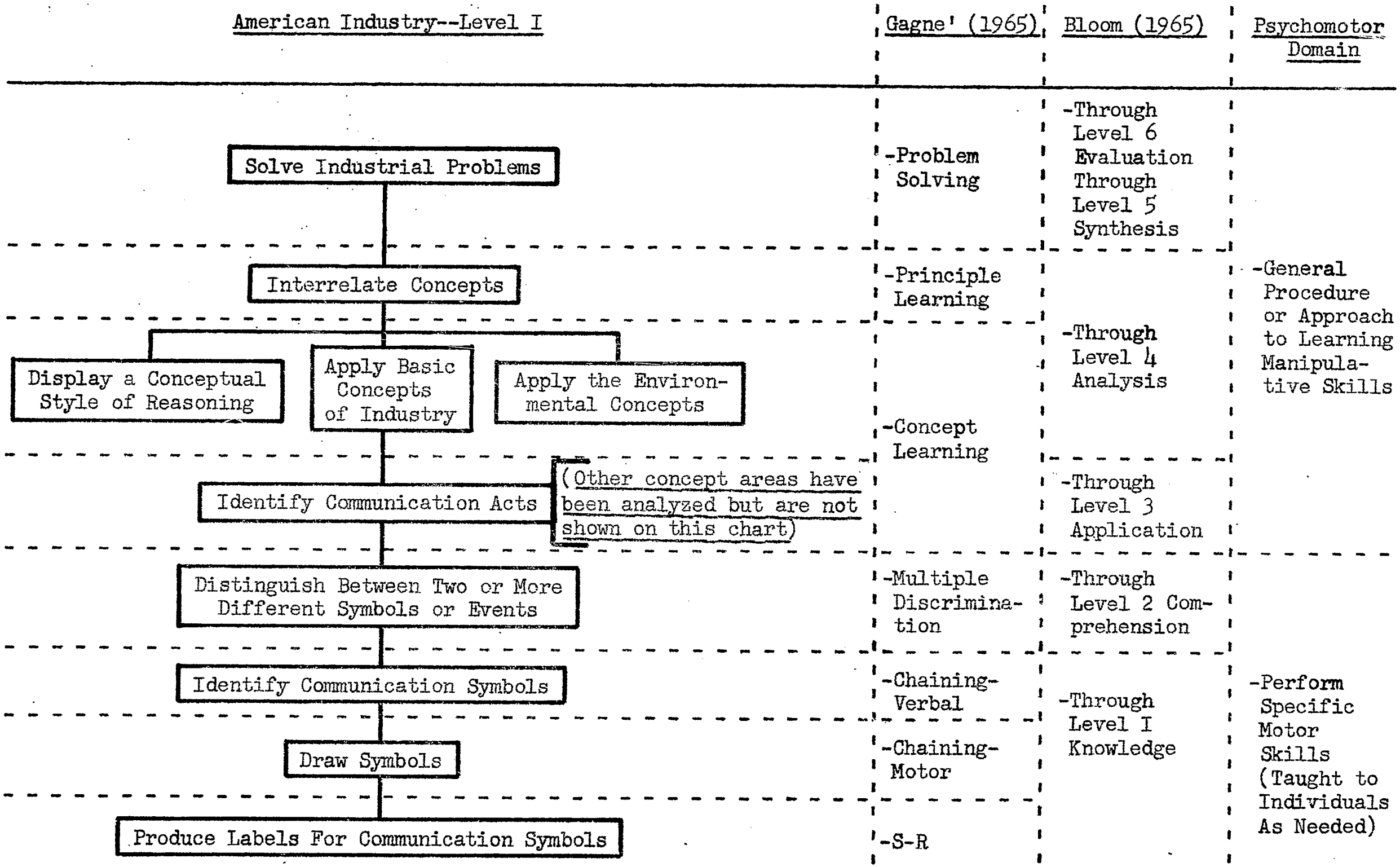
[5]Level refers to a point of change in the course objectives in the American Industry curriculum. There are three levels of American Industry. Level I is the first year, Level II the second year, and Level III the third year. (Objectives for each level appear later in this paper) It should be noted that Levels I and II are being field tested on a semester basis as well as a full year.

