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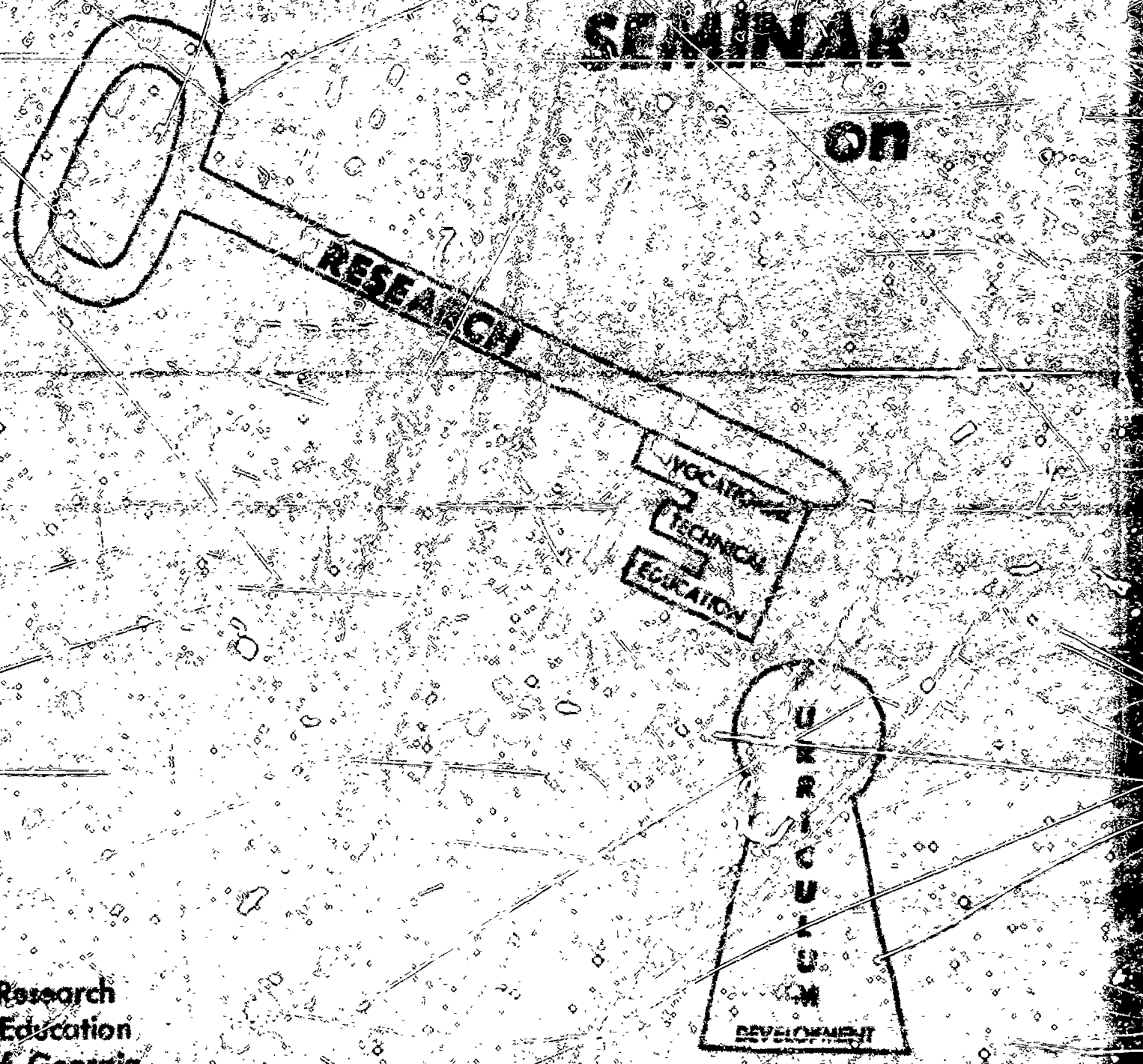
FORTY-ONE VOCATIONAL-TECHNICAL EDUCATION LEADERS AND 23 CONSULTANTS PARTICIPATED IN A SEMINAR TO DISCUSS EXISTING RESEARCH METHODS BELIEVED TO BE USEFUL IN CONTROLLING CURRICULUM VARIABLES. THE SEMINAR WAS ONE OF SIX CONDUCTED IN COOPERATION WITH THE AMERICAN VOCATIONAL ASSOCIATION, U.S. OFFICE OF EDUCATION, AND CORNELL UNIVERSITY. PRESENTATIONS INCLUDED (1) "THE INTERPRETATION OF ECONOMIC DATA" BY N.J. WOOD, (2) "A LOOK AT SOCIAL CLASS" BY R. PAYNE, (3) "RELATIONSHIPS OF COMMUNITY ENVIRONMENT TO THE VOCATIONAL EDUCATION CURRICULUM" BY S.C. MAYO, (4) "EDUCATIONAL PSYCHOLOGY AND THE CURRICULUM" BY J.C. BLEDSOE, (5) "CURRENT RESEARCH DEVELOPMENTS IN THE U.S. OFFICE OF EDUCATION" BY D.M. NEILSEN, (6) "STATISTICAL MODELS IN CURRICULUM DEVELOPMENT STUDIES" BY H.E. ANDERSON, (7) "THE NEW MATHEMATICS--A PATTERN FOR CURRICULUM REFORM" BY J.R. HOOTEN, JR. (8) "CURRICULUM DEVELOPMENT AND EVALUATION IN ENGLISH" BY M.J. TINGLE, (9) "THE ANTHROPOLOGY CURRICULUM PROJECT AT THE UNIVERSITY OF GEORGIA AS A MODEL FOR CURRICULUM DEVELOPMENT--PRACTICAL PROBLEMS" BY M.J. RICE, (10) "GENERAL SUGGESTIONS FOR WRITING RESEARCH PROPOSALS" BY W.G. FINDLEY, AND (11) "THE DEMAND FOR CURRICULUM REVISION IN VOCATIONAL EDUCATION" BY D.S. BUSHNELL. (JM)

Report of a

NATIONAL SEMINAR on



Vocational Research
College of Education
University of Georgia
in cooperation with
American Vocational Asso.
Cornell University
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REPORT OF A NATIONAL

VOCATIONAL-TECHNICAL EDUCATION

SEMINAR ON RESEARCH

AND CURRICULUM DEVELOPMENT

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from the
Division of Adult and Vocational Research
United States Office of Education

PREFACE

The challenges with which education must cope are more complex now than at any other time in our nation's history. This complexity results from both qualitative and quanitative characteristics of society. It was the purpose of this seminar to serve as the catalytic agent to inform the vocational-technical education leadership of existing research methods believed to be useful in controlling curricula variables. The seminar was developed as an interdisciplinary approach to research in such a way as to draw upon the expertness of outstanding individuals with various competencies.

Educators have been offered the greatest challenge and opportunity the people of the United States may grant. This group has the responsibility to provide services for all people of all ages throughout the country who want, need, and may profit from general and vocational-technical education which match their interests and abilities. The waste of human resources within our present-day industrial economy can no longer be tolerated. To overcome this, (1) educational programs must be made more flexible, (2) curriculums must be personalized, (3) continuous and constant counseling must be made available, and (4) personal help must be offered for problems which are only indirectly related to school work. Intensification of the development of vocational-technical education must be forthcoming if youth and adults are to gain the education, skills, and experience necessary to become full participants in our society. The seminar program was an attempt to partially inform vocational-technical leaders of the above outlined voids.

This Vocational-Technical Education Research Seminar was one of six conducted in cooperation with the American Vocational Association, United States Office of Education, Division of Adult and Vocational Research and Cornell University. Individual authors are responsible for content; typographical errors, which may remain, can be attributed to the editor.

As Seminar Director, I would like to acknowledge the assistance and cooperation of many persons: Charles Hill, Cornell University, Project Director for the six seminars, who wrote the proposal and coordinated the activities; members of the over-all planning committee, University of Georgia, especially George L. O'Kelley, Jr. and Aleene Cross for program planning; Fannie Lee Boyd for banquet and meal planning; the consultants, all of which presented outstanding papers, and the panel which reviewed participant's tentative research proposals under some

most difficult situations. Special thanks is given my secretary, Mrs. Ann Phillips, who worked many extra hours in reproducing papers, proposals, and this publication.

This publication does not reflect the untiring efforts, abilities, patience and understanding, enthusiasm, and interest shown by the participants of this seminar. I am firmly convinced that 40 of the most capable and professional vocational-technical educators attended this seminar.

Herschel T. Lester, Jr.
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THE INTERPRETATION OF ECONOMIC DATA

Norman J. Wood
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I. INTRODUCTION

In economics, as in other social sciences, there are two basic reasons why research is needed. Our economic system is so complex that a great deal of work needs to be done to improve our understanding of how it functions and what its present capabilities are. Current research is directed toward questions of public policy as well as the improvement of our understanding of economic society generally. The other major reason for economic research is that the system itself changes. It does not remain static. As economic development occurs, technological advances are made, new forms of business enterprises and improved business methods are introduced, new government programs and agencies are developed, and new possibilities and problems emerge. All of these developments produce, over a period of time, gradual changes in the nature and functioning of our economic system. Much effort is required to keep abreast of these evolutionary changes and to understand their implications.

Some major types of economic research include the following:

A. Historical Research

An understanding of why our present economic system is what it is requires that we know the forces and events which molded its development. To the extent that broad trends in the past may be expected to continue in the future, economic history may also give us some notion of the shape of things to come.

B. Research on the Nature of our Economic Institutions

By the term "institution" we mean, broadly, the cast of actors on the economic stage: consumers, businesses, governments, markets, and other components of the system. Studies of this type may involve the investigation of the kinds of workers who are unemployed, the organization of the steel workers' union, the types of activities in the federal highway program, changes in international financial markets, or a truly infinite list of other topics.

C. Research on the Current Performance of our Economy

Here the emphasis is on the results obtained, the reasons for them, and their evaluation. What is happening to the level and distribution of consumer incomes, unemployment, the rate of introduction of automated machinery, the amount of technological research in drugs and other chemicals, the number of firms in the automobile industry, the known supplies of petroleum and other fuels, and the international flows of gold and credit? Why are these changes occurring? What do they mean? Is our economic development as rapid as might be expected under present conditions, or are we missing significant opportunities for improvement?

D. Economic Forecasting

Forecasting the economic weather is difficult and the accuracy of predictions is not always high. However, many public and private decisions made today necessarily involve some prognostication. The tax cut of 1964 was based on the conviction that without it the level of unemployment in the country would be too high. Readings of the future both with and without the tax cut were necessary to decide that this change was desirable. On the basis of their economic predictions, private industry spends billions of dollars for new buildings and equipment on the hope that this new capacity will not become obsolete or useless before their investments have been repaid.

E. Research on Public Policy Questions

Many studies oriented toward specific public policy combine all of the above types of research. To understand a problem, we must know how it developed. The relevant analytical tools and their strengths and weaknesses must be known. The particular characteristics of the economic units involved in the problem must have been established. Both the current performance and our present capabilities in the area are important ingredients in the study of the problem. In evaluating alternative policies, we must have forecasts of the results which will flow from these actions. The efficiency of these studies in providing guides to policy decisions can be no greater than the weakest link of this chain.

The types of research which we have been discussing differ in their purposes. But whether the purpose of the research is to brace some development of the past, to investigate some aspect of

the present, or to forecast some part of the future, there are general similarities in the methods used. These common elements reflect the increasingly widespread use of one variety of the scientific method. To be sure, it is not possible in economics to make use of the methods of experimental or laboratory sciences. We are not able to remove a family, a business, or a governmental unit from the real world into a laboratory to observe how these would behave under controlled conditions. Yet in a very real sense the entire economic world is a vast laboratory. All around us economic activity and changes in that activity are taking place. By means of thorough observation and recording of economic events and careful analysis of the information gained, our knowledge of the economic system may be improved. From what has happened, we can gradually establish the characteristics of the economic system and of the forces at work in it.

II. POPULAR MEASURES OF ECONOMIC PERFORMANCE

The balance of this paper will be devoted to an examination of some of the most oft-used economic measures.

A. The Consumers' Price Index

The Consumers' Price Index measures the average change in prices of goods and services purchased by urban wage earners and salaried clerical-worker families. It is prepared in the following way. The Bureau starts from a list of goods and services normally purchased by moderate income families. This list is based on a study of actual purchases by single persons and families of middle-income wage earners and clerical workers during 1960-61. The study shows what goods were bought by these families and what proportion of the family income was spent on each kind of goods. About 300 items were selected for inclusion in the cost-of-living index which themselves represent the greater part of family spending. This typical "market-basket" is used to measure the average price change for all items typically consumed by wage-earner and clerical worker families.

Prices of items are collected by representatives of the B.L.S. at intervals ranging from a month to four months in 50 cities of all sizes. Each price is then reduced to a percentage of the average price for that item during the years 1957-59, which is referred to as the "base period". The indexes for the 300 items are then averaged together to obtain a single index for retail prices. It is a weighted index which reflects the relative importance of the different commodities in the consumption of those

families surveyed in 1960-61. In addition to a retail prive index for the U. S. as a whole, the Bureau prepares separate indexes for about 20 of the largest cities.

There are three main reasons why even this carefully prepared index does not provide a perfectly satisfactory measure of changes in living costs. First, it measures only the cost of living in a certain way - the way in which certain families lived during 1960-61. The second limitation of the index is that it measures the change in living costs for people at one income level. It is true that the income group used in making up the retail price index is an important one, including about two-thirds of all people living in urban places. But what of the remaining one-third? A third limitation of the retail price index is that it does not include changes in the quality of items on the budget list. If an article improves in quality without any increase in its price, this improvement benefits the consumer just as surely as a price reduction.

B. The Measurement of Unemployment

Information on employment and unemployment is collected by a monthly survey conducted by trained interviewers from the Bureau of the Census. The survey covers a sample of about 35,000 households in 333 areas which are considered to be a representative cross-section of all of the nation's labor market areas. The population which the sample is designed to represent is the "civilian non-institutional population" made up of persons 14 years of age or older. This excludes all members of the armed forces and inmates of penal, medical, and similar institutions.

Those persons in the sample who were "at work" or "with a job but not at work" during the survey week are counted as employed. For employed workers, information is collected about their occupation, the industry in which they work, and hours of work. Data are also collected on multiple job holders and on those holding full-time or part-time jobs. Persons who worked at least 35 hours during the survey week are considered to be employed on a full-time basis; those who worked between one and 34 hours are classified as having part-time jobs.

Unemployed workers include those who did not work at all during the survey week but who were looking for work. Also counted as unemployed are those who were waiting either to be called back to a job from which they had been laid off or were scheduled to report to a new job within the following thirty days (and who were not in school during the survey week). Finally, workers who were temporarily ill and those who believed no jobs were available in their line of work in the community are included in the unemployed.

From this monthly sample national estimates are made by applying appropriate "blow-up" factors. The sample is a revolving one, that is, the same households are not included month after month, although a complete change is not attempted every month. The sample is selected in such a way as to give every household in the nation an equal opportunity to be included in the survey.

When the data have been collected by census enumerators they are turned over to the Bureau of Labor Statistics for tabulation, analysis, and publication. The B.L.S. publishes a measure of sampling variability known as the "standard error" which can be used to determine the upper and lower limits within which the "true" level of unemployment will fall on a probability basis. Without going into technical details, it may be noted that these limits are quite narrow. If, for example, in a specific month the B.L.S. reports an unemployment estimate of 4 million, the chances are two out of three that the true figure lies somewhere between 3.9 million and 4.1 million. And the chances are 19 out of 20 that the true figure will fall between 3.8 million and 4.2 million.

A LOOK AT SOCIAL CLASS

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University of Georgia

I. INTRODUCTION

This is intended to be a general treatment of social class and social stratification as now being approached by sociology, social psychology, and cultural anthropology. The emphasis is upon the American system, although a few materials from other societies have been included for comparative purposes.

It is not intended that this paper shall present all the data, theory, conclusions, and implications of social stratification, which is, after all, a major field within modern social science. Instead of attempting any such monstrous task, I will proceed by indicating the major areas and chief considerations within the subject, together with some mention of the major researches or theoretical formulations relevant to each. And, although I will certainly not attempt to apply all this to your specific programs and aims, I will nonetheless try to point out some of the ways in which social class and stratification research findings may impinge upon your aims and programs.

This paper is written for oral presentation in a group to be followed by questions and discussion, then by individual follow-up reading and thought. I shall first present a sort of over-view or "big picture", treating rather generally the whole idea of social class and social stratification, using a modified historical approach, defining terms and concepts, and setting up a language with which to discuss this and related matters later on. Next, I will define and describe, in general, the different types of systems of stratification, then I will document and try to account for the rise of class societies. We will be ready, then, to examine our own (United States) class system and its functioning in greater detail.

Following this I have prepared a section called "Discussion and Implications", in which is presented a series of considerations and specifications. Some of the points contained therin are direct repetitions of statements which already will have been made; some points are introduced there for the first. The section itself is intended to explain, qualify, and extend

earlier materials, as well as to lead into discussion and group reaction.

Next is presented for your own use a bibliography containing a sampling of the sorts of things available for further study, with most items briefly annotated.

Lastly, there are appended seven selected items which support and extend the materials in the paper, and these can be pursued at your leisure.

II.

All societies even observed have had systems of social stratification, some simple and some quite complex. That is to say, each has had some institutionalized system by which individuals within society are grouped together conceptually so that they, in combination, comprise a more or less unitary category, and this category is then evaluated differently from other categories within that society. Every society comes to see itself as being composed of two or more categories, and then these categories are treated as if they existed in a value hierarchy. Thus, the progress is not one of simple social differentiation, in which different people (or groups of people) do different things (different sorts of work, for instance) or follow different family practices, or otherwise exhibit different categoric characteristics; in social stratification the <u>value element</u> has been added, and the different groupings which had are differentiated by possession or procedure or appearance then become differentially evaluated -- moved onto a vertical axis, as it were -- and the relative evaluations become institutionalized within the society. Different societies stratify on different factors, but each one stratifies on factors significant to the total system of prevailing social values.

The use of the term "institutionalized" in several places above is intended to convey the idea that a thing is widely accepted within society and that it has become relatively rigid and fixed within the social system and therefore likely to be repeated over time -- passed from generation to generation through tradition and custom. Also, the concept of institutionalization most frequently implies that a given pattern of belief and behavior is accepted largely without examination or question, and hence comes into the individual's cognitive system (becomes part of his own belief and sentiment system) without having been consciously or critically examined prior to acceptance. Therefore, most peo-

ple everywhere are largely unaware of the reasons for believing as they do about a host of important things in their culture, including the way they believe and feel about their own and others' social categories.

This is certainly true about social class and stratification in America. Actually, most Americans are ambivalent about our social class system. On the one hand, we believe that we do not have a social class system, that to have classes in America would be immoral and un-American -- that the founding fathers decreed that we should not have social classes, so we have none. On the other hand, Americans posses not only a fairly strong and evaborate social class terminology, but they also have strong feelings and considerable knowledge about the structure and operation of that system. What's more, Americans have built up, after the fact, complicated procedures for using the social class system for their own interests, and I shall comment further on this point later.

Both points in this contradictory situation are really quite understandable, when examined carefully. On the first point -- that we are unwilling freely to admit that America has social classes: we understand very well that our forefathers came to America (or left Europe) largely because of the perceived unfairness and rigidity of the stratification systems in their homelands. Europe in the fifteen, sixteen, and seventeen hundreds was bogged down in structures inherited from feudal days, with social definitions too rigid and narrow to accommodate new ideas, new inventions, new systems of philosophy, and new knowledges growing out of the scientific age. For many, the only answer was to leave the system and attempt to establish new systems elsewhere, and when they came here they tried to make certain that the curse of class would not be present. They declared, therefore, that all people are created equal, meaning that man under God inherently is not divisible into social classes and that no individual shall be held by social (man-made) difinitions below his capacities to achieve within the system. So, they launched for us a long and firm set of NEW institutions concerning social class, and we are the inheritors of those traditions. Therefore, to admit that we have social classes is going against the assertins of our forefathers, it is in violation of our founding principles, and so forth, and when we find ourselves developing and using social classes, our consciences hurt and we want to deny that they exist.

But we still know classes do exist. We speak of upper, lower, and middle classes; we evaluate people and practices as being lower class, middle class, etc. We try to prevent our

children from marrying beneath themselves; and we try to use the social class system as a broad motivating framework in our educational system; we also try to use it in implementing soil conservation or extension programs and technical training programs, and we shall have a great deal more to say about that later on.

So, it is within this contradictory and confused situation that I approach the subject now. I wish simply to examine what has happened to our forefathers' goal of classlessness, and to consider some of the implications of those developments.

III. STRATIFICATION SYSTEMS

There really are only three basic types of social stratification systems: caste, class, and estate. In India, an agrarian society where economic and social change had been extremely slow, a very rigid type of stratification called a caste system existed for more than three thousand years. The structure of the caste system was based on four major castes or strata: (1) the brahmans, or priests; (2) the Kshatriya, or soldiers; (3) the Vaisya, or farmers, herdsmen, and merchants; and (4) the Sudra, or menials. The "untouchables", still another group, was at the bottom of the whole hierarchy, and the members were "outcasts" in that they really did not belong to any caste. Personal contact between castes was limited by restrictions on touching, associating with, dining with, or eating food cooked by outsiders. If so much as the shadow of a low-caste person fell on a high-caste person, the latter thereby became polluted and had to bathe ritualistically to purify himself. Special types of dress, such as a colored turban, often identified particular castes so that a person could be readily and visually identified with his caste in the eyes of the community. Loyalty to a single caste and to the entire caste system was sanctioned by the Hindu religion. Each caste was accorded a different degree of holiness, and caste purity was protected by taboos against intercaste mobility and intercaste marriage. Born into a particular caste group, a person remained there throughout his life. His chief hope of rising to a higher caste depended on carrying out the caste obligations so effectively that he would be born into a higher caste when he was reincarnated, or when he was "reborn into another life". Caste inequalities were therefore justified and accepted generally. As a matter of fact, down through the centuries, not caste inequalities but obligations to fulfill caste objectives were the most important considerations. The best caste men were those who showed loyalty to their caste by upholding its purity and honor. Among the Sudra, for example, the most diligent and efficient workers who avoided

contaminating other castes were considered good caste men. The same was true for priests, soldiers, and all other caste members. By fulfilling one's caste obligations, a person might gain greater esteem from his fellow caste members, but his position in the caste system would remain the same.