A TAXONOMICAL BREAKDOWN OF LEVEL I AMERICAN INDUSTRY

O. Nelson
R. Gebhart



Some Beginning Competencies - Typical 8th Grade Students

1. Reading and Communication Skills
2. Mathematics Skills
3. Normal Psychomotor Development
4. Exposure to Local Enterprises
5. Experience in Handling and Spending Money
6. Etc.

Figure 4

analysis procedure was used to define the elements to include in the course and to identify any hierarchies that existed in these elements.

In developing any course, one of the basic considerations must be the educational objectives expected to be achieved, that is, the changes desired in students as a result of the educative process. For this course the hierarchy of educational objectives was developed in view of the concepts of American industry. Mager's (1962) work served as the guide to writing the objectives in behavioral terms. The sequence of these objectives may be seen by studying the taxonomical breakdown shown in Figure 4 and the course construction procedures described in the following paragraphs.

Note Figure 4, A Taxonomical Breakdown of Level I American Industry, to obtain a graphic picture of the hierarchy of objectives. At the bottom of the page are listed the beginning competencies normally found with eighth grade students. Some basic competencies that can be expected are: eighth grade reading and math skills, normal psychomotor development, experience in handling and spending money, and exposure to local enterprises. As in nearly any group, individual competencies of students will vary, therefore, the teacher will have to compensate for these variations by using techniques and activities which are appropriate for his students and environment.

This chart uses communication, one basic concept of American industry, as an example to show how the Level I course is taxonomically structured.[6] However, any of the concepts shown in Figure 1 might have been used as the example. The first level of the hierarchical order involves simple recall of information or simple stimulus-response patterns. This could be merely naming specific facts or being able to give the names of various communication symbols without

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[6]Communication is defined as "the act of conveying ideas by means of signs and symbols for the purpose of affecting behavior."

any real understanding of these facts or symbols. An example in the communication area would be simple recall of the senses used in communicating without understanding how the senses were involved in communicating or being able to say the words such as "sign," "person," "product," and "behavior." The second level includes motor and verbal chaining. At this level the student could draw symbols used in communicating. He would also be able to link the names of symbols with the actual symbols. The purpose is to get the events in proper order. Lengths of the chains will vary with individuals.

The next level involves multiple discrimination. The individual working at this level would be able to distinguish among many events or stimuli in his environment. As an example the person would be able to distinguish among the various communication symbols or acts. At the next higher level, the student would be able to group events or objects, classify them, and apply some generalizations to them. By responding to events which he has mentally classified, he is actually applying conceptual reasoning. An example of applying conceptual reasoning would be: after observing many concrete situations which demonstrate the way ideas are conveyed from one person to another, the student forms a concept of communication. If the concept is truly formed, the individual could then display a conceptual style of reasoning by applying his concept of communication to many other situations which are unique to him. This would be the test for his conceptualization of communication.

At this level the student could also apply other concepts identified as basic concepts of industry. In this course, for example, he would be able to apply the concept of transportation by demonstrating how the movement of materials or people is planned and carried out. Or, he might apply his concept of research by solving problems through a systematic and unbiased investigation of the problem. It should be noted that at this level the student would not

interrelate the concepts being applied.

The next level deals with principle learning. Principles are really chains of concepts, but with the relationships between concepts included. By breaking down concepts we can analyze the elements of each organizational structure and identify elements that form a concept and show the relationships between concepts. An example of principle could be shown in an analysis of communication in industry. Let's assume that our concept of communication is basically, "the conveying of ideas by means of signs and symbols for the purpose of affecting behavior." And, our concept of production is "the generation of goods or services." In analyzing any company we can form some simple principles by linking these concepts.

A. In order to produce goods or services a description of the product is needed.

B. Drawings and specifications may be used to describe objects. The principle being that communication is essential in order to produce goods or services.

It is evident that to form principles, concepts must have already been formed. It is also apparent that hierarchical progress through the level of principle forming involves the linking of concepts. Therefore, complexity and sophistication of the principles formed are directly related to conceptual understanding.

Problem solving is at the upper level of the taxonomy. Realizing that an infinite variety of problems exist and that problems are solved at many levels of difficulty, it is still possible to isolate some common characteristics of problem solving. Problem solving involves:

A. Developing a plan of procedure for solving the problem.

B. Exercising judgments in determining what information is required in solving the problem.

C. The arranging of parts or information to form a logical pattern.

D. Discovery of new information.[7]

The term "problem" is directly related to the solver. What might be a problem for one person could well be "old hat" for another. In essence, the concepts and principles formed by the learner will be a determiner of the problems he can solve and the level of his answers.

Bloom's Taxonomy of Educational Objectives (Cognitive Domain, 1965) also served as a guide in preparing objectives for this course. The taxonomical breakdown by Bloom combined with Gagne's work provided the base for a meaningful classification system for the course objectives.

The psychomotor domain was also considered in developing this course. Specific motor skills are taught during the first three units of the course. However, this does not include the development of a specific group of skills for each student, but skills needed by an individual in order to carry out classroom activities. That is, if the student activity consists of mass producing wooden coasters which requires the use of the band saw and disc sander, not all students would learn to operate the saw and sander. Only those students who need to know (operators and foremen) would be taught these skills.

Some general manipulative skills would be taught, however, the focal point would be the concept of skills learning. It would involve the process of learning a skill, and not necessarily how to operate a particular piece of equipment. The learning would be conceptually oriented in order that the information and process could be transferable to other learning situations.

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[7]New means, new with respect to the problem solver.

This allows the students to learn a variety of manipulative skills with greater efficiency through the use of a conceptual orientation to skills learning.

The affective domain is reflected in the course materials and student attitudinal changes are brought about in various ways. An example is safety. In the American Industry classes safe use of machines and tools is demonstrated, safety literature is distributed, and safe practices in industry are noted and posted. Some other attitude changes expected are developed in the students' feelings toward profit, competition, government, and industry.

Having discussed the method and rationale involved in preparing the educational objectives of this course, an overview of all American Industry curriculum materials is in order.

V. The Development of Level I Curriculum Materials

With the structured body of knowledge as the basic source of information and the taxonomical breakdown of the course objectives in mind, let's view the development of the Level I curriculum materials. In Figure 5, The Development of Level I Curriculum Materials, a simple network illustrates the steps followed in developing the first level materials.

Development started with preparing the rationale for instituting a new curriculum entitled American Industry (Face and Flug, 1965). The rationale contains the fundamental reasons for a new curriculum and the general objectives of the curriculum. The general objective of the American Industry courses were seen as:

A. To develop an understanding of those concepts which directly apply to industry.

B. To develop the ability to solve problems related to industry.

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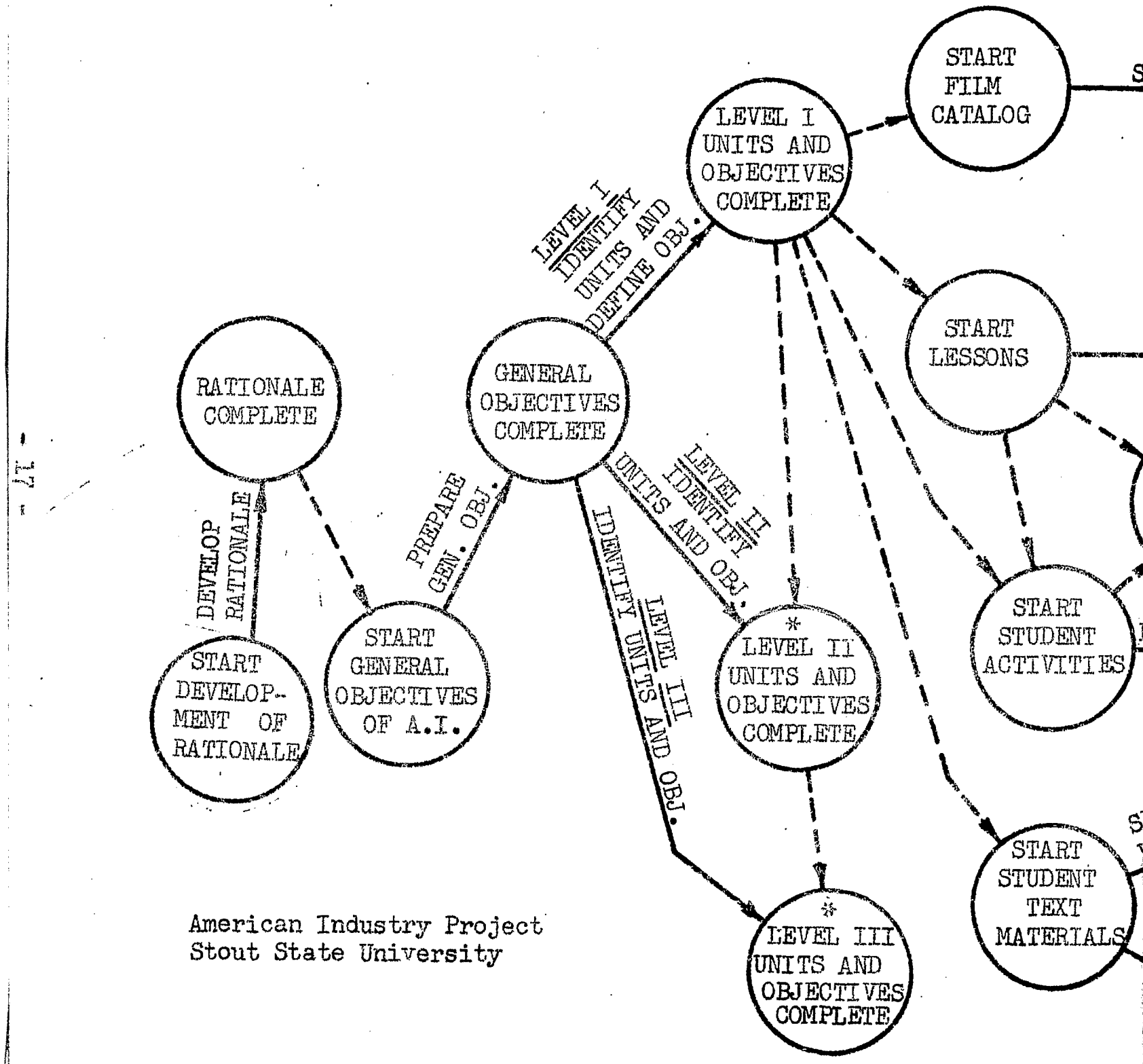

American Industry Project
Stout State University

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F LEVEL I CURRICULUM MATERIALS