The estate system (which existed in its most nearly perfect form in medieval Europe, although it appears now in some sections of the world, in modified form) contained features of both caste and class stratification. Based primarily on birth, the estate system assigned distinctive rights, obligations, and duties to each of three major groups, or estates: the nobility, the clergy, and the so-called "third estate", which included workers, merchants, and peasants. According to a common saying of the times, it was the duty of the nobles to fight, the priests to pray, and of the rest of the populace to work. Marriage and social contacts between the estates were extremely rare, although some social climbing within each estate and later between them was possible. The estate system represented a kind of intermediate stage between the caste system and the more mobile class system that we know today.

The European estate system emerged after the downfall of the Roman Empire, when local lords became powerful enough to acquire ownership rights to land. To protect these rights, the lords maintained their own military forces, which were soon used to assure workers and peasants of protection in return for their work, and to bind them to their lords. As a power of the lords increased, their position became more aristocratic and hereditary. When the church became a landowner, members of the clergy served as feudal landlords, also, thus the Church and its clergy became a part of the estate system. The structure of the system was then complete, with recognition extending downward from the nobility and the clergy to the members of the "third estate".

Unlike the caste system, which keeps a person from changing his inherited social status, the estate system is much more flexible and permits some social mobility. The upper nobility in feudal Europe usually inherited his position, but a few less fortunate in their choice of parents were able to spring from a lowly social perch to a loftier one. This nobility became more common with the rise of wealthy merchants whose daughters (with their dowries) often were coveted by the less wealthy noblemen. And the estate of the clergy and the cloistered and scholarly life lay open to gifted young men. Thus, talent, ambition, drive, and the life were not completely subdued by rules of the estate system.

IV. RISE OF THE CLASS SOCIETIES

Ultimately the rise of towns and cities and the growth of trade and commerce sounded the death knell of the estate system in Europe. Business men in the cities, the "bourgeoisie" as they came to be called, grew wealthy and powerful; this weakened the power and control of feudal lords, who became more and more dependent on the bourgeoisie for money and support. Frequently, kings would line up with the new business class against the old nobility. As a result of these developments, the old priviledged order gradually crumbled, the new social groupings began to crystallize. The final collapse of the system came in dramatic fashion with the French Revolution in 1789.

Out of the ruins emerged the modern, fluid class system of Europe and America. In America social nobility was nourished by the existence of cheap land, a scarcity of labor, and the growing ideals of human equality and dignity. The emergence of a capitalistic economy provided men with new avenues to power, advantage, and prestige, and to the west the unsettled frontier offered opportunity and certain advantages to resourceful, versatile men, no matter what their birth or breeding.

V. THE NATURE OF AN OPEN-CLASS SYSTEM

A class system, or, as it is usually called, an open-class system, is as distinctive as a caste system. In broad terms, it is characterized by vertical social mobility, seeking after status, competition, inter-marriage between people of different class levels, and a philosophy which stresses individual success. It is "open" because, theoretically, at least, everyone is free to find his own level, with the successful competitor being rewarded both with material possessions and increased prestige. No birthright confines anyone to a lowly status or necessarily protects a person born to wealth. There is no landed aristocracy and there are few well-guarded legal privileges to benefit a select minority. A social class in an open-class system is not rigid or binding. It consists simply of those individuals who happen to be occupying the same social status at the same time. Interestingly enough, whereas the Hindu religion supports and justified the Indian caste system, Christianity and Judaism tend to encourage nobility in the American class system by emphasizing human equality and individualism, some church practice to the contrary not withstanding.

An open-class system usually emerges in a social and economic environment that is undergoing rapid and drastic changes. In America, the frontier, with its promise of free or cheap land, provided the initial spark. Waves of European immigrants fleeing from poverty and oppression in the Old World came sweeping into this new land of freedom and opportunity. Some headed west; others crowded into the new seaboard cities to become the backbone of the labor force which was needed to man the new factories. They were making new lives for themselves, and conditions here allowed them to plan rationally against the more objectionable aspects of European society, and to innovate in establishing a sort of utopian society here. The result was, indeed, a new society, with a new system of stratification never before seen on the face of the earth. "Log Cabin to Whitehouse" became a national myth and national dream. Horatio Alger became a national model. Standards of living soared, and every family soon had access to all the amenities of life.

Without upward and downward social mobility the various social strata would harden permanently. Americans have always believed in vertical mobility. We expect it, and even demand it. In contrast to estate or caste systems there are few barriers to movement between classes in an open-class system. Underlying the open-class society is a common faith in ability and achievement as yardsticks of social status.

Achievement of status is the primary means whereby a person changes his class position. Status tends to be ascribed at birth according to the standing of the parents, as in a caste system. However, there is a big difference, because the individual in a class system has the opportunity to move from that ascribed position by what he does during his own lifetime. He is free to achieve status, and most of the change between one's ascribed position and his ultimate position is due to achievement; however, he may make some movement within the system by accident, fluke, or coincidence, rather than by effort of achievement.

Ordinarily we connect the idea of achievement of status with ideals such as equality of opportunity and rewards based on merit and competition. Most Americans realize that these ideals do not always square with reality, but we still remain loyal to them and they often motivate us to strike out against discrimination, inequality, and injustice. All of the noise in our generation about racial matters is, of course, an attempt (belated, at best) to bring our practices more nearly into line with our long-held and loudly proclaimed ideals and principles. Fair employment practice programs aim to guarantee equal job opportunities to those people who might otherwise suffer discrimination. Wage and other

differential rewards presumably signify only differences in ability. Given a fair chance, however, the rest is up to the individual in an open-class society.

One further essential to the maintenance of a class system involves the unobstructed communication of information and a broadly based general system of education. Communication is vital if people are to be kept informed of opportunities for jobs, schooling, housing, and other avenues to higher status. The mass media of communication -- newspapers, radio, and television -- contribute to the process, but personal contacts are important, too. Learning experiences both in and outside of school are obviously very important for the individual's prospects of mobility. Through learning, we acquire new skills and broaden our horizon of opportunity, thus giving the educated man an edge over the uneducated.

VI. SOCIAL CLASS IN THE UNITED STATES

So far we have been considering social status and social class in a very general way. To get a clearer idea, we now turn to some of the more specific aspects of the class system in the United States, and to the ways in which social scientists have approached its study.

For some time now -- since the 1920's and '30's, at least -- social scientists have rather consistently found America to have a social class system containing three major levels, and the whole resembling a pyramid when diagrammed.

Whatever the criteria or method of definition, the class structure in present-day America is much more accurately pictured as a relatively easy-to-climb ladder than as a vertical structure of air-tight compartments into which people are born and must remain. Agricultural communities with large proportions of land owners are generally middle class in nature, wheras the class structure in communities in which land is held by a few persons and most of the farmers are either sharecroppers or laborers would more likely approximate the shape of a pyramid.

Although they are everywhere noticeable, social distinctions in town and country communities are not usually so great, nor is rank generally so extreme, as in cities. That is, social and economic distance between persons of the lowest and highest ranks, in whatever way it may be measured is decidedly greater in cities than in rural areas. This means that in urban society the

the "height" of the class structure is greater.

A long series of field studies have produced a fairly consistent picture of the behavior patterns, ideologies, possessions, and mother characteristics of the typical persons of middle and lower rank. The middle class pattern is characterized by relative economic security, emphasizes thrift, and has a goal -- the ownership of property. Their concern for property is shown by their great respect for the ownership rights of others. Strong emphasis is placed upon personal achievement and self-improvement. The American ideology of "work, virtue, reward" receives its strongest support from this group. Formal education is stressed as a means for getting ahead. The typical occupational groups are the larger and more prosperous farmers (in some regions today this may be a majority) and, in the towns, business and professional people, white collar workers, and some of the skilled workers.

In the middle-class family, husband and wife share the leadership, the former making the living and the latter directing the home. The child is taught respect for the parents, strict sex standards, and cleanliness. A good marriage is set up as the ideal, and divorce is frowned upon. The middle class person controls his aggressive impulses and is not rowdy. For commercial recreation he goes to respectable places. He has some leisure and frequently travels for a vacation. The major support of community betterment programs and organized community life comes from middle-class persons. They hold a highly dis-proportinate share of official positions and organizational memberships. The middle class pattern stresses support of law and order, and organized religion, especially established churches.

The lower class pattern offers some definite contrasts to the one just described. Economic insecurity is the rule rather than the exception among persons of lower rank. Getting the necessities of life is a major concern. Little if any property is accumulated. Young men get jobs at early ages, schooling is terminated early. Occupationally, the typical member of the lower class is a farm laborer, a tenant, or an owner with a low-production operation; in the towns he is a manual worker, customarily unskilled, with a high rate of job mobility, or unemployed. In contrast to the middle class group, the mother is dominant in families of lower rank, even in the economic sphere, as she is more likely to be employed at appropriate levels than is the father. Families are larger, and include more attached and satellite persons, and there is a relatively high rate of broken homes due to death, divorce, and desertion.

Lower class persons are frequently criticized by those above them because they lack the desire to "improve themselves". They feel vaguely that some formal education is desirable but that it is not worth too much effort. For this reason middle class teachers are especially critical of lower class youngsters. Young people of this rank are not so likely to control their aggressive impulses and their control over their sexual behavior is less rigid. They, the lower classes, are much less likely than middle class persons, to forego immediate gratification for long-term goals.

As has been said, getting ahead is the chief characteristic of the American class system, and there are no rigid class lines to create permanent barriers to movement. Americans are less interested in identifying with their social rank than in rising above it.

VII. STUDIES OF STRATIFICATION IN SMALL TOWN OR RURAL SETTINGS

Modern study of this subject dates, actually from the 1930's. Warner's work, published in the early 1940's, provided the basic understandings of the class structure in America. About the same time Sewell, at Oklahoma State College was developing a scale for classifying rural families. His 1937 survey of 800 Oklahoma farm families was made to determine the distribution of 123 traits related to the home and its furnishings and the family's participation in the community. A scale of 36 items was constructed which would distinguish adequately, and further work in Kansas and Louisiana made it possible to reduce the number of items to 14, but such scales much be constantly adapted as culture changes.

Economic scales can be used to rank groups of people as well as individual families. A scale that is widely used in this way at the present time is the level-of-living index developed by Margaret Hagood. This index, which applies to farm-operator families, is made up of four items: (1) percentage of farms with electricity; (2) percentage of farms with telephones; (3) percentage of farms with automobiles, and (4) average value of products sold or traded in the year preceeding the census. Hagood's index has been constructed for each county of the United States and for several different census periods. It shows considerable differences from county to county and from one section of the county to another. The highest level of living for farm operators is found in the Middle West and the Far West, and the lowest in the South. Another index of this type has been used to describe

status differentials in four Southern states. It contains the following items: distribution of patterns of income, landholding, size of enterprise, control over labor, and possession of household facilities. It was found that class inequalities were greatest in Mississippi and smallest in North Carolina, with Georgia and South Carolina holding intermediate positions. The extreme inequality in Mississippi is explained in terms of a small class of elite.

A second way to study stratification is to learn how members of the community rank each other, and themselves. Such an approach was used in the study of a rural community in New York. Two major measures of status were employed. First, judges were asked to rank members of the community. Eleven prestige classes were determined, and the numerical frequency of class membership fell into a diamond-shaped figure.

Second, the participation pattern of the members of the eleven classes was studied. It was found that most informal associations were limited to members of the same class group. Only 8 percent of the contacts had a range of more than one class. Similarly, each formal organization -- club, lodge, church, and others -- tended to draw its membership from one class or from adjacent classes. Organizational, community, and political leadership being held by 89 percent of the members of the top class and only 3 percent of the bottom class.

West, in his study of a community in western Missouri (Plainville, USA) located two major groups, or strata. About half the people belonged to the "upper class" and the other half to the "lower class". The lower class, however, was not a single homogeneous group but was composed of three sub-classes referred to in order of position as "good lower class people", "lower element", and, at the bottom, "people who live like animals".

Holingshead, in his study of an Illinois city - centered community, found five distinctive classes, using a combination of these methods. Again, in his work in New England, he was located five classes in each community, the most notable being New Haven, Connecticutt.

A recent rather extensive and very careful testing of the several procedures for determining relative class standing, done at North Carolina about five years ago, found that Holingshead's basic method was the most efficient and reliable of all. This involves a combination of an occupational rating scale and an educational accomplishment scale, each composed of seven categories, run into a formula of seven times the occupational score plus four times the educational accomplishment score. The resulting scale

reaches from a possible score of 11 to 77, and is probably the scale currently being used for research and program planning purposes.

VIII. SOME FURTHER CONSIDERATIONS

A. Functions of Social Stratification

The stratification or layering of societal structure into graded divisions of prestige and power performs several services in a society. I have already mentioned the fact that the system can serve as a generalized motivational framework within which people are made to work hard, be thrifty, organize their life space, etc., in order to maintain or gain status position. Since the duties associated with various positions in societies are not all equally agreeable to individuals and equally important to society, and because some require more training or talent than others, societies must inevitably have some rewards or inducements, or some ways of distributing these rewards differentially according to the different positions. The distribution of these rewards gives rise to social stratification. The rewards, usually economic, prestige and leisure, are built into the social positions so that, being unequal, the result in inequality of the positions. Actually, this is what stratification is: the organization of societies into hierarchies of statues levels based upon the inequality of social positions.

Probably the outstanding function of the stratification system is to provide order within society, since it acts as a dependable framework within which to relate to others and interact with them.

B. Social Classes as Reference Groups

Social psychologists have come to see social classes as reference groups. That is, while a person might be or have been a member of a certain social class, he might not conform to the social norms of that class. Instead, he may have come refer himself to another class for his norms by which his behavior is controlled and directed. Thus, a lower class person may through education or contact with others or new ideas, come to reject his lower class position and look to the middle classes for his standards of behavior. The next higher class might not grant him membership (call him a climber, a pusher, a comer, etc.,) for greater or shorter period of time -- or forever -- in which case he could be called a "marginal man" -- between groups, and without a crystallized position.

Modern educated American Indians and Negroes are good examples of this. They have rejected their former positions, are in process of moving upward -- are "upwardly mobile" -- but have not yet been accorded full membership in higher classes. The reward for assuming such positions is the thought that movement has been made, and that more may be achieved in the future.

C. Social Classes as Sub-Cultures

Each social class and sub-class in America has been found to have a distinctive culture of its own. That is, the members of a given class have a set of cultural elements which distinguish it from another group and which influence the personalities of the members. Social classes in this country have more behavior patterns in common than they have differences, in contrast to the countries of western Europe where historical differences are still very pronounced. However, despite widespread similarities, certain recognizable class differences are apparent here. Probably the best summary description of the distinctive elements of the three major American classes is to be found in Society and Culture: An Introduction to Sociology, 3rd ed., by Francis E. Merrill (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964), pp. 310-329.

D. Social Class and Social Attitudes

People of different classes learn to think and feel differently toward themselves and toward social institutions. Material on this can be found in Horton and Hunt's Sociology, pp. 279-285.

E. Social Class and "Life-Chances"

Social position is closely related (to varying degrees) to such things as a person's getting an education, getting a good job, getting elected to public office (or, even getting to vote), to live longer, to have good health, to have a happy marriage, to avoid jail or execution, to avoid crime itself, or to avoid suspicion of or arrest for crimes or to receive the attention of the local county agent. Life chances are not distributed according to talent, ambition, ability, or aptitude, but much more nearly by the opportunities granted by society to the category to which an individual belongs.

F. Social Caste in America

Early social organization in the American southeast comes fairly closely to resemble an estate system. This pattern grew out of the combination of large land grants to individuals, an aristocratic attitude, and a cheap and plentiful labor supply. However, the full development of an estate system was avoided chiefly by a shortage of time for its crystallization, and constantly growing pressures of a democratic philosophy within and from without.

The pattern which did develop, however, even more closely resembled a caste system -- the white dominant caste and the Negro caste. Each came internally to have a system of class-like layers which allowed for considerable vertical social mobility internally, but not across the caste line. Only in our time are the last vestiges of legal caste being removed, and they will not have disappeared until race comes to be of no more significance under the law than hair color, numberof eyebrows, and height in inches.

G. Social Class and Leadership

In smaller communities, most of the formal leadership is provided by the upper classes. In large metropolitan, formal leadership is centered in the upper middle levels, not the highest.

Informal leadership is much more dispersed, and is more likely to be identified with social groupings other than classes.

To say that leadership in rural and small community settings is largely provided by the upper classes is not to say that all the rest of the people necessarily obey them, pay attention to what they say or do, or want to become more like them. Nor is it to say that lower class people envy the positions of those in higher positions.

H. Social Class and Churches

It was stated earlier that the Hindu religion supported the caste system of India, and that Christianity and Judaism support an open-class system. The latter statement is true in theory, but falls short in practice. Certain denominations have become associated with lower, or middle, or upper classes, depending upon (a) the proportions of the memberships belonging to particular classes, and upon (b) the particular social ethics supported by the churches themselves.

The Congregational, Episcopal, and to a lesser extent, the Presbyterian denominations have become associated with the upper ranges of the class system, while certain other newer denominations (recently cults or assemblies) such as the Holiness Church, Church of God, the Church of the Nazarene, are associated with the lower ranges. Other denominations fall, at a given time and under given social conditions generally between these extremes. Further, individual churches within a given denomination will in similar fashion become known as either an upper, middle, or lower class church, or as a high or low prestige (or status) church.

Churches or denominations may contribute to a hardening of class lines by espousing or supporting certain values or procedures which in turn, work against easy social movement, such as slavery, segregation, privilege of wealth, and so on.

I. Social Class and Dating and Marriage

Most marriages continue to be within rather than between social classes, although we allow greater freedom on this matter than most societies. In class marriages are probably more characteristic of rural than urban communities, since the family and the "dead hand of the past" exert more control in the rural than the urban setting. The South and New England have higher rates of in-class marriages than other regions. Dates range wider than marriages, although parents attempt to restrict dating within rather narrow limits. Much dating across class is not for matrimonial purposes.

J. Social Class and Communism

Marx saw social classes as an inevitable development of the operation of capitalism, and he saw them as inheventy objectionable because there is always, he thought, exploitation of the working classes by the owner classes. The solution he proposed was to abolish classes and so structure society that stratification could not take place.

However, those who have tried to put the system into operation have not succeeded. Certainly Russian society is at this time as highly stratified as the United States and, actually, the economic differential (to take only one criteria) between the lowest and highest groups in modern Russia is relatively much greater than in England or the United States. As to whether exploitation of one class by another exists, or to what extent, has not been documented fully.

As far as our own situation is concerned, we make a different decision, after it was discovered that the original plan to have no classes was found to be impossible to implement. Instead of continuing to pry to prevent the development of social classes, we turned to the development of means to prevent exploitation. These means were, of course, governmental, so that now the western democracies have something unique in the world's history: stratified societies with a minimum of inter-class conflict and exploitation. This has contributed to the size of government, but we justify its size and point at the necessity for largeness if government is to be able to provide sufficient service (including referee services) to prevent exploitation, conflict, and the permanent hardening of social class lines.

By holding the class system open, by providing the means and opportunities, we have kept at a minimum "class identification". One of the disturbing prospects right at this moment -- and a reason for concern -- is that for the first time in our history we are close to having a large category of Americans who think rising is impossible for them. These are our new poverty class. If, indeed, they come to believe their condition is permanent, then they will identify with each other and become a permanent block -- under-employed, under-motivated, resentful, dependent, and potentially explosive, and wholly unlike anything America ever had or expected to get.

K. The Future of American Social Classes

All evidence would indicate that we will continue to have stratification of our people, and that the "American Dream" of getting ahead and rising within the system will continue to motivate most of our people. It is also indicated that our governments must continue and even expand its referee and service functions to enhance upward mobility. The system seems to be "hardening" to an extent and in some ways, making it difficult for individuals to move from class to class quickly, but it also seems to be "softening" in other ways. As society expands, new channels for movement are set up; as democracy is further refined by continuing experience old laws supporting rigidity give way to new, more appropriate interpretations. The net result is a prospect for a continuing open-class system, with wealth and power widely distributed, with public policy in support of high mobility and in opposition to inter-class conflict and exploitation. Agricultural people will become even less distinguishable as a category (that is, they will move even further away from being a "peasant class", as had begun to appear possible in, say 1910-1933).

We will experience a rising level of living for our lower classes, while our tax system will probably prevent the development of extreme individual or family wealth, as took place in the "Robber Baronx" period before the turn of the century.

BIBLIOGRAPHY

American Journal of Sociology, Vol. 58, January, 1953. Entire issue devoted to social stratification in the United States, Latin America, China, and France.

Anderson, Walfred A., and Frederick B. Parker. Society: Its Organization and Operation (Princeton, N. J.: D. Van Nostrand Co., Inc., 1964), Ch. 22, "Social Stratification: Class and Caste", pp. 358-383.

Anderson, C. Arnold, "Economic Status Differentials Within Southern Agriculture". Rural Sociology. 19:50-67.

Anderson, C. Arnold, "The Need for a Functional Theory of Social Class". Rural Sociology. 19:152-160.

Aurbach, Herbert A., "Social Stratification in the Collective Agricultural Settlements in Israel". Rural Sociology. 18:25-34.

Baltzell, E. Digby. Philadelphia Gentlemen: The Making of a National Upper Class. Glencoe, Ill.: The Free Press, 1958. This is one of the rare sociological studies dealing with the elite in American society. As the title indicates, the author analyzed the factors, both historical and contemporary, that produce a member of a recognized upper class. The role of education, both at the preparatory school and college levels, is especially important in the production of gentlemen.

Bendix, Reinhard, and Seymour M. Lipset, Eds., Class, Status and Power: A Reader in Social Stratification. Glencoe, Ill.: The Free Press, 1953.

Buckley, Walter. "Social Stratification and the Functional Theory of Social Differentiation", American Sociological Review, 23, No. 4:369-75, August, 1958. A careful analysis of most of the theories of social stratification and social differentiation.

Chapin, F. Stuart, The Measurement of Social Status, University of Minnesota Press, 1938. A demonstration of the method and problems of measuring status.

Cole, G. D. H., Studies in Class Structure. London: Routledge and Kegan Paul, 1955. Especially good materials on British class structure.

Cuber, John F., Sociology: A Synopsis of Principles. 5th ed. New York: Appleton-Century-Crofts, 1963. Ch. 23, "Social Stratification", pp. 446-66.

Dahrendoff, Ralf, Class and Class Conflict in Industrial Society. Stanford, California: Stanford University Press, 1959. A sociological analysis of the Marxian critique of class and a sociologically based alternative model.

Drake, St. Clair, and Horace R. Cayton, Black Metropolis, Harcourt, Brace, 1945. An analysis of the Negro Community in Chicago with emphasis on the class structure.

Duncan, Otis Dudley, and Artis, Jay W., "Some Problems of Stratification Research. 16:17-29.

Flood, J. E.; Halesy, A. H.; and Martin, F. M., Social Class and Educational Opportunity: London: William Heinemann, 1956. How class influences educational opportunity, especially in Great Britain.

Frazier, E. Franklin, Black Bourgeoisie. New York: Collier Books, 1962. Paperback (AS346). A provocative study of the rise of a new middle class in the United States and of its use of power.

Glass, D. V., ed., Social Mobility in Britain. London: Routledge and Kegan Paul, Ltd., 1954. A comprehensive study of mobility based on an approximation to a random sample of adult civilians eighteen years of age and over, in England, Scotland, and Wales.

Haberle, Rudolf, "The Changing Social Stratification of the South", Social Forces, 38 (October, 1959, pp. 42-50). This is a carefully formulated discussion of the changing stratification system in the South during three periods -- from the Civil War to the great depression, the depression period, and the period of rapid industrialization since 1940.

Hollingshead, August B., Elmtown's Youth. John Wiley & Sons, Inc., New York, 1949. A study of the effects of social class upon youth in a small Midwestern community.

Horton, Paul B., and Chester L. Hunt, Sociology. New York: McGraw-Hill Book Co., 1964. Chapters 11, 12, and 13. pp. 283-374.

Kaufman, Harold F., Duncan, Otis Dudley, Cross, Neal and Sewell, William H., "Problems of Theory and Method in the Study of Social Stratification in Rural Society", Rural Sociology, 18:12-24.

Lasswell, Thomas E., "Orientations Toward Social Class", American Journal of Sociology, LXV, May, 1960, pp. 585-587. This is an important refinement concerning attitudes ("orientations") toward social classes. Distinguishes between mass and pluralistic stereotypes. This may help to explain some of the inconsistencies found in the research on class attitudes.

Lopreato, Joseph, "Social Classes in an Italian Farm Village", Rural Sociology, 26 (1961), 266-281.

McGuire, Carson, "Family Life in Lower and Middle-Class Homes", Marriage and Family Living, XIV February, 1952, 1-6. A well documented comparison of lower and middle-class families.

Marx, Karl, and Friedrich Engels, Manifesto of the Communist Party. International Publishers, 1934. Contains the communist theory of class structure.

Merrill, Francis E., Society and Culture: An Introduction to Sociology, 3rd ed. Englewood Cliffs, N. J. Prentice-Hall Inc., 1965. Chapters 13, 14, and 15, pp. 275-353.

Miller, S. M., and Frank Riessman, "The Working-Class Subculture: A New View", Social Problems, 9:86-97, Summer, 1961. In this thoughtful article, the authors question some traditional assumptions about the working class and its subculture. The article is especially valuable for its analysis of certain "themes" of working-class life -- that is, themeaning of working-class life, rather than its mere description.

Montague, Joel B., "Social Class Status of the Small Farm Freeholder in the English Midlands", Rural Sociology, 23, 1958, 401-403.

Ogburn, Williams F., and Meyer F. Nimoff, Sociology, 4th ed. Boston: Houghton Mifflin Co., 1964, Chapter 16, "Social Stratification", pp. 431-69.

Packard, Vance, The Status Seekers. New York: David McKay Co., 1959. A best seller on the quest for status in America and means of achieving it.

Ryan, Bryce, Caste in Modern Ceylon: The Sinhalese System in Transition. New Brunswick, N. J.: Rutgers University Press, 1953. A distinguished monograph by a sociologist formerly at the University of Ceylon.

Sewell, William H., and Haleer, Archie O., "Social Status and the Personality Adjustment of the Child". Sociometry, 19, 1956, pp. 114-125. Casts doubt on the earlier research findings regarding the class differences in personal adjustment of children.

Simpson, Richard L., "A Modification of theeFunctional Theory of Social Stratification". Social Forces, 35, December, 1956, pp. 132-137. A stimulating theoretical treatment of the rewards-system and social position.

Sjoberg, Gideon, Are Social Classes in America Becoming More Rigid?" American Sociological Review, 16, December, 1951, pp. 775-784. An important paper which explains why easy generalization on this subject is precarious.

Smith, T. Lynn, The Sociology of Rural Life, 3rd ed. New York: Harper and Bros., 1953. Chapter 15, "Social Differentiation", and Chapter 6, "Social Stratification", pp. 363-422. A comprehensive summary of theory and research on these phenomena in the rural setting.

Tumin, M. M. Social Class and Social Change in Puerto Rico. Princeton, New Jersey: Princeton University Press, 1961. A study of class structure in a rapidly changing society. Detailed and scholarly, with special attention to the theoretical implications of the findings.

Vogt, Evon Z. Jr., "Social Stratification in the Rural Middle West: A Structural Analysis", Rural Sociology, 12:364-375.

Warner, W. Lloyd, ed., Yankee City. New Haven: Yale University Press, 1963. Paperback, Yale Paperbound Y-72. A one-volume condensation of the Yankee City series.

RELATIONSHIPS OF COMMUNITY ENVIRONMENT TO THE VOCATIONAL EDUCATION CURRICULUM

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The invitation to participate in this conference on curriculum development in vocational education came as quite a surprise to me. I claim no competence in the field of curriculum development either in general education or in vocational education. I accepted the invitation with mixed emotions. I claim only that I have developed some interest in and competence in community analysis and development. My acceptance was fraught with doubt, anxiety, and trepidation. On the other hand, I am aware of the fact that the social sciences in general, and sociology in particular have not contributed to and have not been used in curriculum development to any great extent. Concepts and methods from the social sciences have not been highly honored in curriculum development and in curriculum revision. The more I work in this field, however, the more I am convinced that the social sciences, including sociology, can help with curriculum development through knowledge of the change process and through methods of problem analysis, and through the tools for community understanding. It was, therefore, on these premises that I was delighted to accept the invitation to participate in this program.

It will, of course, not be possible to cover all the aspects of community environment which, in my opinion, are related to the development of a vocational education curriculum. It is necessary to be highly selective within the time and space limitations which have been allotted to the subject. I shall, however, attempt to present some ideas and materials which I hope will be useful to you and to the general subject under consideration.

IMAGE OF VOCATIONAL EDUCATION IN THE COMMUNITY

It is quite obvious that the image that people have of vocational education varies a great deal from one community to another across our great country. In many of our communities, going to college in a four year degree program is equated with success. In many communities, anything less than the college degree program is given little consideration and holds a very poor image in the minds of many people. There is in many communities a basic conflict between the so-called general education and

the so-called vocational education. In many communities questions are being raised concerning "should every child at the high school level take some work in vocational education?" Obviously, this is not a new question and it will not be resolved satisfactorily to everyone in the near future.

In many communities, one must admit, vocational education has a very poor and low image indeed. On the other hand, there is a growing concern with the question of how can the world of work become an integrated part of the upper levels of our secondary school system? In reality, how do we get our young people to understand the ways the people of America make a living? I recognize that many schools are developing courses dealing with an introduction to vocations; and, many other similar techniques are being used.

It has been suggested that every upper level secondary student needs to visualize his school day and his school year as a work schedule in and of itself rather than simply the preparation for the world of work. Another way of thinking about this is that of assuring that every effort is made to show the vocational implications and applications of every subject -- whether it is history, English, math, etc. Surely the world of work of tomorrow will demand that every student be versed in the skills of communication such as reading, listening, speaking, writing -- as well as in the areas of mathematics.

Many schools are developing new approaches to the whole concept of the work-study program. These developments reflect not just economic pressures but rather genuine concerns for the necessities of youth understanding the world of work. But, that is not all, either, because such programs may very well enhance the learning process in the more traditional subjects. Here, then, we return to an analysis of understanding the image that the community has of the place of vocational education in its total environment. There are those who will argue that vocational education in the high school is only for the dull or the severely economically handicapped. Certainly, the image of vocational education that is held by the people in the power structure and those who handle and manipulate financial affairs of the community will have an impact on the development of vocational education at the community level. If vocational education has a poor image, surely, there will be poor financial support from the community in developing programs in this area of education.

IMAGE OF ADULTS WITH RESPECT TO ADDITIONAL EDUCATION

At this point the question must be raised, namely, for whom is the vocational education curriculum being developed? There are those who will argue that vocational education is in reality for the kids in the community only while they are a part of the regular school system. There are communities in which the very idea of additional schooling for adults is held in very low esteem. Many adults have had such an unfavorable experience in the school environment within their own or an adopted community that their least desire is to enter into such an environment again. In other words, the community must be examined with respect to the image that adults have concerning the necessity for and the opportunities of additional training. We are assuming here that if the adults in the community see vocational education beyond the high school as an opportunity to upgrade skills, to increase their level of living, and to become more productive members of society, then a great deal of time and effort will be devoted to the development of broad and deep curriculum. On the other hand, if the adults have a poor image of additional education of if they, themselves, see little opportunity for advancement, then, obviously, the participation in any kind of curriculum will be relatively low.

In a recent article included in the publication entitled Contemporary Issues in American Education, Mrs. Joan Bowers stated that "One of the unique needs present in retraining the older worker is convincing the worker who needs retraining or relocation of the seriousness of his plight. It is normal human nature for a man who has, for a quarter of a century, had a useful skill which he had been able to apply in industry and for which he had received financial compensation to find it incomprehensible that he and his skills are no longer needed". I am sure that each of us could cite communities in which there is a low level of esteem for education in general, even for youngsters beyond fourteen or fifteen years of age. Just as surely there are those communities, which we could cite, in which the image of adults considering attending additional classes or upgrading skills would be looked upon as having immature ideas for adults. All I am suggesting here is that we need to examine the images of adults with respect to additional education before much can be done by way of curriculum development. Part of our basic problem, therefore, in many communities, is to somehow change the image which adults hold which will in effect make education for the adult -- even the young adult --- respectable.

TIME AND SPACE ORIENTATION OF A COMMUNITY

The time orientation of a community is a tremendous importance to curriculum development in vocational education. Irwin Sanders, in his book entitled The Community, states that "All communities have some concern with the past, the present, and the future, but they differ in the importance accorded to each. Where most of the people in the community stress the past, they tend to be complacent and take pride in what their ancestors have done more than in what they have done themselves. They tend to resist change, and stress conformity almost as an end in itself." Dr. Sanders, however, goes on to state that most American communities are future oriented. Even here, however, this is a matter of degree, because there are many variations of the time orientation to the future. I would assume, however, if the community is future oriented, that there will be a great deal more stress placed upon increasing level of living, of enhancing and developing each individual, and therefore, new opportunities for education will be accepted and will be stressed. In many communities, and I suspect that this is particularly true of our changing rural communities, the past orientation is still very strong. Each of us could cite examples of people with whom we have talked in these past oriented communities who say that "my father and my grandfather had three years or four years or five years of formal education and that was certainly sufficient for our younger people. This is an important dimension of community analysis which must be related to curriculum development in vocational education.

Each community may also be analyzed in terms of what is called here a space dimension or orientation. This orientation may be considered as a continuum ranging from a localistic to a cosmopolitan space orientation. The basic idea here is that if the space orientation is largely localistic, the curriculum in vocational education will be relatively narrow in scope and will be related to the local community in its entirety. If, on the other hand, the space orientation is largely cosmopolitan, the curriculum will be fuller and it will be more adequately related to the larger society. If the orientation is localistic, questions will be raised about the preparation of people for jobs which do not exist in the local community and local situation. If it is cosmopolitan, such questions in reality will either not be raised, or support will be gained for preparing young people or older people, too, to move into the larger society in a fuller measure.

THE BASIC ENVIRONMENTAL COMMUNITY CONFLICT

In developing a vocational education curriculum, basic decisions must be made concerning whether the training will be oriented to the local community, to the larger metropolitan area, to the region, or to the national market. However, this is not an either/or proposition in its totality. There are some aspects of vocational education or some areas of vocational education which can be oriented almost entirely to the local community. For example, because of the relatively narrow range of migration of adult farmers, vocational education in the productive aspects of vocational agriculture can be oriented to the national market rather than to some intermediate level. This is true because of the heavy rates of mobility and migration in American society.

Americans are on the move all across the nation. High rates of geographic mobility of the population are associated with a dynamic economy and an affluent society. Every community, regardless of either size or location, has been and is being affected by population movement regardless of whether the flow is in or out. Such a continuing population mix has tremendous import for every region as well as for the nation as a whole.

Migration and mobility patterns for the local community situations must be studied very carefully. Many studies have shown that older workers are considerably less mobile and their patterns of migration are somewhat different than those of younger workers. Certainly, these patterns must be considered in curriculum planning and development. It would be somewhat criminal from an educational point of view to assume that each training facility and service would be oriented to the local community situation. On the other hand, many of the programs in vocational training must include some training for migration. There are many communities, small and large, which must give training to their local people but, on the other hand, it must be recognized that they are being trained for regional and national markets because the opportunities will not be sufficient in either quantity or quality to hold these population groups in the community.

In a recent article, Donald J. Bogue discusses at considerable length the important patterns of population redistribution for the nation. He summarizes the major shifts in our population in the following statements. "(a) Migration from rural (especially the rural farm) areas has been taking place rapidly. (b) There has been heavy movement of population toward metropolitan areas. (c) There has been extensive outward movement from low-income areas to higher income areas of greater economic opportunity.

(d) There has been extensive outward movement from low-income population from the North and East to the South (especially Florida and the Gulf Coast) and the Southwest. (e) There has been heavy migration to the Pacific Coast of persons from all strata and from all regions. (f) There has been a massive out-movement of population from the densely settled core of metropolitan areas to the suburban fringe. This movement has become so extensive that the metropolitan areas are beginning to merge one with another, to form extensive chains of megolopolitan proportions, or 'conurbations', as the British call them. (g) There has been a concentration of the Negro population into ghetto-like deteriorated portions of our larger metropolises."

I believe that it is a true statement that in the future and increasingly vocational education curricula must be designed to encompass at least the total national market. It would appear that approximately one-fifth of America's total population moves at least from one house to another during each year. A recent study showed that more than 12,000,000 people lived in a different county at the end of the year as compared with the beginning of the year. All I am trying to say here is that we must gear our training programs to a national market and this is especially true for the younger workers. At the same time, we must be ever mindful that there are aspects of training which can be, should be, and must be geared to the local community situation. Undoubtedly, however, because of the rapid mobility of our population, this aspect will become less important as time goes on.

During the decade of the 1950's, the so-called population explosion bypassed large areas of the nation. Beale and Shoemaker have stated that "The result of the decline in the farm population and the redistribution of the rural nonfarm population is the partial depopulation of vast areas. It is not widely appreciated that in the 1950's. . .half or more of the total land area of the nation experienced a population decline that was often severe. In contrast to the atmosphere of boom and bustle that pervades most urban areas, many rural people are daily confronted with such visible effects of population loss as brush-grown fields, abandoned barns, and deteriorating houses."

There is one other aspect of this picture that I am trying to present which must be taken into consideration. Somebody must do some national bookkeeping with respect to the end products of our vocational education curricula. With the rapid increase in facilities, services, and finances for vocational education, unless there is some national bookkeeping it is quite possible that we will over produce many kinds of skills and we will under produce many other kinds of skilled personnel. In other words,

if every training center begins to produce welders, we will have welders running out of our proverbial ears. It is essential, therefore, that we think in terms of a bookkeeping system which will in reality permit training in proportions as will be needed at the local level on the one hand, and at the national level on the other. We must be ever mindful that our curriculum development stays apace with the changes taking place in our society in order that we not produce skills which are already outdated by the time the worker is trained.

QUALITY OF THE COMMUNITY EDUCATIONAL FACILITY AND SERVICES

A vocational education curriculum must be based upon certain assumptions relating to the quality of the total education establishment in a community. I am suggesting here that the quality of the vocational education curriculum is in reality enhanced by, or restricted by, the quality of what we generally call basic education. I am referring particularly to the fact that the world of work of tomorrow will demand that every student and worker be well versed in the skills of communication, such as reading, listening, writing, mathematics, etc. In other words, the vocational education curriculum in terms of its quality cannot be divorced from the quality of the total educational system in the community. It makes no difference whether the vocational education is obtained in the local community -- the same community or in a different community from that in which the individual received his general education.

A recent study in North Carolina among low income families showed some rather startling consequences for curriculum planning in vocational education. I would like to quote one paragraph from this study. . ."Certainly the primary purpose of these educational programs for low-income adults is to raise their level of income; however, before many of the individuals can qualify for technical training, they must first be brought to a higher level of basic education. This would mean that for approximately 37 percent of the respondents in this study considerable time would be required before they could begin training of a technical nature. Another 30 percent would also need to devote some time to basic education. The remaining 33 percent who have completed high school or nearly so might begin training without further basic education."

In a recent proposal for a vocational education program for high school students, I was interested to learn that laboratory facilities were being provided within the framework of

vocational education for up-grading the communication skills of these high school students. In other words, the vocational plant was being designed for high school students in such a way that additional reading, writing, and math skills could be developed prior to the student entering the vocational education curriculum. You may consider this a condemnation of the basic or general education skills which are being obtained, but on the other hand, it is undoubtedly a recognition of the reality of the situation. All of this can be duplicated across the nation. In many of our schools the basic skills are inclucated in such poor proportions that it will be necessary to up-grade these skills prior to developing any kind of basic curriculum in vocational education. My point here, however, is that the vocational education curriculum can never be divorced from the quality of the basic skills in the local community school environment.

COMPOSITION OF THE POPULATION

The composition of the population of the community is one of the most pervasive factors or group of factors related to curriculum development in vocational education. Communities have very different profiles with respect to many composition factors. These profiles must be taken into account in vocational education curriculum development and planning.

There are extremely wide variations in the age composition from community to community. Some communities will exhibit an age profile which shows that perhaps 25 percent of the total population is above 65 years of age, whereas in another community, the proportion may be only four or five percent of the total population. The age composition of a population, of course, is related to the birth rate, mortality rate, and to the rate of migration. But since these factors are constantly changing, it is necessary to keep a constant vigil in terms of analysis of the factor of age. It is important in terms of the magnitude of the job to be done in vocational education, but it is also important in terms of specific aspects of curriculum which will be related to the space orientation of the population. It has been pointed out already that the older age groups migrate substantially less than the younger age groups. Much of the vocational education training for the upper age groups will undoubtedly be for a fairly limited community area. On the other hand, the younger age groups must be trained in terms of the larger community and, perhaps, more especially in terms of the national market.

The sex composition of the population also shows considerable variation from community to community. In general, the larger urban communities are heavily weighted in terms of females as compared with smaller communities, and it has been pointed out that the migration patterns are somewhat different for males and for females. Nevertheless, an increasing proportion of the females are entering the labor market but they enter it probably either two or three times during their lifetime. This means, of course, that there will be broken places in their work history and this will mean a different pattern of training for the females as compared with the males. This is an important factor which must be taken into account. At the same time, there are certain kinds of bias in our communities with respect to the kinds of jobs which are open to females. These factors, too, must be taken into account in planning for vocational education programs.

Obviously, as indicated above, the general educational attainment level of the population must be given consideration, and here, too, there are wide variations from one community to another. This factor is of particular importance in the upper age groups because, in general, the educational attainment level declines as the population ages or in the older age groups. The older age groups will be more difficult to train and the training will be more expensive. This is the case because of the fact that the older workers will have to be given more basic training in communication skills than will the younger workers. On the other hand, they may be more difficult to place because of not only the bias which exist against the older worker, but because of their mobility and migration patterns.

Certainly, the changing demand in our society for workers as related to our changing occupational and industrial complex must be given considerable weight. In other words, our communities are undergoing rapid changes with respect to the ways in which people earn a living. A statement by Mrs. Joan Bowers points these facts out very clearly. "Also because of automation and the increasing expectation of physical and cultural services, there is a shift from the manufacturing industries to the service occupations such as health, safety, sanitation, education, and community services. The magnitude of the shift to service occupations is clearly reflected in the fact that a comparatively short time ago the majority of the jobs were in production. Today the service areas constitute 60 percent of the jobs, and the estimates are that this percentage will rise to 80 percent by 1980."