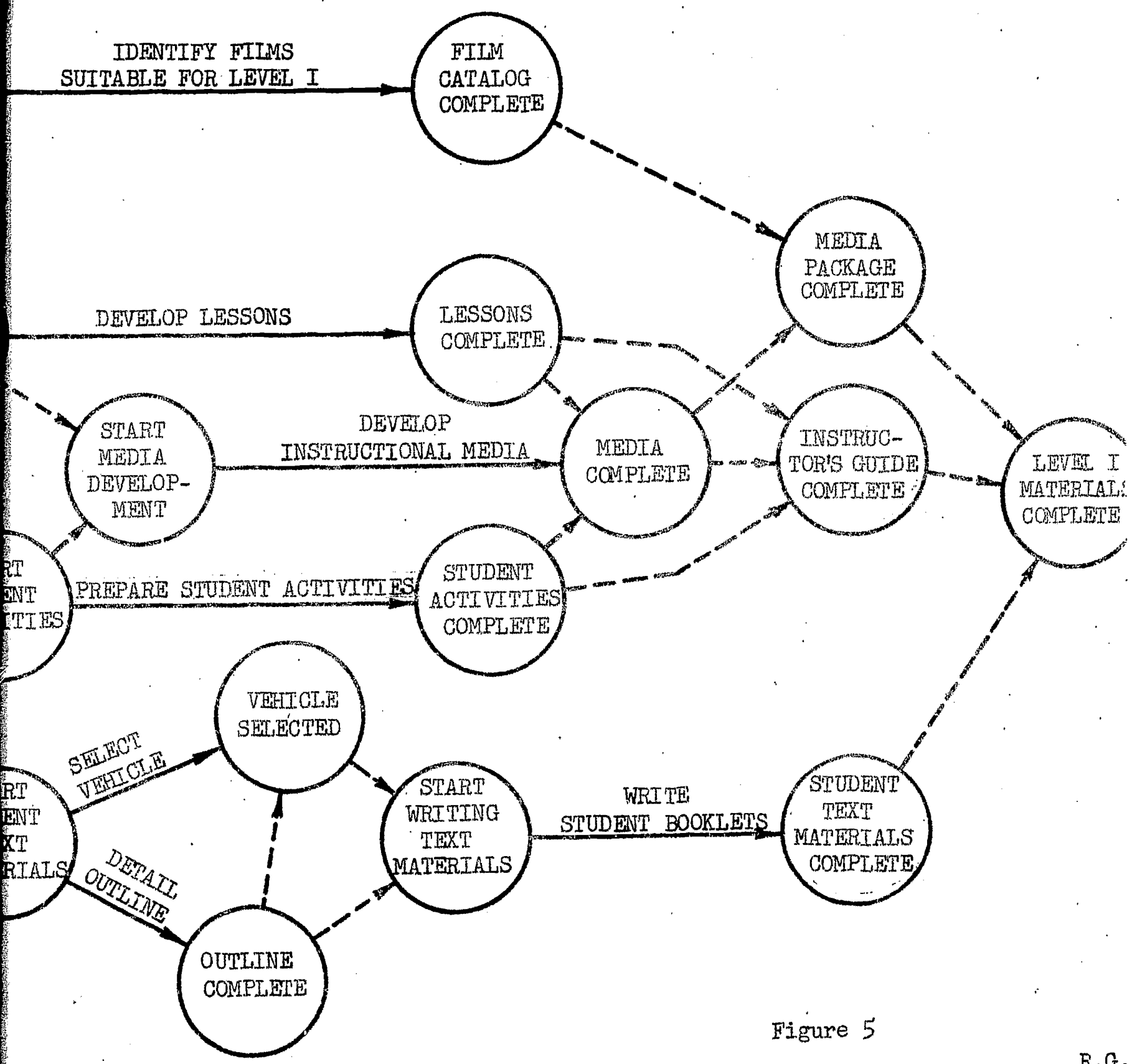

Figure 5

R.G.

s Will Not Be Detailed In This Network.

All materials for the American Industry courses were developed with these two objectives as a base.

Next, objectives for the three levels of American Industry were identified. They are:

Level I, designed for eighth grade students, has the following course objectives:

1. To develop a knowledge and understanding of the major concepts of industry and their relationships.
2. To develop the ability to solve simple problems related to industry.

Level II, designed for tenth grade students, has the following course objectives:

1. To develop in-depth understanding of the concepts of industry, and develop refined understandings of the relationships among the concepts.
2. To expand the ability to recognize and solve complex problems related to industry.

Level III, which is for twelfth grade students, is designed to develop knowledges and problem solving skills within a concept area or cluster of concept areas appropriate to the individual's level of ability and interests.

Next, the course outlines were prepared in accordance with the objectives (general and level) and the conceptual method of presentation.

From this point forward, this paper will detail the preparation of Level I materials. Levels II and III are being developed in a similar manner.

Level I, Unit Outline and Objectives

In describing the unit outline for Level I, it should be noted that unit objectives were also identified and later were followed by lesson objectives.

Each set of objectives was built upon the basic objectives. The sequence in preparing objectives was as follows:

A. General American Industry objectives

B. Level objectives

C. Unit objectives

D. Lesson objectives

Figure 6, Level I - American Industry Course Outline was prepared with the aid of various structuring methods. The seven units outlined represent:

A. A course that utilizes the cyclical approach and is designed to "cycle" through the basic concepts of American Industry once in Unit I and once in Unit II. Individual concepts are studied in greater detail during Units III, IV, and V. At the completion of these three units the student will have studied each of the concepts and thus will have completed another cycle. Each time a cycle is completed the student progresses to a more sophisticated level of understanding as is represented in Figure 4. At the higher levels the student is problem solving at a level commensurate with his abilities.

B. Another structuring method involves moving from a <u>teacher directed</u> activity to <u>student directed</u> activity. That is, when starting the course most activity is teacher directed, however, as the course progresses activity direction is gradually shifted to the students. This allows for in-depth problem solving which is necessary to reach the higher levels of learning.