SOCIAL STRATIFICATION SYSTEM

Each community has an approach to the acceptance of the democratic processes and attitudes toward the worth of the individual. This is, of course, associated with the social stratification system within each community. We are talking specifically about the class structure and the class structure as it is cut through by the factor or race in American society. Race and class, especially, permeate almost every aspect of education in every community. This is, of course, no less true for vocational education. There are those who will state very specifically the basic conflict that vocational education is only for those who cannot go beyond a given level of general education. This is associated in turn with class structure. The basic conflict, however, is such that these same people will say that certain people are not worth training, or, that they cannot learn or that the investment is too great.

But race and class are associated with migration patterns and this is particularly true of migration pattern for the Southern region. In a recent article, Dr. C. Horace Hamilton has stated, "The mass of Negro migrants from the South has moved into the low-status, low-wage occupations of the North and West. In terms of numbers, the greatest absolute increases by occupation have occurred in ushc unskilled and semi-skilled occupations as operatives, services, and miscellaneous unskilled labor. However, there are some large percentage increases in the employment of Negroes in the middle and upper white collar occupation classes, as well as a significant increase in the number of Negro skilled craftsmen and kindred workers." In other words, the attitudes toward the total democratic process must be taken into account in program development in vocational education.

The worth of the individual must be taken into account in curriculum development. Many communities, at least in terms of the local power structure, have certain images in terms of the kinds of occupations which are associated with certain kinds of people. There are certain kinds of occupations in some communities that are associated with the Negro or the Puerto Rican, or some other characteristic. There are some occupations which are associated with the particular class structure in the minds of the power structure in these communities. There are items of importance and they will have a tremendous impact on the kind of curriculum which can be developed in vocational education at the local community level. It would be of interest to know how these factors are being taken into account in program development from one community to another. These images will change and

these patterns are changing. Nevertheless, the represent certain kinds of barriers to curriculum development for the total population. In other words, we are suggesting that the attitudes toward work and the attitudes toward particular occupations must be associated with the images that the leadership structure of the community has toward the total stratification system, particularly as it relates to social class and to race.

A FINAL NOTE

I should like to close this discussion with a recent statement by Eli Ginsberg, Professor of Economics from Columbia University: "During the past century our young people have spent an increasing number of years in school preparatory to starting work. The patterns of school have differed in various regions of the country, and access to and use of available schooling has differed among the various groups in the population. But beneath these diversities have been certain general trends: Children and young people have tended to spend more years in school; the school year has been lengthened; the quality of the staff has been improved; the curriculum has been broadened and deepened to better meet the needs of an increasingly diversified school population; more and more young people have been graduated from high school and going on to college. . .

"Whenever a basic social institution such as the public school has multiple functions to perform, it is inevitable that the professional leadership as well as the concerned citizens will disagree about the exact emphasis which the institution should place on the accomplishment of one or another objective. No decade has been free of disagreements about the responsibility of the school for preparing young people for gainful employment not about the best ways to discharge this responsibility."

In 1786, it is reported that Thomas Jefferson, in writing to a friend, made the following statement: "Preach, my dear sir, a crusade against ignorance. Establish and improve the law for educating the common people. Let our countrymen know that. . . the tax which will be paid for this purpose is not more than a thousandeth part of what will be paid. . .if we leave the people in ignorance."

The job is not finished - the job will never be finished. There will be disagreements over direction and there will be disagreements over direction and there will be disagreements over techniques. Nevertheless, the end product for all is a more

productive individual, a happier life for each individual, and a more affluent American society.

EDUCATIONAL PSYCHOLOGY AND THE CURRICULUM

OR

(A CUBE AND A BALL)

Joseph C. Bledsoe
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The work of a scientist is in part practical: he designs experiments and makes observations. Another part of his labor is theoretical: he formulates conclusions from his experimental findings, compares his results with those of other workers, constructs a theoretical system so as to represent and order the facts of observation as accurately as possible, or notes their conformation to existing theory. With the aid of the theory he derives predictions, which he again validates by new observations.

Science progresses both by collecting new experiences as well as by better ordering of those experiences or data already possessed. It is primarily by the former process -- that of inductive, empirical research that new knowledge comes into being.

Within recent years the concept of "model" has come into fairly widespread useage. Sometimes the adjective "mathematical" is applied; sometimes a geometric or physical model is suggested. The ancient Greeks developed Euclidean geometry to a high order of specificity but were unable to break the barrier represented by the three-dimensional world. It took another thousand years for the n-dimensions of the world of algebra to be discovered by the Arabs. Thus, both algebraic and geometric models may be of value in the communication of ideas as well as developing systems.

In looking for a solid theoretical foundation upon which to build a model, the scientist or statistician must make clear just how far the concepts which he uses are justified and are requisite. The justification of the logical system he develops rests upon the demonstration of its usefulness in describing the results of experience. The events and objects of the world of reality are always very complex. From among a vast number of characteristics present it is important to identify those which are essential from the standpoint of theory. Because the object of the world of reality cannot be comprehended in a way that could

lead to an exact theory, they are superseded by idealized conceptions which can be comprehended with relative ease. The object of creating theoretical models is to permit the mental reconstruction of the world of empirical fact. This statement does not mean that the theory necessitates putting the empirical facts into an inflexible predetermined scheme. The opposite is more nearly true. That is to say, the theory or model should be constructed so that the facts are truthfully represented.

Some sixty-odd years ago, a famous English writer wrote the following lines which are familiar to all of us (from "The Elephant's Child", R. Kipling).

I keep six honest serving-men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.

We are most familiar with these as the six elements of a good story. I have frequently thought of these six elements in their relation to learning. Thus, the "Who" refers to the learner, from birth to senescence or throughout the life span. The "Why" concerns philosophy, objectives, ends, purposes. "How" suggests processes, procedures, theories, media, and practices of learning. "Where" suggests that learning takes place in many locales and settings, but has particular implications for the school plant, facilities, and equipment. "When" suggests the principles of readiness and the associated concepts of "the teachable moment" and the "developmental task". "What" suggests the content or kinds of learning experiences to be provided, or the curriculum. Since, by mere accident, these elements add up to six, an obvious idealized geometric model is suggested: the cube, made of six sides. In the language of factor analysis, this geometric model has the interesting property of orthogonality or independence. That is to say, there is no overlapping between the six elements and we have six apparently pure factors. Obviously this is not a true representation of the world of reality. Unfortunately some critics of education and lay people seem to be of the opinion that especially the "How" and the "What" in Teacher Education are entirely orthogonal or independent, since colleges of education are supposed to teach exclusively the "How" while liberal arts and or sciences teach the "What". I do not presume to know precisely what the model approaching the real world is, but I am confident it is more like a sphere or ball than a cube, for each of these six elements seems to merge somehow into the other and the establishment of the six rubrics or classifications for our convenience rather than descriptive of the properties of the concept. Surely, educational psychology can contribute in many

ways to enable learners (who) to learn tasks and activities (what) in more efficient and effective processes (how) in many settings (where) and at many times (when) for many objectives (why).

Educational psychology is concerned with the application of the principles, techniques, and other resources of psychology to the solution of problems confronting the teacher as he attempts to direct the growth of learners toward worthy objectives. More specifically, educational psychology is concerned with an understanding of (a) the learner--his development, his needs, and his individual peculiarities, (b) the learning situation, including the influence of groups and group dynamics as they affect learning; and (c) the process by which learning can be made more effective and more efficient. To accomplish these purposes, educational psychology must maintain contact with both general psychology and educational practice.

The curriculum may be defined as "a sequence of potential experiences set up in the school for the purpose of disciplining children and youth in group ways of thinking and acting." (Smith, Stanley, Shores, p. 4) The task of curriculum development (according to Smith, Stanley, and Shores) has at least four significant aspects: (1) the determination of educational directions; (2) the choice of principles and procedures for selecting and ordering the potential experiences comprising the instructional program; (3) the selection of a pattern of curriculum organization; and (4) the determination of principles and procedures by which changes in the curriculum can be made, evaluated, and sustained. (Smith, Stanley, Shores, p. 7).

These terms (curriculum development and educational psychology) both represent complex clusters of ideas loosely grouped together -- a higher-order concept. Normally we think of these ideas and the sub-concepts within them as only partially definable and measurable by empirical means. Since it is impossible to attack the entire field of possible problems suggested by these concepts, it has been the practice of most laboratory and field researchers to attack small problems and gradually bit-by-bit and block-by-block add to the total picture within the large field. Most persons would probably agree that we have achieved greater success with the analytical aspects of breaking down than we have with the corresponding synthesizing phases of adding the pieces to get a clear picture of the jig-saw puzzle. It is difficult to carry on large-scale research which permits many variables to be analyzed at one time. Until the recent development of multi-variate analysis, the "law of the single variable" or "vary one thing at a time, holding others constant" required

that much research be limited to small, readily controlled areas.

The role of antecedents and consequents in curriculum and psychological research is also a matter of concern. Thus, the same variable may be interpreted in one context as an antecedent or independent variable and in a second context as a consequent or dependent variable. Thus, an event in time (A) may predispose a second event, (B) which in turn leads to a third event (C). The second event (B) may thus be considered as a consequent (A) an antecedent of (C). To cite an example, three years ago one of our doctoral students, a former high school science teacher, became very interested in the phenomenon of "change in interest in science during the high school years". Change in interest can of course be either positive or negative, thus he was interested in both gains and losses. He was not interested in small changes which might be attributed to errors of measurement, but rather in significant changes which he defined operationally as one standard deviation above or below the mean. Boys and girls were considered separately. He first considered the changes as consequents or dependent variables and attempted to determine factors which may have led to or precipitated these "effects". Next he treated the changes as independent variables or as antecedents to see what, if any, general characteristics may have differentiated the persons with significant gains from those who lost interest or who did not change in their degree of relative interest. In the present paper, we could of course consider educational psychology as both cause and effect or more precisely independent or dependent variables and curriculum development in the same way. In reality both of these high-order concepts may be coneived in both ways. It seems more appropriate to the writer, however, to think of educational psychology as a means to develop a more effective curriculum. Thus, although in one sense, we change or develop the curriculum as a means of reaching the objectives or goals of the schools, educational psychology would seem to be even earlier in the stream of possible manipulation since insights derived by study of principles of psychology applied to education should permit more effective curriculum building.

In the present paper, I should like to attempt briefly to consider the following points or questions:

1. The scope of psychological research in education.
2. The conditions necessary for evaluating curriculum research.
3. The need for new approaches in research.
4. Complexity of curriculum evaluations.
5. Inadequacy of dependence on objective data alone.

6. Need for "good sense" in interpreting research.
7. Opportunities in psychological research in education.

SCOPE OF RESEARCH IN EDUCATIONAL PSYCHOLOGY

What is the proper scope of educational psychology? Should it, for example, be as much restricted to the pupil as it is at present? Can research do anything to reduce the gap between advancing knowledge and established practice? What methodological and organizational innovations in research are needed? How can due recognition be gained for the contributions of psychological research in education? How can additional funds for research be secured? These are obviously large questions. On the answers, it is apparent, depend the directions which research in educational psychology should take.

The educational industry -- covering 50 million students, employing 2 million teachers and professors, and budgeted at well over $25 billion -- is the largest nonmilitary undertaking in the nation. It includes a wide variety of <u>persons</u> -- pupils, instructors, librarians, counselors, speech correctionists, textbook writers, audio-visual specialists, superintendents, principals, deans, architects, presidents, trustees, school board members. It includes a variety of <u>functions</u>: not only teaching, but remedial training, curriculum development, administration, finance, and public relations. It includes all kinds of <u>learning</u>: motor skills, verbal knowledge, social skills, interests, attitudes, values and habits. There are important applications of psychology to all these persons, to all these functions, to all these types of learning. At present, however, vast fields remain unexplored and untouched, not because they are unexplorable or untouchable, but because educational psychologists have never had the resources to mount a broad attack on all fronts. The pupil has been most accessible to those seeking a graduate degree so it is pupils (or rats or pigeons) that have figured in much educational research. Study of the acquisition of academic knowledge calls for fewer resources than study of factors affecting financial support of education so we have numerous studies of arithmetic, but few of public opinion. After a while, necessity and custom tend to become rationalized as virtue, whereupon some adopt the view that educational psychology <u>should</u> be restricted to its present limited scope in order to remain respectably "scientific".

CONDITIONS FOR EVALUATING CURRICULUM RESEARCH

It is much easier to describe the conditions for research studies designed to determine the relative effectiveness of curriculum patterns than it is to create these conditions in an actual investigation. Perhaps this fact accounts for so much criticism of curriculum research. Even so, criteria against which curriculum research can be judged can serve as guidelines for improvement in the design of curriculum research. Recent development of more adequate research designs and high-speed electronic computer equipment can permit more adequate experiments and evaluative studies to be made. A word of caution, however, seems appropriate. In order to set up the conditions required for experimental investigations, assumptions must be made with respect to the values, beliefs, knowledges, and skills of the significant persons in the educational enterprise--pupils, teachers, administrators, members of the community. In practice the determination and validation of these assumptions are overwhelming, almost impossible tasks.

Briefly, four conditions are necessary to appraise curriculum research. These are:

(1) The theory of the curriculum pattern to be tested must be stated unequivocally.
(2) The conditions under which the curriculum pattern is tried out must be described in detail.
(3) The anticipated results of the curriculum theory must be stated as hypotheses derived from the theory.
(4) Data must be collected to determine whether or not the hypotheses derived from the curriculum theory were borne out by the observed facts; for as these hypotheses are tested, confirmed or invalidated by observation the theory is affirmed or denied.

NEW APPROACHES

Are any new directions desirable in the methodology and organization of research in educational psychology? Without a doubt, yes. In current terminology, a "systems" approach is called for. It is gratifying that this conference represents a significant phase in this systems approach. What does this systems approach mean?

We often say that the learning of pupils is complex, being tied to the child's or student's interest, his past experience, his home, neighborhood and other cultural influences. This same complexity characterizes every aspect of education. A complex situation can be investigated in various ways, all useful. One approach is the analytic or piecemeal one, in which one segment or aspect of a problem is studied more or less in isolation or under so-called "controlled conditions". At the other extreme is the large-scale, long-term investigation which attempts to study simultaneously as many factors and their interactions as possible. We do not have enough of either type of study, but surely we have had more of the small, cross-section, fragmented type than we have had of the other. A crucial need is for more studies utilizing the large-scale, long-term, comprehensive "systems" approach. This approach calls for a research organization extending beyond the single college professor and the resources available to him. We are grateful to the individual professors and students who have advanced our knowledge of the psychology of education as far as they have. But complex, large-scale problems can benefit also from research on a larger scale, extending beyond the resources, interests, and lifetime of one individual. Such research and development centers or institutes should include the educational psychologist.

One special type of institute--one in educational measurement seems especially needed. The importance of measurement in education can hardly be overstressed. Slow or costly methods of measurement constitute a serious handicap in many areas.

COMPLEXITY OF CURRICULUM EVALUATION

In evaluating curriculum studies in the past we have often tended to minimize the complexity of this kind of research. Perhaps because the logical bases of experimentation historically emphasized simplicity and idealized forms and because natural science and animal learning experiments permitted a higher degree of control, this tendency was a logical one and to be expected. At first glance, it would seem to be a simple matter to teach a segment of some subject or skill to two or more groups of children exposing the groups to different systems or patterns of instruction. After the experimental period, we assess the learning which has taken place by means of tests or other similar ways, compare test scores, and rank the instructional systems or patterns for effectiveness in terms of the relative standings of the groups taught. Sometimes the final rankings are presented without qualification--that is, Program A is the best way to

teach the subject under any conceivable set of conditions. As naive as this may seem, it is not rare.

Upon reflection, such a conclusion is obviously unlikely. Normally in evaluation we are able to sample only a fraction of the content taught. A different sample might produce a different array of ranks. The assumption that the same sample of content was taught by two or more procedures might have been incorrect, since the theory of a given program may omit material or introduce non-essential material not common to other programs.

Effects of differences in objectives may not be fully considered. Thus, Program A may be preferable for mastery of factual data while Program B may be better for developing skills in discovery and creative or critical thinking. In fact, evaluations of some of the new curriculum patterns in high school science teaching have revealed precisely this sort of differences.

Pacing of instruction is another source of possible confounding which has not always been considered. Thus programs may agree in assigning high value to certain outcomes but the realization of these goals may vary with different programs. Tested too soon, children in a certain program may seem to be inferior where as with testing delayed for a year or two, the apparent inferiority of pupils in that program may dissipate.

A fifth factor complicating evaluative research is the lack of control of teaching within a particular method or system. A program of instruction represents often a paper organization. Sometimes teachers may agree <u>on paper</u> to teach according to a specific program, but in <u>actual practice</u> variations in teaching practices within each of the competing programs can be such as to reduce considerably the supposed differences between or among them and make them more alike than was expected or intended. Thus, contamination of the programs vitiate the findings such as to render them far less valuable. In fact, findings may indicate no differences in competing programs when if "pure" systems could be established, real differences in these programs might be discovered.

Finally, perhaps the most difficult factor in evaluative research to control is quality of teaching. I submit that this factor accounts for much of the conflicting evidence on the value of certain approaches or methods of teaching. To give an example of what I mean, during the year 1963-64, I had the opportunity and privilege of directing a doctoral study to evaluate two methods of teaching introductory microbiology. The substantive hypothesis was that students enrolled in the

classes where film slides employing photomicrography, color and time-lapse photographic techniques would learn significantly more concepts, exhibit greater laboratory skills, and have better attitudes toward science than students enrolled in the conventional class wherin no such procedures were used. The slides were very carefully prepared by a person who was competent in both microbiology and photographic techniques and were prepared for the particular course, carefully woven into the units of study of the course. A cross-over design was employed which enabled instructors to teach under both procedures. (Quite parenthetically to the main point here is that the experimental procedures indicated a very significant superiority and the film slides have now been incorporated as a regular procedure in this institution. I am also reliably informed that the film slide set has been duplicated and is now being used in a number of institutions other than the University of Georgia). The main point I wish to make, however, was that the survey of related literature on the use of audio-visual media in the teaching of science presented a most bewildering and remarkable picture. For practically every study suggesting <u>superiority</u> of audio-visual media, a corresponding study indicating the <u>inferiority</u> of such media could be found. About as many studies revealed no apparent difference. No wonder educational research is often criticized as academic pot-boiling! I contend that the crucial issue in these studies was not so much the use of selected audio-visual instructional techniques as the <u>quality of teaching</u>. How many of us have seen a good potential aid or procedure employed poorly by a lazy, incompetent teacher? The old cliche--"It's not <u>what</u> you do, but the way that you do it"--seems pertinent here. An instructional program is one thing in the hands of expert, interested teachers and quite another in the hands of teachers not so expert and interested. Yet in evaluating rival systems of instruction, how can we assure comparable quality of teaching or allow for the effect of differences in this factor?

How many instances of research have resulted in findings and subsequent recommendations based not on the instructional programs so much as on these six factors which have been mentioned? Yet this analysis is surely incomplete. At any rate, these six factors are enough to confirm the contention that this kind of research is not simple. They suggest the belief that we cannot hope to evaluate programs of instruction as <u>wholes</u>. Instead, we must settle for evaluating them in part, on some selected, delimited basis. We need also to describe as fully as possible the conditions which impose restrictions on the extent to which the findings can be generalized.

teach the subject under any conceivable set of conditions. As naive as this may seem, it is not rare.

Upon reflection, such a conclusion is obviously unlikely. Normally in evaluation we are able to sample only a fraction of the content taught. A different sample might produce a different array of ranks. The assumption that the same sample of content was taught by two or more procedures might have been incorrect, since the theory of a given program may omit material or introduce non-essential material not common to other programs.

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INADEQUACY OF "OBJECTIVE" DATA ALONE

In evaluating learning under different systems of instruction, there seems to be the notion that there is little place for subjective decisions, that the aim should be to collect an abundance of objective data, and that the thorough manipulation of these data will in itself produce a dependable ranking of systems of instruction. One problem is the precise definition of "objective". Do interviews with pupils, teachers' estimates of pupils ability or achievement, observations of behavior yield objective measures? Certainly these procedures provide quantitative data, but are they objective?

Besides the problem of difinitions of "objective" and "subjective" there is a danger in seeming to set up a dichotomy: judgment vs. objective, one or the other. Any such dichotomy is, of course, unreal. In these times when quantitative research is highly regarded pure conjecture, that is, weighing one opinion against another, would have little respect. In the court of professional opinion, a reasonable amount of empirical evidence to support one's decisions is required. On the other hand, some decisions occasionally have to be made on subjective grounds. Rather than a dichotomy, pure judgment and pure use of objective data may be considered as the theoretical extremes of a continuum. Most evaluators represent positions close to the midpoint of this continuum.

Still some evaluators do not seem to appreciate the appropriate place of judgment in evaluative research. It may be that they are not fully aware how much they must rely on judgment. Sometimes no mention of such judgment is made and on other occasions such instances are cited hurriedly and almost apologetically.

Yet judgment may be extremely important in organizing and in conducting research. In fact where basic objective data are not available and/or trustworthy, judgment must play a prominent role in such areas as decision to make the study, the selection of grade levels and subjects, the length of the experiment, the analysis of objectives and content of rival programs, the kinds of data to be collected, the choice of available tests and/or the constructing and validating of original measurement, the selection of statistical methods for treatment of data, and the final interpretation of the findings.

It is unfortunate that lack of printing space often leads an investigator to decide to report only what he did and what he

found. Many readers will accept uncritically whatever is reported without wondering why certain tests were chosen over others and whether or not the rival programs were taught with approximately equal quality. More careful selection of manuscripts for publication of longer analytic descriptions of evaluative studies that can meet higher standards may be a more satisfactory alternative to a greater number of studies stripped of important details.

The important point is not that we should leave evaluation to personal opinion and subjective judgment but that we should not deceive ourselves into thinking that we can reduce to zero the need for judgment. Instead we should recognize and report such instances of decisions based on such judgment as honestly and freely as we do in strictly quantitative research.

GOOD SENSE IN CURRICULUM RESEARCH

Within recent years new and better means of controlling experimental factors and of treating quantitative data has resulted in improvements in curriculum research. Yet it is doubtful that the quality of such research will be enhanced as much by technical improvements as by corresponding improvements in methods of procuring valid and relevant data to start with and by ways to find out the <u>educational</u> significance of the differences which may have <u>statistical</u> significance. Even the most refined formula for determining the reliability of differences does not preclude the possibility of drawing erroneous conclusions or judgments indefinsible as far as educational practice is concerned.

Some years ago an investigator performed an experiment to determine the relative effectiveness of three methods of teaching simple subtraction in arithmetic. His study involved measures of error and rates of work on subtraction tests and the use of large groups of subjects, one set of the groups being about two grades higher than the others. On the end test, the means for the younger group in terms of errors were 21, 12, and 13, for the X, Y and Z methods respectively. He employed a formula acceptable at the time to determine the reliability of differences between means, and found that Method X was definitely the least effective, with a slight but unreliable advantage of Z over Y. On this basis he recommended the adoption of Method Z. However, he neglected <u>opportunity</u> for error, with the result that he inflated the differences among the programs with respect to effectiveness. On the average, X subjects who made a

mean of 21 errors, were accurate in 203 or in 91% of their chances. The corresponding average percentages of accuracy for Y and Z subjects were both 94. Thus the least accurate group differed from the two more accurate groups by three chances in 100, a margin so small as probably to be disregarded in classroom practice. In essence, the three methods were about as equally satisfactory.

Had the investigator had the best and most refined formula for determining the reliabilities of differences, what might have happened? He might have found the measures of reliability to be greater or less than those he reported. Regardless of what test he used, whether average errors or percentage of accuracy, the differences would still have been of dubious EDUCATIONAL significance. Rarely indeed are choices made in instructional practice on the basis of three percentage points. Other questions may have been relevant, for example, might not the X procedure (the one which came out poorest) have been easier to teach meaningfully and might it not have yielded learning with greater potential value?

What the investigator overlooked is that programs of instruction are supposedly evaluated not to provide opportunities to demonstrate mastery of sophisticated techniques, but to answer significant (that is practically significant) questions which will improve the conditions of school learning. Curriculum research must be competently done, but it must be oriented to the possible usefulness of the results in managing the processes of teaching and learning. When this condition is met, negative findings as well as positive findings may be valuable, as when the exaggerated claims of some new curriculum pattern or organization of content may be found to be wanting.

In this connection it has sometimes been said that "the trouble with educational research is that it answers questions nobody asks". Certainly, good sense dictates that pressing problems of educating our children and youth should receive high priority in our attention.

OPPORTUNITIES IN EDUCATIONAL RESEARCH

In closing, I should like to quote from an article by Dr. Herbert Conrad of the United States Office of Education entitled "Research in Education: Directions and Misdirections", published in the 1962 Teachers College Record.

"Education is now a vast enterprise, enormously visible, indispensably useful, and basically approved by the great majority--yet by virtue of its size, cost, and complexity, the object of persistent attacks. The multiple facets of education present endless opportunities for psychological research; and the availability of increased funds suggests the feasibility of a more thorough, systematic type of research, organized around the problems to be solved rather than around the highly limited resources of the individual research worker.

In education, psychology now finds both a majestic opportunity and a deep moral obligation to enlarge its contribution. The national interest requires that psychological research in education receive greater consideration and support than it has yet been granted. The most immediate agents of progress here would be the psychologists and educators themselves, the universities, school systems, state departments of education, professional organizations, private foundations, and the federal government. The potential for a 'great leap forward' lies before us, provided that increased resources are organized in an orientation free from the timidity of poverty and delivered from the veneration of tradition."

CURRENT RESEARCH DEVELOPMENTS IN THE U.S. OFFICE OF EDUCATION

Duane M. Nielsen
Director, Educational Resources Development Branch
U. S. Office of Education

The following few selected charts, list of priorities and project reports were taken from Dr. Nielsen's presentation.

The following are some of the funded curriculum projects which have been approved by U.S.O.E. under 4 (c) of the 1963 Vocational Act. If you are interested in any of these studies please correspond with the principal investigator.

TITLE: How to Improve Teaching for Non-Farm Agricultural Occupations

PRINCIPAL INVESTIGATOR: Dr. Robert E. Taylor, Professor of Agricultural Education

INSTITUTION: The Ohio State University

TOTAL FEDERAL FUNDS REQUESTED: $76,370

DURATION: Beginning, March 30, 1965. Ending, August 31, 1965

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TITLE: Development and Evaluation of an Experimental Curriculum for the New Quincy, Massachusetts, Vocational-Technical School

PRINCIPAL INVESTIGATORS: Dr. Maurice J. Daly, Assistant Superindent for Vocational-Technical Education, The Quincy Public Schools, and Dr. Robert M. Gagne, Director of Research, The American Institutes for Research

INSTITUTIONS: The Quincy, Massachusetts, Public Schools and The American Institutes for Research

TOTAL FEDERAL FUNDS REQUESTED: $190,428

DURATION: Beginning, April 26, 1965. Ending, June 30, 1966

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TITLE: Development of a Curriculum and Materials for Teaching Basic Vocational Talents

PRINCIPAL INVESTIGATOR: Dr. John T. Dailey, Research Professor

INSTITUTION: The George Washington University, Washington, D. C.

TOTAL FEDERAL FUNDS REQUESTED: $171,702

DURATION: Beginning, April 1, 1965. Ending, September 30, 1966

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TITLE: Revised Instructional Programs for "Slow Learners" to Improve Their Job Placement Opportunities

PRINCIPAL INVESTIGATOR: Mr. Elliott D. Becken, Assistant Superintendent of Schools

INSTITUTION: School District 549C, Medford, Oregon

FEDERAL FUNDS REQUESTED: $29,916

DURATION: Beginning, April 30, 1965. Ending, March 31, 1966

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TITLE: An Experimental Program to Compare Education Versus Training for Young School Dropouts

PRINCIPAL INVESTIGATOR: Dr. Jacob J. Kaufman, Professor of Economics and Director, Institute for Research in Human Resources

INSTITUTION: The Pennsylvania State University, University Park, Pa.

FEDERAL FUNDS REQUESTED: $194,997

DURATION: Beginning, July 9, 1965. Ending, February 28, 1970

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TITLE: Development and Evaluation of Instructional Programs in Ornamental Nursery, Floriculture, and Turf Occupations for the Northeastern United States

PRINCIPAL INVESTIGATOR: Dr. Gene M. Love, Associate Professor, Department of Agricultural Education

INSTITUTION: The Pennsylvania State University, University Park, Pennsylvania

TOTAL FEDERAL FUNDS REQUESTED: $105,971

DURATION: Beginning, May 21, 1965. Ending, June 30, 1966

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TITLE: Experimental and Development Study of a Four Year Comprehensive Education Program

PRINCIPAL INVESTIGATOR: Mr. Lloyd G. Benham, High School Principal

INSTITUTION: Hudson Public Schools, Hudson, Ohio

FEDERAL FUNDS REQUESTED: $75,555

DURATION: Beginning, July 1, 1965. Ending, June 30, 1969

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TITLE: Identification of Occupational Clusters and the Development of Outlines for High School Training Courses

PRINCIPAL INVESTIGATOR: Dr. Donald Maley, Professor and Head Industrial Education Department

INSTITUTION: University of Maryland, College Park, Maryland

FEDERAL FUNDS REQUESTED: $48,572

DURATION: Beginning, September 1, 1965. Ending, August 31, 1966

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TITLE: Establishment of a Course of Study in American Industry as a Transitional Subject Between General and Vocational Education

PRINCIPAL INVESTIGATORS: Dr. Wesley L. Face, Chairman, Metals Department and Dr. Eugene R. F. Flug, Supervisor, On-Campus Student Teaching

INSTITUTION: Stout State University, Menomonie, Wisconsin

FEDERAL FUNDS REQUESTED: $202,786

DURATION: Beginning, June 1, 1965. Ending, June 30, 1970

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TITLE: An Industrial Arts Curriculum Project for the Junior High School

PRINCIPAL INVESTIGATOR: Dr. Edward R. Towers, Associate Professor, College of Education

INSTITUTION: The Ohio State University, Columbus, Ohio

FEDERAL FUNDS REQUESTED: $126,420

DURATION: Beginning, June 1, 1965. Ending November 30, 1966

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TITLE: Experimentation with Computer-Assisted Instruction in Technical Education

PRINCIPAL INVESTIGATOR: Dr. Harold E. Mitzel, Professor of Psychology and Education, and Dr. George L. Brandon, Head, Department of Vocational Education

INSTITUTION: The Pennsylvania State University, University Park, Pennsylvania

FEDERAL FUNDS REQUESTED: $165,080

DURATION: Beginning June 1, 1965. Ending, May 31, 1969

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TITLE: Curriculum Development and Training Program for Food Service Employees

PRINCIPAL INVESTIGATORS: Dr. Marjorie M. McKinley, Head, Institution Management Department, and Dr. Hester Chadderdon, Professor, Home Economics Education Department

INSTITUTION: Iowa State University of Science and Technology, Ames

FEDERAL FUNDS REQUESTED: $37,600

DURATION: Beginning, September 1, 1965. Ending, August 31, 1968

TITLE: Developmental Program in Animal Science

PRINCIPAL INVESTIGATOR: Dr. W. S. Stone, Professor of Animal Science

INSTITUTION: State University of New York, Delhi, New York

FEDERAL FUNDS REQUESTED: $58,077

DURATION: Beginning, June 1, 1965. Ending, November 30, 1969

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TITLE: Approaches in Assessing Needs for, Content of, and Factors to Consider in Offering Home Economics Courses for Gainful Employment

PRINCIPAL INVESTIGATOR: Dr. June Cozine, Head, Home Economics Education

INSTITUTION: Oklahoma State University, Stillwater, Oklahoma

FEDERAL FUNDS REQUESTED: $6,772

DURATION: Beginning June 1, 1965. Ending December 31, 1965

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TITLE: Technical Training for Industrial Radiographers

PRINCIPAL INVESTIGATOR: Dr. H. D. Bearden, Director, Texas Engineering Extension Service

INSTITUTION: Texas A & M University, College Station, Texas

FEDERAL FUNDS REQUESTED: $67,001

DURATION: Beginning, June 1, 1965. Ending, August 31, 1966

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TITLE: A Proposal to Prepare Teachers and to Develop Instructional Materials for Food Service Occupations

PRINCIPAL INVESTIGATORS: Dr. Helen Hollandsworth, Associate Professor, Home Economics Education, and Mr. Henry Barbour, Director of Hotel, Restaurant and Institutional Management

INSTITUTION: Michigan State University, East Lansing, Michigan

FEDERAL FUNDS REQUESTED: $6,550

DURATION: Beginning, July 1, 1965. Ending, December 31, 1965

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TITLE: The Classification of Education Objectives in the Psychomotor Domain

PRINCIPAL INVESTIGATOR: Dr. Elizabeth Jane Simpson, Professor and Chairman, Division of Home Economics Education

INSTITUTION: University of Illinois, Urbana, Illinois

FEDERAL FUNDS REQUESTED: $9,000

DURATION: Beginning, June 1, 1965. Ending, May 31, 1966

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TITLE: A Pilot Project in Curriculum Development for Work Experience and "Occupations"

PRINCIPAL INVESTIGATOR: Marvin C. Groelle, Supervisor of Classes for the Mentally Retarded

INSTITUTION: Oakland Unified School District, Oakland, California

FEDERAL FUNDS REQUESTED: $7,034

DURATION: Beginning, July 1, 1965. Ending, July 31, 1966

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TITLE: The Development and Improvement of Directed Work-Experience Programs in Expanded Vocational Education Offerings in Agriculture at the Secondary School Level

PRINCIPAL INVESTIGATOR: Dr. Harold R. Cushman, Professor, Agricultural Education

INSTITUTION: Department of Rural Education, New York State College of Agriculture, Cornell University, Ithaca, New York

FEDERAL FUNDS REQUESTED: $39,418

DURATION: Beginning, October 1, 1965. Ending, January 31, 1968

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TITLE: The Development of a Master Teacher Training Curriculum for Teachers of Occupational Level Training Programs

PRINCIPAL INVESTIGATOR: Dr. John L. O'Brian, Graduate School of Education, Department of Vocational-Technical Education

INSTITUTION: Rutgers, The State University, New Brunswick, N. J.

FEDERAL FUNDS REQUESTED: $46,001

DURATION: Beginning, October 1, 1965. Ending, May 31, 1966

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TITLE: A Competency Pattern Approach to Curriculum Construction in Distributive Teacher Education

PRINCIPAL INVESTIGATOR: Mrs. Lucy C. Crawford, Associate Professor of Vocational Education

INSTITUTION: Virginia Polytechnic Institute, Blacksburg, Virginia

FEDERAL FUNDS REQUESTED: $48,026

DURATION: Beginning, September 1, 1965. Ending, November 30, 1967

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TITLE: A Study of the Aviation Mechanics Occupation

PRINCIPAL INVESTIGATOR: Dr. David Allen

INSTITUTION: Division of Vocational Education, University of California, Los Angeles, California

FEDERAL FUNDS REQUESTED: $195,990

DURATION: Beginning, October 1, 1965. Ending, March 31, 1967

TITLE: Scientific Secretary Training Program Development

PRINCIPAL INVESTIGATOR: John H. Swenson, Director, Bureau of Class Instruction

INSTITUTION: University of Colorado, Boulder, Colorado

FEDERAL FUNDS REQUESTED: $79,920

DURATION: Beginning, September 20, 1965. Ending, September 18, 1967

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TITLE: Curriculum Development Programs for Preschool Teacher Aides

PRINCIPAL INVESTIGATOR: Mrs. Naomi LeB. Naylor, Preschool Consultant Delinquency Study Project

INSTITUTION: Southern Illinois University, Edwardsville, Illinois

FEDERAL FUNDS REQUESTED: $76,973

DURATION: Beginning, November 1, 1965. Ending, April 30, 1967

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TITLE: The Development and Evaluation of Educational Systems Packages for the Occupational Training of Depressed Area Students in Five Basic Subject Areas

PRINCIPAL INVESTIGATOR: Don D. Bushnell

INSTITUTION: Brooks, Foundation, Santa Barbara, California

FEDERAL FUNDS REQUESTED: $38,990

DURATION: Beginning, September 1, 1965. Ending, February 28, 1966

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TITLE: Identification of Knowledge in the Field of Child Development Important for Mothers and Child Care Workers to Know

PRINCIPAL INVESTIGATOR: Mrs. Ruth E. Whitmarsh and Dr. Elizabeth J. Simpson, Vocational and Technical Education, College of Education

INSTITUTION: University of Illinois, Urbana, Illinois

FEDERAL FUNDS REQUESTED: $8,970

DURATION: Beginning, December 1, 1965. Ending, August 31, 1966

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TITLE: A Curriculum Development Program for a Paramedical Education Center

PRINCIPAL INVESTIGATOR: Bill J. Fullerton, Professor and Chairman of Department of Secondary Education

INSTITUTION: Arizona State University, Tempe, Arizona

FEDERAL FUNDS REQUESTED: $8,471

DURATION: Beginning, November 15, 1965. Ending, May 14, 1966

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TITLE: Effects of Field and Job Orientated Technical Retraining on Manpower Utilization of the Unemployed

PRINCIPAL INVESTIGATOR: Dr. David C. Bjorkquist

INSTITUTION: The Pennsylvania State University, University Park, Pennsylvania

FEDERAL FUNDS REQUESTED: $138,818

DURATION: Beginning, February 1, 1964. Ending, June 30, 1968.

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TITLE: A Study of Recommendations for Technical Education Curricula

PRINCIPAL INVESTIGATOR: Joseph P. Arnold, Assistant Professor of Technical and Applied Arts

INSTITUTION: Purdue University, Lafayette, Indiana

FEDERAL FUNDS REQUESTED: $5,698

DURATION: Beginning, July 1, 1965. Ending, December 31, 1965

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TITLE: An Investigation of Changes in Gregg Shorthand

PRINCIPAL INVESTIGATOR: Mrs. Ruth H. Gaffga, New York University, School of Education

INSTITUTION: New York University, New York, New York

FEDERAL FUNDS REQUESTED: $6,734

DURATION: Beginning, June 1, 1965. Ending, May 31, 1966

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TITLE: Development and Evaluation of a One-Semester Stenography Course: Phase One of a Two-Phase Program

PRINCIPAL INVESTIGATOR: Patsy McMurtrie, San Francisco State College

INSTITUTION: San Francisco State College, San Francisco, California

FEDERAL FUNDS REQUESTED: $9,000

DURATION: Beginning, June 1, 1965. Ending, May 31, 1966

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TITLE: To Develop a Program in Salesmanship for Testing the Use of Program Text-Books in Adult Education

PRINCIPAL INVESTIGATOR: Raymond B. Russell

INSTITUTION: Kansas State Teachers College, Emporia, Kansas

FEDERAL FUNDS REQUESTED: $6,653

DURATION: Beginning, September 1, 1965. Ending, January 31, 1966

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TITLE: The Scoial Restoration of Young Offenders

PRINCIPAL INVESTIGATORS: Dr. Wallace Mandell and Dr. Clyde E. Sullivan

INSTITUTION: Staten Island Mental Health Society

FEDERAL FUNDS REQUESTED: $362,991

DURATION: Beginning, June 1, 1965. Ending, May 31, 1966

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TITLE: Preparation of the Disadvantaged for Vocational Training

PRINCIPAL INVESTIGATOR: C. R. Jeffery

INSTITUTION: Washington School of Psychiatry, Washington, D. C.

FEDERAL FUNDS REQUESTED: $157,488

DURATION: September 1, 1965. Ending, August 31, 1967

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TITLE: The Identification of Common Occupational Skills

PRINCIPAL INVESTIGATOR: Douglas D. Sjogren, Associate Professor and Director of Research

INSTITUTION: Colorado State University

FEDERAL FUNDS REQUESTED: $65,560

DURATION: September, 1965. Ending, February, 1967

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TITLE: Development of Training Programs for Youth Preparing to Enter Non-Farm Jobs

PRINCIPAL INVESTIGATOR: Dr. C. M. Curtis, Associate Professor of Vocational Agricultural Education, Department of Vocational Agricultural Education

INSTITUTION: College of Agriculture, Louisiana State University, Baton Rouge, Louisiana

FEDERAL FUNDS REQUESTED: $52,915

DURATION: Beginning, June 1, 1965. Ending, May 31, 1967

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TITLE: Development of Curriculum Guide in Electro-Mechanical Technology

PRINCIPAL INVESTIGATOR: Dr. Maurice W. Roney, Director, School of Industrial Education

INSTITUTION: Oklahoma State University, Stillwater, Oklahoma

FEDERAL FUNDS REQUESTED: $55,428

DURATION: Beginning, October 1, 1965. Ending, September 31, 1966

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TITLE: The Establishing of a Comprehensive Health Institute in Pittsburgh, Pennsylvania

PRINCIPAL INVESTIGATOR: Dr. Louis J. Kishkunas, Assistant Superintendent for Occupational, Vocational, and Technical Education

INSTITUTION: Pittsburgh, Pennsylvania Board of Education

FEDERAL FUNDS REQUESTED: $98,875

DURATION: Beginning, April 1, 1965. Ending, June 30, 1966

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TITLE: Development of a Curriculum Guide in Bio-Medical Equipment Technology

PRINCIPAL INVESTIGATOR: Mr. Austin E. Fribance, Professor of Mechanical Engineering, Rochester Institute of Technology