After the Level I objectives and outline had been completed, the following activities were started:

LEVEL I - AMERICAN INDUSTRY COURSE OUTLINE

TEACHER DIRECTED

	Units and Features	Unit Theme
Unit I	Industry Today 1. Introduction to American industry 2. Resources of industry 3. The environment of industry 4. The basic parts of industry	- Let's analyze industry.
Unit II	The Evolution of Industry 1. The needs of man 2. A search for greater productivity 3. Some effects of man's quest for productivity	- The needs of man and why he progressed.
Unit III	Organizing an Enterprise 1. Communication 2. Research 3. Management 4. Finance 5. Property 6. Energy	- Let's start a business.
Unit IV	Operating an Enterprise 1. Relationships 2. Procurement 3. Materials 4. Processes 5. Production	- Let's produce using modern production methods.
Unit V	Distributing Products and Services 1. Marketing 2. Transportation	- Why does a product sell?
Unit VI	The Future of Industry 1. State of the art 2. Reasons for change 3. Future expectations	- Where do we go from here?
Unit VII	The Students' Business Venture 1. Development 2. Fabrication 3. Marketing 4. Evaluation	- The students organize, produce, and sell.

STUDENT DIRECTED

Figure 6

A. A Level I film catalog was prepared. This catalog contains reviews of 16mm sound films suitable for Level I students. It is designed to assist teachers in locating films that directly relate to the conceptual areas taught in American Industry, therefore, the films are grouped according to concept area. Each film has been previewed and found to be acceptable for the stated level. The title, rental arrangements, cost, company, and a brief synopsis is presented for most films. A total of 141 films is listed in the Level I catalog. (Daehling and Wolf, 1967) It should be noted that, although the films previewed are the best of those located, future plans include development of conceptually oriented films more directly related to the course materials.

B. The lessons were also started when unit outlines and objectives were complete. In developing the lessons the following process was followed. First, themes were introduced as variants of the concepts to be studied. The general unit objectives were then reviewed. Next, the detailed objectives for the lessons were developed. At the same time, however, lesson length was established. When the objectives and outline for the entire unit had been completed, the lessons were written. Each lesson consists of the following:

1. Theme (variation on the concept or principle involved).
2. Behavioral objectives which were developed according to the procedure defined in Figure 4, A Taxonomical Breakdown of Level I American Industry.

3. A general description, or scope, of the lesson.

4. Resource references identifying instructional media, and literature for students and teacher.

5. Lesson content which has been written in dialogue form addressed to the instructor. Lesson content consists of an introduction, activity and content, and a conclusion. In the lesson content, the resource reading, lesson activities, and instructional media have been appropriately keyed into that lesson.

6. Student activities are also a part of these lessons but will be discussed later.

7. Evaluation items are included in each lesson, however, it has been suggested that the teacher use these only as a guide to preparing his own evaluation.

C. The student activities were designed by the same person who prepared the lesson and became a part of the lesson. In many lessons there are sufficient activities to allow a selection from two or three activities available for that lesson. These activities allow the student to become involved in real industrially related learning situations. Examples of some activities used in Level I include: planning for and mass producing wooden coaster and silk screened pennants, going on field trips to observe natural resources or to visit an enterprise, posing labor-management problems and solving them through arbitration, establishing a small student enterprise, selling stock in the company, doing research on a product, performing market research, planning for continuous production of a product, making or locating jigs and fixtures, producing products, inspecting the products, developing packages, selling the products or

services, preparing financial and personnel records, conducting hiring interviews, and writing final reports indicating profit or loss of the company.

This represents a cross section of the activities included in the Level I instructor's guide. Later, there will be a further explanation stating how the entire instructor's guide operates.

D. Project developed media. As each lesson and its activities were completed the media for that lesson was started. A film, overhead transparency packets, slide series, audio tapes, graphs, charts, mobiles, and bulletin board displays have been developed for use in this course. As mentioned before, each has been keyed to a specific lesson to allow the teacher to quickly identify its location in the lesson.

E. Student texts were written for each of the seven units in Level I. Written in a contemporary style, the student texts contain examples of simple industrial events, the principles of which are readily transferable to situations in various companies. Each text contains a table of contents, illustrations, bibliography, and definitions of the salient terms used. Text reading assignments are also keyed to specific lessons in the instructor's guide.