INSTITUTION: Technical Education Research Center, Cambridge, Massachusetts

FEDERAL FUNDS REQUESTED: $45,900

DURATION: Beginning, September 1, 1965. Ending, February 28, 1967

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TRAINING PRIORITIES

SEMINARS, INSTITUTES, AND WORKSHOPS

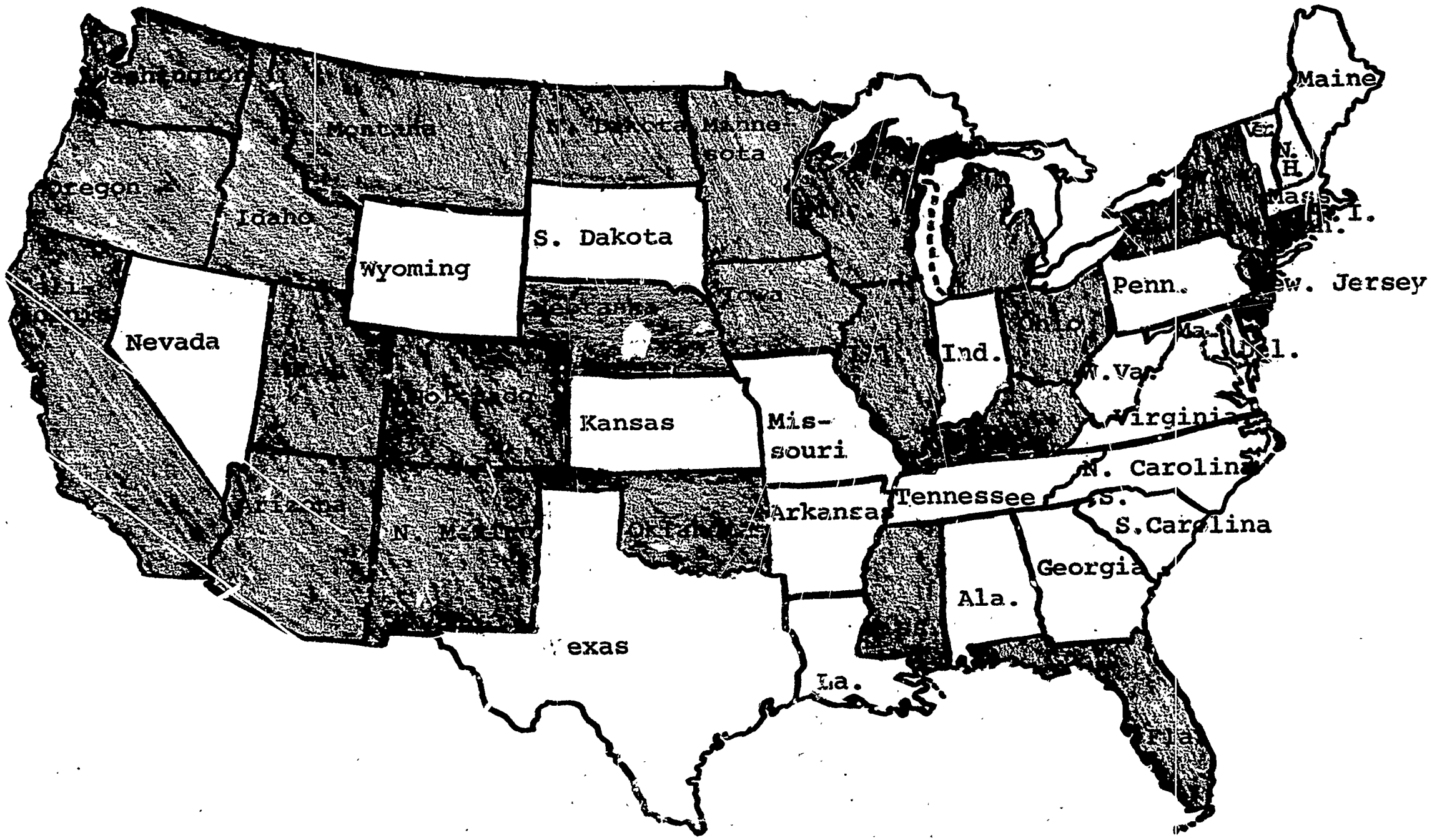
DAVR - PY 66

1. State and Local Leadership Development
2. Administration and Operation of Programs for the Disadvantaged
3. Teacher Educators - Instructional Media
4. Home Economics Teachers - Programs for Wage-earning Occupations
5. Administrators and Counselors - Post-secondary Programs
6. Teaching Psychiatric Nursing
7. Fluid-power Teachers
8. Vocational Guidance and Counseling Personnel
9. Teachers of Numerical Control
10. Office Education Teachers and Teacher Educators
11. State and Local Technical Education Administrators
12. Teachers of Instrumentation
13. Teachers of Agriculture Technologies
14. Dental Assistant Instructors
15. Home Economics Teachers - Preparation for Employment in Group Care and Guidance of Children

PRIORITY AREAS FOR 1966 AND 1967

1. Program Evaluation
2. Curriculum Experimentation and Development
3. Personal and Social Significance of Work
4. Personnel Recruitment and Development
5. Program Organization and Administration
6. Adult Education
7. Occupational and Other Manpower Information and Career Choice Processes

LOCATION OF THE 24 STATE RESEARCH COORDINATING UNITS



Shaded states indicate Research Coordinating Units

DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY TYPES

(N=166)

	N	%
Research	53	32
Experimental, Developmental, and Pilot	48	29
Training	40	24
Centers	2	1
Research Coordinating Units	24	14

DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY INSTITUTIONS

(N=166)

	N	%
Colleges and Universities	120	72
State Education Departments	26	16
Local Education Agencies	8	5
Private Organizations	12	7

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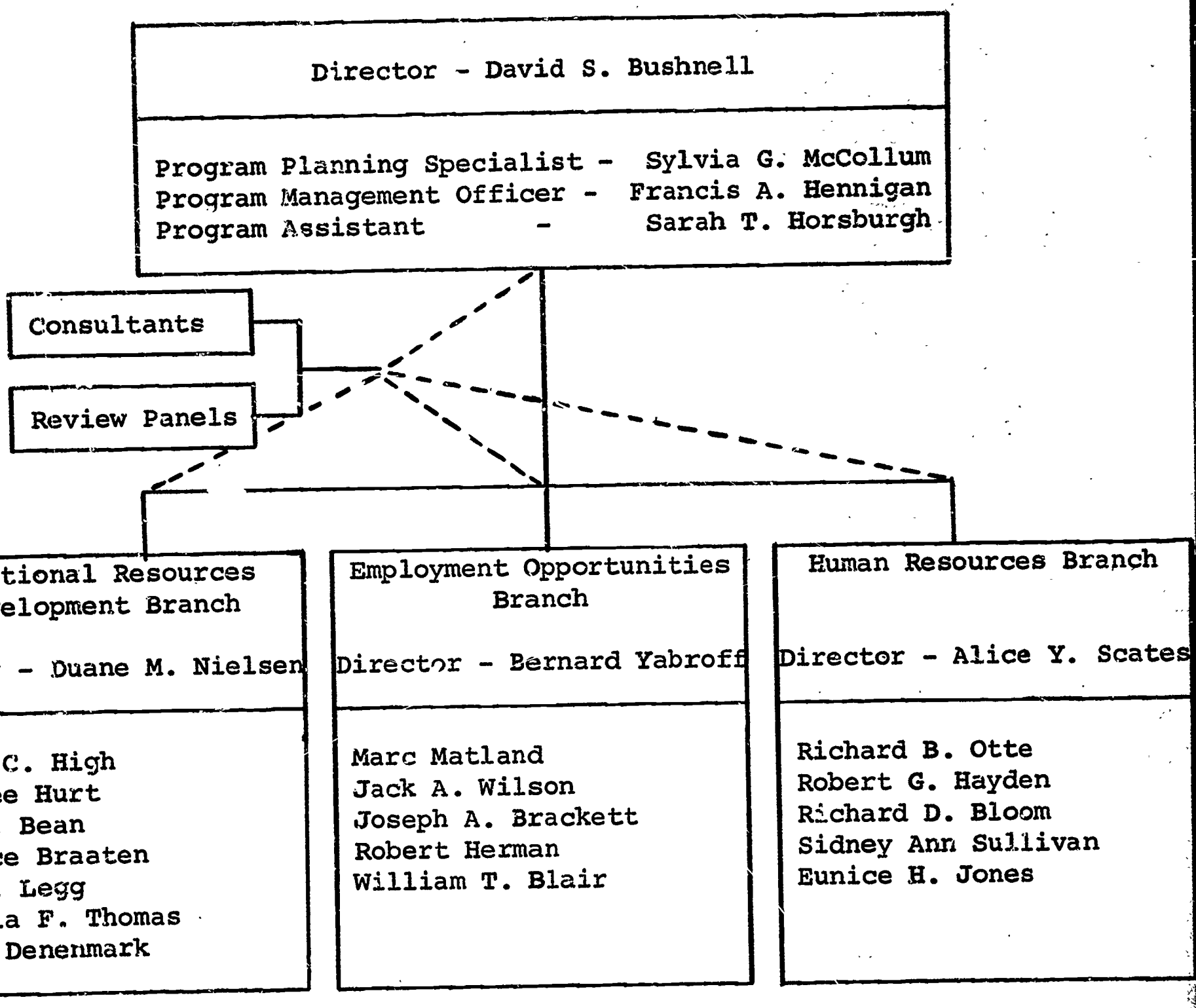

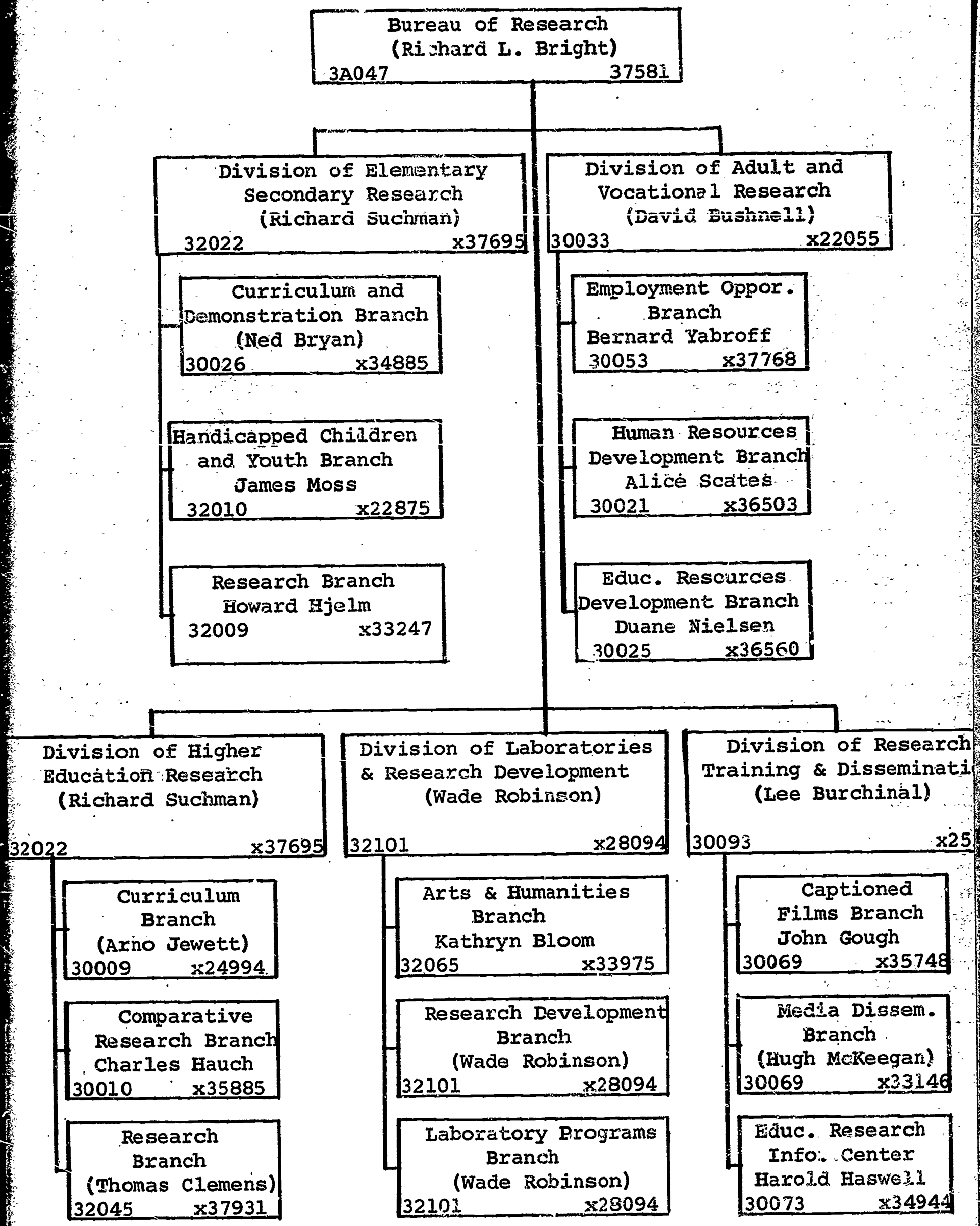
Bureau of Research
(Richard L. Bright)
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Division of Elementary Secondary Research
(Richard Suchman)
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Division of Adult and Vocational Research
(David Bushnell)
30033 x22055
Curriculum and Demonstration Branch
(Ned Bryan)
30026 x34885
Handicapped Children and Youth Branch
James Moss
32010 x22875
Research Branch
Howard Hjelm
32009 x33247
Employment Oppor. Branch
Bernard Yabroff
30053 x37768
Human Resources Development Branch
Alice Scates
30021 x36503
Educ. Resources Development Branch
Duane Nielsen
30025 x36560
Division of Higher Education Research
(Richard Suchman)
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Division of Laboratories & Research Development
(Wade Robinson)
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Division of Research Training & Disseminati
(Lee Burchinal)
30093 x25
Curriculum Branch
(Arno Jewett)
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Comparative Research Branch
Charles Hauch
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Research Branch
(Thomas Clemens)
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Arts & Humanities Branch
Kathryn Bloom
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Research Development Branch
(Wade Robinson)
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Laboratory Programs Branch
(Wade Robinson)
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Captioned Films Branch
John Gough
30069 x35748
Media Dissem. Branch
(Hugh McKeegan)
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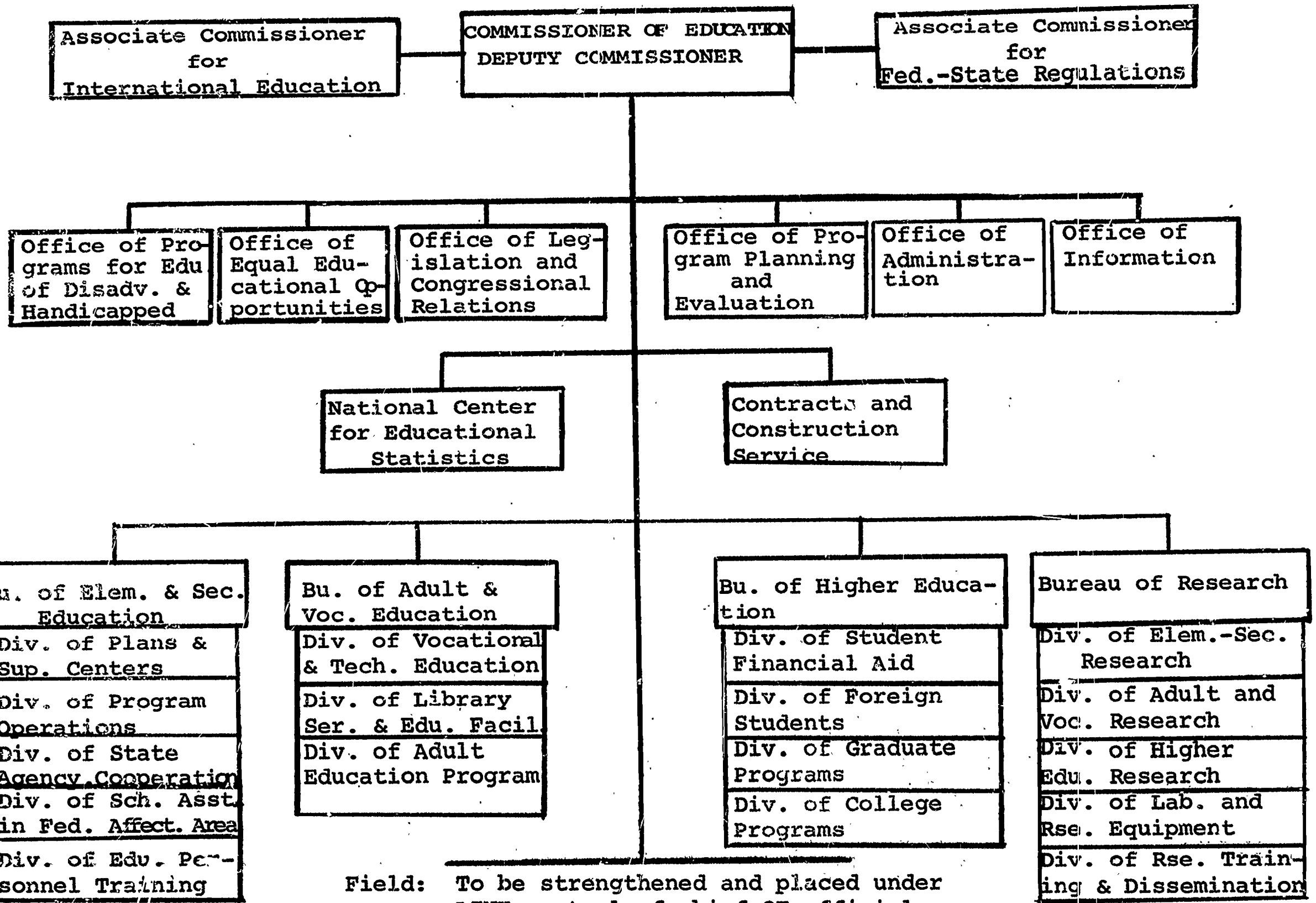
Educ. Research Info. Center
Harold Haswell
30073 x34944

ORGANIZATIONAL CHART OF U. S. OFFICE OF EDUCATION



Field: To be strengthened and placed under LINE control of chief OE official in each region.

July 1965

STATISTICAL MODELS IN CURRICULUM DEVELOPMENT STUDIES

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INTRODUCTION

There are many problems in the construction, development, assesment, and modification of technical and vocational educational curriculums. I would like to discuss some of these activities, particularly with regard to the development of programs, and point out the role of the various statistical methods and models in these activities. From time to time I shall make references also to some of my own work, much of which was conducted at a technical school operated by a branch of our military services.

COURSE DEVELOPMENT

One of the initial activities in developing a technical or vocational educational curriculum is the selection of material for courses. Usually this is done by job sampling in the technical area for which the training is being planned. Another useful technique in relation to this activity is the Critical Incident Technique developed and published by Dr. John Flanagan in the Psychological Bulletin in 1954. His Critical Incident Technique, as applied to curriculum building, involves the solicitation of opinions from experts regarding the various behavioral performance tasks related to the job, and the definition of these activities in such a way that they can be incorporated directly into the curriculum. Particular attention is given to the special abilities and the uses of tools and materials that will be required on the job. I might mention also that in designing material and courses in the curriculum we should be on the lookout for the use of teaching machine devices, such as the Skinnerian type or the Crowder Scramble Book type. The Scramble Book is particularly interesting and we tried it at the technical school in several topics, such as Algebra and trouble shooting equipment. Basically, it involves the presentation of material in terms of items. A student reads an item, selects from a multiple choice list what he thinks to be the correct answer, and goes to the page designated by that answer. On the designated page, if the answer is right he is told it is right and given another question of the multiple choice type. If his answer was wrong, he is told why it

was wrong and then directed back to the page where the question was presented originally to select another alternate answer. The Scramble Book proved to be a very good teaching device, but we received complaints from the field. Many of our technicians who went through the school preferred to use the text they used in schools for later work, such as trouble shooting equipment or for reading wire diagrams. The Scramble Book device, although it was an excellent teaching tool, is a very, very poor reference book. In any case, in the initial construction of courses, selection of material, and similar activities assoicated with the development of curriculums, most of the data that is acquired will be of the type where we are getting opinions from people in terms of what is most important, where it should go, and how it should be presented, and the statistical methods and models associated with crude data, such as chi square, are likely to be most helpful.

SELECTION DEVICES

After we decided on the material that goes into a course, what kinds of things we are going to teach the students, then we have the problem of selection devices. What kinds of aptitudes are important? What kinds of special things should the student know before he enters the school? Will he have to be reading at a given level? In any case, we may have to build a special kind of test as a selection device. Our devices may be multiple choice items, categorical items, biographical items of one type or another, variables in which the applicants must have a minimum score or similar other criteria. For test variables we select should have a specified reliability and we should validate the procedures to insure that students who are so selected by the criteria actually perform well in the course or in the whole curriculum. Most of the statistical methods and models useful in this phase of course development are of the correlational type.

COURSE EXAMINATIONS

The problem of building course examinations is always a critical one and one where we can use statistical models to a great advantage. Item characteristics, such as difficulty and discrimination levels, will be important in terms of building up good test reliabilities. If the test is made up of multiple choice items with distractors for each item, then the distractors should be made as equally attractive as possible to examinees

who do not know the correct answer to the item. Often it is helpful to build up libraries of items with known characteristics and use these to make up tests in the various parts of the courses. Chi square is useful for examining the distribution of responses across distractors; point biserial correlations, for inter-item correlations; tetrachoris correlations, for item-total score correlations; and the Cronbach's coefficient alpha, or other maximum likelihood estimators, for total test reliability.

COURSE EVALUATION

The problem of course evaluation is also a critical one and one that is not examined critically enough in some technical areas. In general, my own preference is for the construction of a performance criteria. That is to say, people who are trained in a technical or vocational field should be able to perform certain critical tasks which might, in fact, be gleaned from the Flanagan Critical Incident Technique itself. Criteria levels for these performance tasks should be set and should be compared with the grades and performance criteria. It is also helpful to obtain ratings by immediate superiors for students who have graduated from the course and been in the field for, say, a period of six months; these ratings can be compared with the previously obtained data.

GENERAL REMARKS AND SUMMARY

Aside from the activities that go into the various phases in the development and evaluation of technical and vocational curriculums, there are other kinds of considerations where statistics might prove helpful. The general sequence of sub-courses in the curriculum may be of paramount importance, and here there are several kinds of statistical models that might serve to guide us in the placement of courses. The Simplex model is one of the statistical models, for instance, that might shed some light as to the best sequence. Basically, the model is a correlational one. Consider, for instance, five sub-courses in their natural sequence -- one, two, three, four and five -- and consider the correlations between examinations in the various sub-courses. The logic of the model states that sub-course two will build on sub-course one, sub-course three will build on sub-course two, and so on; sub-course one, then, plays more of a part in sub-course two than it does in three, but more in three than it does in four. The correlation, then, between course examinations

should be higher for one and two than it is for one and three, and higher for one and three than it is for one and four. If the sub-course examination correlations are placed in a matrix in the natural order of the sub-courses, then the correlations should decrease as they go away from the diagonal. The Simplex model has a certain intuitive appeal, but whether or not it is the best sequence has not been studied very vigorously.