The reading level of the student texts has been evaluated. Determination of the reading level was done by Mrs. Sylvia Nelson, a person with a background in reading research. In establishing the reading level Mrs. Nelson used the Dale-Chall (1948) formula.

VI. General Operating Characteristics of the Course

The following provides an overview of the methods of operation employed in course development. Details of the procedures are found in the "American Industry Procedures Book" (1967).

Using the Instructor's Guide and Student Texts

Before attempting to teach American Industry courses, an understanding of the philosophy and rationale is necessary. It is also necessary to know how the instructor's guide is used and how to safely demonstrate equipment used in the laboratory.

As mentioned before, the guide is divided into units and lessons. In each unit, the first lesson provides the introduction. Successive lessons develop the concepts of American industry through the cyclical method. In each cycle, the aim is toward deeper understanding of the concepts. In Units III, IV, and V the basic concepts are first studied individually, and then the relationship between the concept being studied and those previously studied are discussed.

In using the guide and student texts, the teacher should start by perusing the introduction and course outline. Next, the units, corresponding student activities, and student text materials should be studied. At this point the teacher should have evolved an overview of the course about to be taught. He should then read the student text materials and mentally interweave the lessons and student activities with the student texts.

When the teacher has accomplished the above, he should study each unit, lesson by lesson, and detail his course in preparation for teaching it. This should include the identification of selected activities and approximate lesson dates.

As in any new course, it is necessary to determine the effectiveness of the course material. For the American Industry Project a system was designed to gather feedback information from teachers and students using the course materials. Many of the revisions came as a result of student and teacher feedback forms. In addition, classroom observation, teacher interviews, and student contacts provided feedback data.

Feedback and Revision of Curriculum Materials

As mentioned, improvement of these materials has been accomplished through many means. Observation in the classrooms and laboratories, followed by interviews with participating teachers and students has provided much data. The Project's supervisor of participating teachers visited each school monthly. During his visits to participating centers he recorded information pertaining to the instructional technique being used, instructional media employed, and the students reaction to the presentation or activity. The visitation record prepared by the supervisor of participating teachers is discussed with the participating teacher following each observation. Additional suggestions for improving curriculum materials are often made during these discussions.

Another feedback tool is the lesson feedback form. One feedback form is completed by the teacher at the end of each lesson. It contains an overall rating of the lesson, an appraisal of the objectives, content, instructional media, plus other general comments. A similar form is prepared as an overall rating of each unit.

A media feedback form is completed each time instructional media are used by the participating teacher. This form also provides data necessary for media revision.

The student reading material is rated by the students and the teacher. Each student is encouraged to make comments within the booklets and underline words he doesn't understand. Students are also asked to note any lack of

continuity they feel exists. Finally, the students complete a formal rating of each booklet, the Nelson Rating Scale for Written Materials. This form is designed to gather a sequence of information related to the students' attitude toward the booklets, vocabulary, the style and layout of each booklet, readability of the booklets, and content.

Teachers also examine each booklet and note spelling, punctuation, and technical errors. In addition they check literary continuity and suggest addition or deletion of material.

All feedback information is recorded and filed by unit and lesson to be used for revision purposes. In making revisions each comment is reviewed and analyzed before making the change.

Evaluation of Curriculum Materials

In order to determine the effects and operating characteristics of the American Industry courses, evaluation procedures have been developed and employed. A wide spectrum of evaluation procedures was designed to obtain descriptive and comparative data. Details of the evaluation may be found in a paper by Orville W. Nelson (1967). The paper is available from the American Industry Project.

VII. Conclusion

The previous pages have described the procedures, rationale, and philosophy which are fundamental to the American Industry Project. A logical structuring of conceptual models, combined with taxonomically arranged objectives provide a hierarchical learning pattern for students of American Industry.

The instructor's guide serves as the focal point for all course materials. That is, it provides guidance for the teacher in identifying a consistent course pattern; it identifies supplemental reading for teacher and student;

it provides suggested student activities; it combines suitable media with prescribed lessons; and it outlines evaluation items. By combining the instructor's guide, student texts, and instructional media one can envision an instructional package designed for teaching the concepts of American industry.

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