Statistical models in methodology are helpful further in various kinds of general and operational research in technical and vocational curriculums. I refer, for example, to another research study carried out at the aforementioned technical school. The main objectives of the school were to provide technical and vocational training for missile technicans for operation and maintenance activities in the various systems. The main technician program lasted 52 weeks. The school personnel complained that they were losing as much as 25% of their trainee population during the first three months of training. The problem was not only irritating, but costly. A general examination of the curriculum indicated that studies in the first 13 weeks of the course were quite academic in nature, and a factor analytic study on a similar but much shorter course tended to corroborate this conclusion. In 1961, I co-authored a factor analytic study in the Journal of Experimental Education showing that initial examination grades were highly related to academic abilities while subsequent grades were highly related to technical abilities. That is, the first three months involved a review of mathematics, physics, electronics, and mechanics, but the main part of the program, training for the technical activity in the missile systems, came in the last 39 weeks. There is not much to indicate whether or not students who flunked out could have done well later in the course. Or, for that matter, could have been good technicains. But nevertheless the possibility exists. Circumstances of this nature should be examined quite carefully by anyone planning vocational and technical educational curriculum. I am not questioning the need or the efficacy for such academic review prior to entering technical courses, but whether or not students should be flunked out because they fail in the academic aspects remains to be seen. In any case, correlational models, such as the factor analytic one, will prove quite helpful for the study of such courses.

THE NEW MATHEMATICS: A PATTERN FOR CURRICULUM REFORM

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I. INTRODUCTION

Judging solely on the basis of frequency of mention in the various forms of popular mass media one would still be lead to the conclusion that something is happening in the teaching of mathematics in the elementary and secondary schools of this nation. When "new math" becomes the topic of a series of Peanuts cartoon strips; the basic plot motive for a TV program; or the basis for, sometimes crude jokes; then one must admit that even the layman is beginning to feel the impact of the past decade of intensive revision in pre-college curricula.

That which the layman suddenly recognizes as happening in public education usually has been known to professional educators for a much longer period. So is it true with the changes in the mathematics curricula. Over ten years ago high school mathematics teachers suddenly discovered "new wealth" in the form of summer study fully subsidized by the National Science Foundation (NSF). Occasionally a mathematics faculty member turned up missing for a year only to be found in an academic year institute, again financed by NSF.

Texts began to appear around 1960 with the word "modern" appended to their title in some way. Paper bound "experimental units" appeared in some elementary classrooms around the country. Conversations about elementary children studying geometry, or high school students studying the calculus were overheard in the faculty lounge.

New terms such as "sets", "open sentences", "patterns" and the like began to creep into the vocabulary of previously non-mathematically oriented teachers. Some, unacquainted with these new and strange ideas, may have even used a few descriptive words not properly repeated in a document such as this.

So, even the most disinterested teacher must have been aware of the changes and the attendant consequences of the growth of the so-called "new math". It now seems appropriate to turn backwards and review how and why this veritable revolution in school mathematics took place; to examine the present state of

affairs; and to venture a peek into the future.

Perhaps in so doing the reader whose major interest lies in some other field of study in public school education will find an analogy that will serve some useful purpose. It is not at all unrealistic to expect that the national concern for improvement in the programs of mathematics and science will continue to broaden to include other areas of importance to the welfare of the citizenry. Surely, these new areas will include preparation for those vocations requiring less than a college degree. The national need for competent technicians and craftsmen grows more desperate by the hour, or so it seems to this author who is also a consumer.

However, before proceeding, there must be here injected a parenthetical note. The terms "new math" or "modern math" are so easily misunderstood that they must be defined. What is "new" or "modern" is, of course, a matter of relationship. For example, how old is an "antique"? If "new" is limited to this century, then there is virtually no "new" mathematics being taught in the public schools today. Almost all of the mathematics included in contemporary programs was discovered or devised at least prior to 1900.

What is new then is not the mathematics itself but the fact that its study now occurs at a pre-college level. The "new math" may therefore be described as a re-selection of topics, concepts, and notions in relationship to the time and place of introduction. Furthermore, what is "new" is the method of presentation and the description of objectives to be accomplished.

The objectives of new mathematics programs are perhaps best summarized by Dr. Max Beberman who asked (of the UICSM project) "can able mathematicians together with skillful teachers develop materials of instructi n and train high school teachers in their use so that the products of the program are enthusiastic students who understand mathematics?"[1] Obviously, the key words which certainly must deviate from older, moretraditional programs, are <u>enthusiastic</u> and <u>understand</u>.

II. THE CAUSES

In the very early 1950's, the typical mathematics program, grades 1-12, was not unlike the program of the forties, the thirties, or even earlier. By the time he finished, the best high school graduate would have, at most, completed six years of

arithmetic, two years of general math (whatever that was), two years of algebra, one year of plane geometry and one-half year each of solid geometry and of trigonometry.

Throughout these twelve years the student was taught rules, sometimes to rhyme, but with little reason, for getting answers. Enthusiasm for and understanding of the nature of mathematics was purely accidental in most cases.

What then happened to change all this? Contrary to popular opinion it was not solely the epic event of the Russina launch of Sputnik I in 1957 nor the near panic of embarrassment that followed. It must be admitted, however, that this did help in certain ways as shall be pointed out later.

Professor G. Bailey Price attributes the change to three causes: (1) research in mathematics, (2) the rise of automation, and (3) the advent of the automatic digital computing machines.[6] In 1961, Price said of the technological revolution, ". . .new mathematics (must) be taught in our schools,. . .the emphasis shifted in the teaching of many subjects already included in our mathematical courses."[6]

The reader is well aware of the impace on our society of casues two and three cited above. However, it may be interesting to note, in reference, to cause one, that sine 1900 membership in the several professional organizations of mathematicians has multiplied by more than 30 times. There are today nearly 5,000 people holding doctorates in mathematics. In 1962 there were three times as many mathematics majors in college as there were in 1956.[2] And, although it cannot be accurately documented, many claim that more mathematics has been developed in the past fifty years than in all the years before!

In addition to those above, Dr. John Kinsella has listed the following as among the important causes for change:

(1) A growing concern about the neglect of the superior student;

(2) An awareness of the great technological and mathematical progress of the U.S.S.R.;

(3) The huge financial support given by the federal government and large foundations to the improvement of mathematics education;

(4) The emergence of vigorous and imaginative leadership in mathematics education in various universities and professional organizations.[5]

It is true that many isolated movements to reorganize the mathematics curriculum did begin before Sputnik I. It is equally true that the rapid expansion of the field of mathematics and the simultaneous explosive growth in modern technology proceeded in great measure independently of the race for space. However, this author believes that the tremendous financial support from both government and private foundations would have been much slower in coming if it had not been for Sputnik I and the reactions it created. The various efforts for change would likely have continued without financial aid but they would, of necessity, have been on a far less grand scale. And so, while it cannot be truely regarded as a basic motivational cause, the effects of the millions of dollars provided by the United States government (through the NSF, USOE, NDEA, etc.), the Ford Foundation, the Carnegie Foundation, and others, can never be underestimated.

III. THE REACTIONS

It will not serve the purpose of this paper to outline in detail the work of each of the major mathematics curriculum revision projects. Rather the reader is referred to the items in the bibliography if his interest in particular projects is not satisfied by the following generalizations.

The projects that have had the most impace are undoubtably the University of Illinois Committee on School Mathematics (U.I.C.S.M.) and the School Mathematics Study Group (S.M.S.G.). The former, perhaps because it was one of the first (1952) and the latter, begun in 1957-58, because it is the largest and most generously funded. Others that must be mentioned are: The University of Maryland Mathematics Project, the Ball State Teachers College Experimental Program, the Commission on Mathematics of the College Entrance Examination Board.

The UICSM project is of interest here in that its organizational plan is located within the general confines of a university setting. The project is directed by Beberman, a mamber of the College of Education faculty. Associated with him is a mathematician (Vaughn) and two teacher-educators (Hendrix and McCoy). Earlier in the project others contributed to the project in various ways.[1]

The text materials were written by Beberman and Vaughn, then taught by Beberman in the University School (the laboratory school of the University of Illinois). These text materials were produced in mimeographed form and loose-leaf bound in order to facilitate the inevitable subsequent revision.

After several years of writing, testing, re-writing, a teachers edition of the final forms was produced. This too was mimeographed and loose-leaf bound with the teacher's notes printed on a different color paper and inserted at the appropriate place. Again, the intent to continue revision was in evidence.

Prospective teachers from the public schools were brought to the University of Illinois campus where they were instructed in the use of these new materials before introducing them to the students in the classroom. In the early stages Beberman felt so strongly that the materials could be properly presented only by those who had received the special preparation for doing so that classroom sets of the texts were unavailable to those who had not participated in the teacher training program. However, recently the texts were made available to any school by commercial publication.

The influence of the UICSM choice of topics and the imaginative modes of presentation can certainly be seen in the work of virtually every other project that followed.

The SMSG program, directed by Professor E. G. Beagle, differed from the UICSM, in that the total writing team originally consisted of approximately 100 mathematicians and 100 public school teachers. In the first writing year (1959) these persons were divided into smaller teams with equal representation from both groups. Each team then write text materials on a given topic for a given grade.[7]

During the school year 1959-60, these texts were tested in some sixty school systems. The following year a smaller team revised the materials according to what had been learned during the trial period.

It should be noted here that the original objective of SMSG was to prepare secondary school curriculum materials for the superior student. Since then SMSG has also given considerable attention to the demands of the less able students and to the elementary school curriculum as well.

The other activities mentioned above have followed one of the two basic patterns just described. In general, the differ-

ences are in matters of content, teaching technique, or size, rather than in method of procedure.

Careful attention must be given to the essentials of the various curricula movements. They are:

(1) A combination of the talents of the educator and the mathematician to produce material that is mathematically correct and pedagogically sound.

(2) The extensive testing of the materials produced and the subsequent revision in light of the testing results.

(3) The preparation of materials for the teacher who is to present these new materials or the conducting of special teacher education programs.

(4) The availability of sufficient funds to cover the costs of salaries, materials, expenses, etc.

(5) The close cooperation of public schools and universities to make available the facilities and talents.

(6) A commitment to change for improvement.

IV. THE RESULTS

It was inevitable that the rapid changes in curriculum would create considerable criticism. No critic has been more severe not more articulate than Professor Morris Klein.[3] Klein's attack has been directed primarily toward the SMSG, accusing the group of being "wholly misguided", attempting to replace the "fruitful and rich essence of mathematics" with "sterile, peripheral, pedantic details".

Certainly, Klein's comments were overdrawn and overstated. However, some of the early pioneers have privately observed that perhaps they did go a bit too far. But without going <u>too</u> far, how does one know how far to go?

The critical remarks of parents, less articulate than Klein's but no less devoid of emotion, reveal more about the knowledge and understanding of the parent than they do about the new programs. It is true that the ideas and materials are unfamiliar to many parents and therefore, they are unable to "help"

their child with his homework. This state of affairs only serves to indicate that the schools must realize and attempt to solve the problem of communicating with parents.

The most real source of difficulty lies not in the new materials nor in the abilities of the children to master them. Rather, it lies in the inadequate supply of sufficiently well prepared teachers to teach the materials. Unfortunately, colleges are not producing nearly enough new teachers to meet the demands. Experienced teachers whose knowledge of mathematics is itself traditional have as much difficulty with the new materials as do the lay parents. This problem will gradually be resolved through more in-service education, better teacher guides, and, of course, the passage of enough time to permit a background of new experience.

However, one does not evaluate the total worth of any activity on the basis of superficial criticism, regardless of how well intentioned it may be. Instead, the evaluator asks "does the activity produce results that were not previously being realized?"

In the case of the new mathematics programs, after a decade of carefully conceived experimentation and research, the answer must be a resounding "Yes!". Again, the reader is reminded of the phenominal increase in collegiate study of mathematics previously cited. One must also consider that the past few years have seen a constant revision of collegiate mathematics programs to meet the demands of entering freshmen who already know what was once included.

Countless studies, large and small, have conclusively established that the products of the new mathematics programs still maintain as high a level of skill attainment as under the traditional programs. In addition, today's high school graduate who successfully completed an extensive study within the new programs has acquired a far greater grasp of basic concepts in mathematics than did the graduate of twenty years ago.

In summary, the new mathematics programs <u>are</u> creating enthusiasm for mathematics, and <u>are</u> building a considerable understanding of the nature of mathematics, without sacrifice of skill attainment.

V. THE NEXT STEP

If one is to believe that the predictions outlined in Goals for School Mathematics, commonly referred to as "The Cambridge Report"[4], will be ultimately realized then the public school graduate of 1990 will have studied what today's college junior has encountered. Even more amazing is that some leaders in mathematics feel that the Cambridge Report is not bold enough!

It now appears axiomatic to say that educators have no true notion of what the limits of learning are; indeed, even if they exist. Apparently questions of what a given child at a given age can learn are hardly worth asking. What does seem reasonable is to ask what is appropriate for a given child to learn; how best to use the limited time devoted to learning.

Thus, the future of curriculum design, whether in mathematics or in some other field lies in the hands of competent educational researchers. They must ask good questions, discover valid answers, then "spread the gospel" through publication.

Mathematics continues to grow at an ever increasing rate. Children continue to learn despite all efforts to prevent it. Educators have no choice but to teach; to teach as well as they can, to choose wisely what is taught; to experiment, revise, and experiment again.

BIBLIOGRAPHY

1. Beberman, Max. An Emerging Program of Secondary School Mathematics. Cambridge, Mass.: Harvard University Press, 1958.

2. Courant, Richard. "Mathematics in the Modern World", Scientific American, XXIII (September, 1964), Pp. 41-49.

   This article, as well as the entire issue, is one of the finest resume's of contemporary mathematics yet published. Even the most mathematically naive reader will find much of interest.

3. DeMott, Benjamin. "The Math Wars", The New Curricula, Robert Heath, editor, New York: Harper and Row, 1964. Pp. 54-67.

This book contains 14 essays on all phases of the "new" movements in public school curricula. Of especial interest are the first five.

4. Goals for School Mathematics: The Report of the Cambridge Conference on School Mathematics. Boston: Houghton Mifflin Company, 1963.

A 120 page paper bound book, this publication provides the most provocative predictions of the future in mathematics education. Included are several items of general interest in curriculum improvement.

5. Kinsella, John J. Secondary School Mathematics. New York: The Center for Applied Research in Education, Inc., 1965.

An excellent review of the work in mathematics education prior to and since 1950. Of particular interest is Chapter IV, "The Teaching of Secondary School Mathematics".

6. Price, G. Bailey. "Progress in Mathematics and Its Implications for the Schools", The Revolution in School Mathematics. Washington, D. C.: National Council of Teachers of Mathematics, 1961, pp. 1-14.

This is only one of several articles in the pamphlet. All are excellent reviews of "why?", "how?" and"what happens next?" A series of questions and answers about the "new mathematics" are especially helpful.

7. Wooton, William. "The History and Status of the School Mathematics Study Group", New Curricula, Robert Heath, editor. New York: Harper and Row, 1964. Pp. 35-53.

CURRICULUM DEVELOPMENT AND EVALUATION IN ENGLISH

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The subject upon which I have been asked to talk is "Curriculum Development and Evaluation in English." The word development implies that something is, that its status is definable, and that evidence of change is recognizable. Curriculum development in English is, at the present time, one of the major movements on the educational scene. When anyone becomes deeply involved in the process of development or revision of an English curriculum, he realizes that the teaching of English is in something of a state of confusion. It is not, however, the confusion arising from indifference or ignorance on the part of those who have been responsible for its growth but rather from its relation to the overwhelmingly complex forces that are at work to reshape American education. The issues are not simple, the time for decisions is limited, and the gap between the present and the immediate future is both deep and wide. Our concern is not with rearranging bits and pieces of the curriculum, of deciding whether the predicate nominative should be taught in the sixth grade instead of the seventh grade or whether seniors should be allowed to make book reports on Treasure Island. The demands are for a new design that will show a unity, a balance, and a strength that is not now present.

BACKGROUND OF DEVELOPMENT OF AIMS IN TEACHING ENGLISH

Demands for change in curricula are ever present because curricula are sensitive to existing social conditions and to the state of knowledge. There has never been a time when some group was not agitating for change to bring the curriculum more nearly in line with the needs of students.

English as a school subject is a comparatively new subject; it did not attain respectable status until about 1900. In fact, in 1899 the Committee on College Entrance Requirements recommended that secondary schools devote four periods a week for four years to the study of English with "one-half of this time to be devoted to the department of literature" and that the other half be devoted to composition. Five days a week were not allowed because many educators thought that English did not provide sufficient "Developing power" to warrant as much time as major courses

such as Latin and mathematics.[1]

In 1874, Harvard required each candidate for admission "to write a short English Composition, correct in spelling, punctuation, grammar, and expression, the subject to be taken from such works of standard authors as shall be announced from time to time."[2] From these "works of standard authors. . .announced from time to time" developed the literature programs devoted to classics such as Shakespeare's Julius Caesar and Macbeth, Scott's Ivanhoe, Eliot's Silas Marner, Dicken's Tale of Two Cities, Longfellow's Evangeline, and Coleridge's The Rime of the Ancient Mariner. Classics thus singled out by Harvard and later by the College Entrance Examination Board took on such an aura of importance that teachers, textbook publishers, and curriculum makers to this day feel slightly sinful if they choose substitutes. At any rate, the study of chosen classics was early established as the literature course. With this was also the study of English grammar described in terms of Latin grammar, and of formal rhetoric and composition.

The aim of these early programs was preparation for college, and it is not surprising that college entrance requirements should have strongly influenced the English curriculum in the common schools. The result, however, was rigidity in programs and frustration for teachers who were trying to prepare students who would rank high on college entrance examinations. Also soon after the turn of the century public education began to include more and more students who did not expect to go to college, and the programs did not seem suitable.

One of the first attempts to change the aims and content of English came in 1917 when a joint committee from the National Education Association and the newly formed National Council of Teachers of English prepared a report which stressed the importance of considering the pupils' daily experiences in the selection of the content of the English programs. They identified cultural, vocational, social, and ethical values as desirable outcomes of instruction in English. The report challenged the pattern of concentration on college preparation and pointed out that "the chief function of language is communication."[3]

World War I came and the impact of patriotic tension upon the English program resulted in a reinterpretation of aims. Charles R. Gaston, President of NCTE (1922), "defined two paramount aims in the teaching of English: development of the power of thought, and strengthening of the character of the students - both toward the ultimate goal of service to a democratic state." President Essie Chamberlain (1924) "suggested that we determine

the ideal qualities of the American citizen and then direct instruction in ethics and the training of thought toward these ends."[4]

The coming of the depression of the 1930's shifted attention to the practical.

> Two eloquent advocates of practical English at this time were Presidents [R. L.] Lyman (1931) and [Charles Swain] Thomas (1935). Lyman spoke of English as a "tool" subject for other studies in the curriculum and stated that a basic goal of English instruction is practical usefulness. "My plea for normalizing instruction is this: its disciplines, its subject matter, and pupils' experiences with it should be as intimately associated with life as possible." . . . Literature . . . should be treated "as the noble and profound application of ideas to life," President Thomas, commenting on the altered school population - the increasing proportion of students with reading and writing retardation, remarked, "I stand firmly upon the principle that the larger portion of our expended energies in English teaching must rest upon the broadly extended base of the practical, for it is there that we meet the workaday needs of every individual pupil."[5]

In 1929 the National Council of Teachers of English appointed a committee to build a course of study in English from kindergarten through graduate school. The committee, headed by W. Wilbur Hatfield, spent five years in this project and in 1935 published a report, An Experience Curriculum in English. The report was designed to show that English could be organized around strands of human experiences and that the total English program could be built upon the pupils' everyday language needs and experiences.

Before the experience curriculum had gained full recognition, the clouds of World War II were gathering and uncertainty, indecision, and reappraisal of the meaning of education disturbed the educational scene. Temporarily the emphasis in purposes for teaching English came from the emphasis upon the language arts (reading, writing, speaking, and listening) as "tools of democracy, the instruments by which it implements and perfects itself."

During World War II an English Commission was appointed through the National Council of Teachers of English to study the English curriculum from kindergarten through graduate school. The Commission concerned itself with articutating the program

from grade to grade and with meeting the needs of students by providing them with worthwhile experiences. The report of the Commission was planned in five volumes, the last of which was published in 1965.[6] Before the volumes were completed, however, the Sputnik incident affected educational thinking, and criticisms of the emphasis upon individual development through the language arts arose. The emphasis shifted from personal problems to deep scholarship for intellectual independence and for moral responsibility; the term language arts began to be replaced by English, especially in reference to the secondary school.

Thus, under the impact of two World Wars, a depression, a tremendous growth of school populations, and technological advances that put earth satellites in orbit, the basic aims of the teaching of English have shifted in several directions - from college preparation, to personal needs, to support of patriotic emphasis, to deep scholarship. For over a period of nearly seventy years the aims have maintained only a tenuous stability.

The lack of objectives for teaching English that are stable, fundamental, and generally accepted by all who teach English constitutes one of the majc problems in the development of English curricula. The task of clarifying the purposes and content of English for a constantly changing society is a never ending process. Each set of objectives is satisfactory for the time for which they are written, but before they can be implemented well enough to have a real effect in the classroom they are outdated and a new set is in the making. Perhaps we have been influenced too much by the predominant characteristics of each period in our changing society and have written objectives on the level of expediency without looking deeply enough to find the characteristics and needs of human beings that make possible the continuity and uniqueness of our society. Perhaps this is more than we can do; nevertheless, as we move into a new effort at curriculum revision in English, we are again required to try to determine the directions in which we expect to move and to state those directions in terms of what they mean to students.

The stating of objectives is one of the sic problems in the development of an English curriculum

THE NEED FOR CURRICULUM DEVELOPMENT

The present is another time of appraisal of the English curriculum. The need has been apparent for a long time for, in spite of all of the innovations that have come into the program

over the years, the critics of education continue to say that students read less well than we expect, write very poorly, spell incorrectly, and speak abominably. Sometimes the critics are harsh, but sometimes we who teach have something of the same feelings, certainly about some students. We do not always bring the student and our subject together in the most meaningful way. I well remember one of my students in high school who was strong in agriculture but not so strong in English. One day he was in the shop hammering out something on the anvil. He pounded away and then held his work up to admire it. He is reported to have remarked, "I don't give a damn about Shakespeare, but I can sure beat hell out of an anvil." When this was reported to me, I had a distinct feeling that he and I and the Bard had not made contact. Shakespeare and I had missed our chance.

This incident occurred in the 1940's, and I think that it is a fair estimate of the status of the teaching of English then and to some extent now. What was going on in the English classroom had become so academic that many students saw little relationship between the way language and literature were presented in the classroom and what they did with it in reality. The classroom and the everyday world were so far apart that they seemed to have almost no connection. The students spoke as the teacher required them to in class, but they knew that this was not the way people talked outside an English classroom; they read the classics that the English teacher required, but they did not read these or many other things outside the class; they wrote the compositions the teachers specified and hoped they could do them well enough to be able to find on their corrected papers at least an equal balance between their work and the red marks the teacher made.

As I say this I realize that there has always been a group of students who are oriented to and motivated by the academic presentation of language and literature, but in the public schools we are not concerned with one group only. It is our responsibility to teach the English language in all of its aspects to all students and through our teaching to enable students from kindergarten through grade twelve to gain control of the language as they use it and to understand and value it as it has been and is being used by others.

Language is the most marvelous and most powerful invention of man; the one upon which all other inventions depend either directly or indirectly. You will remember an incident in <u>My Fair Lady</u> in which Professor Higgins, who has undertaken to make Eliza Doolittle a master of the English language, realizes

that she has worked to the point of exhaustion and is ready to quit trying. Then he said to her:

> Eliza, I know you're tired. I know your head aches. I know your nerves are as raw as meat in the butcher's window. But think what you are trying to accomplish. Think what you are dealing with. The majesty and grandeur of the English language, it's the greatest possession we have. The noblest sentiments that ever flowed in the hearts of men are contained in its extraordinary, imaginative and musical mixtures of sounds. That's what you've set yourself to conquer, Eliza.[7]

The basic problem of curriculum development in English is that of finding ways to make this language real and vital in the lives of students who are living with it and using it and will continue to live with and to use it the rest of their lives. It is not an easy problem to define or to solve.

FACTORS AFFECTING CURRICULUM DEVELOPMENT

All curriculum development must take place within the context of current social conditions, a particular group of students, a particular subject to be taught, and beliefs about how learning takes place.

The present day world offers no assurances about what the future will be. The youngster of six who enters the first grade talking about jet propulsion and space travel will have to be ready fifteen years later to control a world which no one can describe for him now; however, what he learns as he goes through school must suffice in the unknown future. What must he learn in order to be able to meet unknown problems and solve them? How can he learn to participate in change without being frustrated to the point of indifference or immobility? What kind of foundations must he have to be able to continue learning?

A major problem in curriculum development in English is that of identifying current social conditions of making some projections into the future, and of defining the ways in which they impinge upon the program of language development required by American youth.

The students in our schools are a part of a restless world, a world of more TV sets, more houses, more cars, more

schools, more pupils against a backdrop of an awareness of atomic power and the race for space, of the United Nations and the Peace Corps. They are interested in jet planes, hot rods and frag races, but they are also interested in idealistic youth movements, in working with underprivileged children, in human rights. They react to the conditions of their times, but they are also concerned about the persisting problems of growing up in our culture: physical and emotional development, achieving independence, adjusting to sex roles, clarifying vocational goals, seeking a philosophy of life and a set of values by which to live. The search for identity, for individuality, for significant and responsible work and family life are major tasks for today's youth. What does the English curriculum contribute to youth's understanding of the persistent problems of living in an ever changing world?

DEFINING THE CONTENT OF THE ENGLISH CURRICULUM

The content of English also presents some problems to the curriculum makers. In 1959 a Committee on Basic Issues in the Teaching of English began its deliberations with th question: "What is English?" The Committee was attempting to define the limits of a discipline. What <u>is</u> the English teacher responsible for teaching? The necessity for an answer to this question comes from the situation which has developed over a period of years in which it has been assumed that anything dealing with words is the business of the English teacher: the school paper (although the teacher may never have had a course in journalism), the senior play (although the teacner was never in a play in her life); the declamation contest, the debate team; the U.D.C., the D.A.R., the American Legion, the Civitan, essay contest; and perhaps a class in remedial reading. The diffusion of the teacher's efforts and energies has become so general that frequently any kind of coordination of activities in which he and his students engaged is impossible. Recently, largely through the work of the Commission on English of the College Entrance Examination Board the discipline of English has been defined as consisting of three components: Language, literature, and composition. This restriction has been favorably received and much of the work in curriculum development at the presen' is limited to these three areas.

The area of language which includes grammar, usage, and vocabulary is, perhaps, creating more confusion among those who propose to develop an English curriculum than any other area. The term "new grammar" appears in discussions about what shall

be taught. Grammar, however, refers to the structure of the language and there is no new structure in American English language. The newness lies in the various methods that have been and are being developed to describe the language as it is. Recent linguistic research, dating from about the 1930's, has developed descriptions of the structure of American English that deviate in basic assumptions from the traditional "school" grammar that English teachers know so well and teach with such vigor.

Three grammars - and more if you get beyond these three - currently claim the attention of those who teach.

Traditional "school" grammar is the one that most of us learned - or failed to learn - when we were in high school or in freshman English. It is a prescriptive grammar developed principally in the eighteenth century by scholars who considered the classical languages the ideal languages and believed that English should be forced to fit the structures of Latin. It is subject to criticism because (1) it imposes the forms of a highly inflected language upon English which has few inflections, (2) it relates to the written language rather than to the spoken language and consequently does not describe the language as it really is but rather says what it should be.

Structural grammar, a second approach, attempts to analyze the spoken language to determine the basic structures of English sentences, the stress and intonation patterns which signal meaning, and the words which act as markers or signals to indicate parts of speech.

Generative grammar, a third approach, proposes that English consists of two kinds of sentences: basic or kernel sentences and transformations from these sentences. From the kernel sentences an unknown number of transformations can be made but all transformations that will be acceptable to a native speaker of the language as grammatical English sentences are derived a cording to an underlying process than can be defined.

Although each of the grammars referred to has a system of its own, it is not assumed that either one will replace fully the traditional grammar but will contribute it its modification and will add to it concepts that it has not generally incorporated. The English curriculum must present the most accurate description of the English language that is available; however, since developments in the new descriptions are not definitive the problem of modification of the traditional approach is disturbing.

The study of the structure of the language has led to a distinction between grammar, a term reserved for the description of the structure, and usage, which refers to matters of choice about forms to be used, as who or whom or doesn't or don't. The work of linguists, who study the language as it is without making judgments about what should be, has made meaningful the concept of appropriateness in choice of language. Language chosen as appropriate in a particular situation reflects the range of choices that in reality exist in the English language and denies the arbitrariness of positive right or wrong associated with the term correct. It is difficult for some of us to accept the fact that "I ain't got no money." is grammatically correct although it is questionable as a usage which can be approved.

Composition has a prominent place in current curricula. It is generally considered to have been neglected, possibly because few teachers feel competent to teach it and because class loads are generally too heavy for a teacher to be able to teach even as well as he knows. The focus on it, as a place in which changes must be made, results not so much from noisy criticisms of high school graduates' inabilities to write simple expository material or business letters as from the development of speculations about learning that propose that language and thought are so interrelated that they develop concurrently, and that development of both depends upon formalizing thought through structured language. Composition, oral and written, derive from and contribute to the development of thought process and consequently cannot be neglected in the school program. Curriculum plans must provide frequent opportunities for students to write and to talk in connected discourse about ideas they are competent to consider if they are to learn to use language effectively both to shape and reflect thought.

Although the present approaches to teaching literature seem more nearly stabilized than the approaches to teaching language and composition, here too are some unsettled questions. Should selections taught in high school be only classics or should junior books, modern literature, and abridged classics be included? Should only American and English literature be presented? Does literature of other countries, although taught in translation, have a place? Should the program be based on wide reading or intensive reading? Should we use anthologies or single books for each selection? How should literary interpretation be taught - according to a specific theory of literary criticism or through a variety of approaches?

What is learned is affected by the nature of the learning process and the kind of experiences through which learning occurs.

In spite of differences among students in the manner and amount of learning, it seems both desirable and possible that a sequence of learning experiences can be planned which will lead each student, by a process of discovery and generalization, to develop for himself the concepts and principles which constitute the structure of a body of knowledge. In this process, the student uses, in essence, the methods of inquiry by which scholars approach the study of the discipline.

A study of language, literature, and composition makes evident the close relationships that exist among the three, and trends in the teaching of English suggest the need for curricula to provide learning experiences that bring the three together in ways that make each contribute to the deeper understanding of the others.

Now that English has been included in the programs for improvement of instruction sponsored by the Federal government and generous funds are available, it is possible to plan on a grander scale than ever before. In the past much has been done, but the efforts have been so restricted that improvement has come at an irregular pace. California may make great strides, but the rest of the nation profits from it only indirectly; Portland may develop excellent curriculum guides, but they filter out slowly; Goergia may have original and profitable ideas, but they do not reach a wide audience. Now, however, programs all over the nation are being developed simultaneously, and there is considerable interchange among the many groups involved. There are large curriculum development centers scattered over the nation, each responsible for developing curriculum materials for a phase of the teaching of English: The University of Nebraska, for example, is working on materials for the entire English program from kindergarten through grade thirteen, with strong emphasis upon composition; Hunter Collegein New York City is working on materials for reading and English for grades 7-9 in depressed urban areas; Carnegie Tech has just completed materials for able college-bound students in senior high school, grades 10 through 12; the University of Illinois is working on a state-wide curriculum for the preparation of secondary school English teachers; the University of Georgia is preparing materials for teaching written composition in elementary school. My last information is that there are sixteen such centers; there may be more now. There are also several large demonstration centers where new programs are in operation and are open for observation. There are several Research and Development Centers devoted to developing school programs. Funds for elementary and secondary schools through State Departments of Education, and the impetus afforded by the support of the Federal government has spread to

State Departments of Education which are assuming direct responsibility for developing curriculum guides in English for the States and to local school systems which are developing materials for specific school situations. Although each unit that undertakes curriculum development has a certain autonomy, all are working from current research findings about effective learning and are studying generally the same materials; consequently there are fundamental similarities among all of the programs. This massive attack upon the problems of teaching English should result in widespread improvement in the English curricula that are in use throughout the nation. At least this is a reasonable expectation.

AN ILLUSTRATION OF CURRICULUM DEVELOPMENT IN ENGLISH

The English Curriculum Development Center at the University of Georgia can be used as an illustration of the process of curriculum development. The Center at Georgia has as its purpose the developing of competency in written composition in children from kindergarten through elementary school by means of curricular materials. This effort, as do all efforts at curriculum improvement, grew out of the interests and curiosities of persons directly concerned with teaching. This particular undertaking was stimulated by persisting criticisms of the written language of students in high schools, in colleges, and even in graduate schools. At every level, discussion seemed always to reach eventually a climax in the question, "Why didn't they . . .?" implying that the present is the product of the past and that therefore the past cannot be disregarded. How far can we push such questioning and expect to find answers that offer constructive leads for curriculum improvement? When does an individual begin to develop the skills, attitudes, and understandings that are incorporated into the production of honest, straightforward prose or significant poetic images?

Discussions about this problem among members of our staff brought out several pertinent considerations. (1) Much is known about language and language learning that has not been incorporated into school programs. Linguists, anthropologists, sociologists, psychologists, and educators have been studying language in its various facets for years; each has some basic information about the meaning of language as it is involved in a particular discipline. (2) Learning is a continuous process. What we learn today affects what we can learn tomorrow; language learning leads to language learning; relationships established among various learnings contribute to other learnings and understandings. (3) What happens to the young child has an effect on his attitudes,

understandings, and language patterns as he matures. The young child who is encouraged to talk, whose ideas are respected and considered seriously, talks more freely, expresses more mature ideas, and reads better than the child who is squelched and shunted off or treated as a cute toy to be enjoyed by adults. (4) The young child can learn more about language - and everything else for that matter - than is ordinarily assumed. Anyone who has ever taken children seriously and participated seriously in their intellectual efforts knows this; however, Jerome Bruner's assertion that "foundations of any subject may be taught to anybody at any age in some form" has given support to the idea. There seemed to be adequate reasons for looking seriously at the kindergarten and the first grade as the beginning points for developing a program for effectiveness in written composition and for continuing it through elementary school.

The structure for developing the project required the selection of a staff, outline of a master plan of work, involvement of public schools, and the submission of a proposal to the U. S. Office of Education for support of the plan. The staff consists of three co-directors, one from the English Department and two from the College of Education, three staff members from the College of Education, six graduate research assistants, elementary teachers in ten cooperating schools, and consultants from the University Department of Anthropology, Sociology, Psychology, and English, who are available for limited services. The program is for a period of five years, beginning in 1963 and ending in 1968.

In outline, the procedures followed were these:

1. A study of research in anthropology, sociology, psychology, and language was made to develop the foundations of knowledge about language and language development. This was accomplished through a series of seminars directed by specialists in several fields and through the study of papers prepared by the specialists.

2. The development of a set of objectives for the development of a curriculum in written composition. These were developed in direct relationship to the information derived from the specialists.

3. The outline of a plan of work for the five years.

4. A conference with the teachers of the cooperating schools for orientation and for help from them in

structuring the plans.

5. The beginning of the development of materials in tentative forms to be used by the teachers, revised, used again and revised again.

6. The development of plans for evaluation of part and of the total program.

7. Staff members from the Center serve as consultants to the schools and visit them several times during each year.

8. As the work has developed the general procedures have been (a) the staff on campus worked on initial plans and materials, (b) teachers came to the campus for discussion of procedures and materials, for work on developing materials, and for instruction.

The curricular materials supporting the development of written composition in the elementary school will concentrate on an inductive approach to learning through which the individual student will arrive at the highest level of concept development of which he is competent, develop a meaningful vocabulary, learn the basic forms which are used in written composition, and develop a flexibility of expression that will present accurately and effectively his ideas.

The materials will be developed in the form of resource units designated for specific grade levels. Each will include a section providing for the teacher informationnecessary for teaching the unit, a statement of objectives, suggestions for evaluation, lists of resource materials, and descriptions of anticipatory experiences and reinforcement activities for grades preceding and for grades following the grade for which the unit is designed.

When the work is completed, it will comprise plans for one phase of the total English program in the elementary grades; however, throughout the materials will be references to the ways in which the composition work can be related to the work in literature and in language and in other subjects.

EVALUATION

Evaluation is one of the most significant and most elusive aspects of curriculum development. The basic principle

of evaluation is that the evaluation must be directly and specifically related to the objectives and it must be engaged in continuously. The lack of clearly defined objectives probably accounts for the fact that the processes are often used unsatisfactorily. Evaluation takes many forms, ranging from that which is subjective and inexact to that which is rigidly controlled and highly objective.

We are never without evaluation of some sort. "This is a good class." "The students are not learning any English in that school." "These students can't read." These are the kinds of evaluation that are generally far removed from careful comparison of progress with objective; nevertheless, they are evaluations and sometimes we like them so well that we say them with assurance and proceed as though we knew what we were talking about.

Another type of informal evaluation is observation based upon criteria selected as indications of behavior related to an objective. Sometimes we, in English, get so carried away with our subject that we make broad statements: We want students to <u>enjoy</u> literature. This is an acceptable objective, but what kinds of behavior can be taken as indicative of enjoyment of literature? Conscious and deliberate analysis of this objective can result in a statement of criteria that in our best knowledge and judgment relate to enjoyment, and we can evaluate student performance with some assurance; we do, however, lack reliable observation guides.

Objective standardized tests are useful in evaluation of progress; however, in search for objectivity we may settle for instruments that have the requisite objectivity but lack the coverage of the total sets of objectives. In order to evaluate the total purpose we must use the best objective measures available, supplemented by informal methods as a basis for judgment of progress.

Evaluation in English is difficult and at best unsatisfactory because we are dealing with language, ideas, attitudes, and abilities. The structure for evaluation is, however, always the same: What is the objective? What behaviors can be taken as evidence of the accomplishment of the objective? In what manner or by what devices can these behaviors be identified and ranked in terms of approximation to the acceptable level of accomplishment? And, of course, the really big question is this: After the evaluation is made, what difference do the results make in improving teaching? I regret that I cannot talk about this phase of curriculum development with more assurance. It is wide open for serious research; until this is done we must rely

on our best judgments made upon the best evidence we can secure.

Curriculum development in English is necessary, it is interesting, and it is intellectually stimulating. The movement in this direction is in the main stream of educational thought and allies the English teacher with all others who are concerned with bringing to the classroom the rapid development of applied knowledge and scholarly inquiry.

REFERENCES

1. Stahl, Donald E. A History of the English Curriculum in American High Schools. Chicago: The Lyceum Press, 1965, p. 22.

2. Broome, Edwin Cornelius. A Historical and Critical Discussion of College Admission Requirements. New York: The Macmillan Company, 1903, p. 58. Quoted in Donald E. Stahl, A History of the English Curriculum in American High Schools. Chicago: The Lyceum Press, 1965, p. 13.

3. National Joint Committee on English, James Fleming Hosic, Chairman. Reorganization of English in Secondary Schools, U. S. Bureau of Education, Bulletin No. 2 (Washington: U. S. Government Printing Office, 1917), p. 27.

4. Radner, Sanford. Fifty Years of English Teaching: A Historical Analysis of the Presidential Addresses of NCTE. Champaign, Illinois: National Council of Teachers of English, 1960, p. 25.

5. Ibid., p. 26.

6. NCTE Curriculum Series: Commission on the English Curriculum, Vol. I, The English Language Arts, 1952; Vol. II, Language Arts for Today's Children, 1954; Vol. III, The English Language Arts in the Secondary School, 1956; Vol. IV, The College Teaching of English, 1965; Vol. V, The Education of Teachers of English for American Schools and Colleges, 1963. All volumes were published by Appleton-Century-Crofts, Inc., New York.

7. Lerner, Alan Jay. My Fair Lady. New York: The New American Library of World Literature, 1956. A Signet Book. p. 63.

THE ANTHROPOLOGY CURRICULUM PROJECT AT THE UNIVERSITY OF GEORGIA

AS A MODEL FOR CURRICULUM DEVELOPMENT: PRACTICAL PROBLEMS

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The purpose of this paper is not to describe the Anthropology Curriculum Project in terms of curriculum theory or field testing. Descriptions of the Project are being made available to you in the form of copies of a "Panel Report".[1] The purpose of this paper is rather to present to you some conclusions concerning practical problems of curriculum development management emerging in cooperative curriculum projects financed by universities and federal agencies.[2]

The Anthropology Curriculum Project at the University of Georgia, is being used as a point of departure. It is inevitable, therefore, that remarks will be made which appear critical of the Project and of the University. I wish to assure you that while we still have our problems, evidence of our ability to solve them and to produce curriculum materials are the materials themselves, their actual use in public schools, and their systematic evaluation and revision. The Division of General Research has also been very understanding of new problems posed by curriculum development and has been very helpful in resolving them. The remarks which are being made are designed to point up some of the putfalls which emerge in curriculum development projects.

STAFF

The Anthropology Curriculum Project is a cooperative research project funded by the Cooperative Research Branch of the United States Office of Education and the University of Georgia. Some University staff time is made available through federal funds, but the majority of staff federal contribution is made in subsidize graduate research assistants. The curriculum development project, therefore, has been used to support the University's graduate program.

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[1]General Information Series No. 4, Anthropology Curriculum Project, February, 1966

[2]This paper has been reviewed by the Project Co-Director, Wilfrid C. Bailey. He concurs substantially with the views stated.

The majority of professional staff time, as the University's contribution, has been made available by allocating to the project the released time of individuals already on research, after clearing with the individuals involved. As a cooperative project of the College of Education and the Department of Sociology and Anthropology, staff are involved from the substantive field of anthropology and from a variety of fields in education--- curriculum, media, reading, psychology, evaluation, and logic. This staff combination has been made on the assumption that curriculum development involves a variety of skills. Some skills, not possessed by graduate research assistants of professional staff, such as art and illustration, have been provided for on a contract basis, paid by project funds.

ALLOCATED STAFF TIME

The method of accumulating staff, by adding portions of several individuals' time, is not an efficient method of gaining production time. In the first place, the size of the staff becomes somewhat unwieldy, and an undue amount of time is spent in meetings and coordination. Secondly, individuals assigned to the project have other commitments, such as teaching, advising graduate students, serving on committees, and performing other duties which are associated with their primary role as a member of the teaching faculty. Staff find it difficult to budget their time for project use. A third difficulty lies in a member's appraisal of his rights to his use of research time. At the University of Georgia, research time is allocated faculty members as a means of encouraging research and reducing the teaching load. Computations of work load accounting sometimes lag behind growth in enrollment and expansion of academic functions, so that the amount of time theoretically available is not actually available. At the same time, the staff member has the pressure to publish, and it is often much more difficult to publish research articles as a member of curriculum project than it is to use equivalent time in-puts on some single investigation which permits the use of some testing instrument. Only the evaluation aspect of the project readily lends itself to research publication. Hence, the project coordinator does not find that he has for production time the time officially scheduled. In short, in a curriculum project the release of staff time from multiple individuals do not add up to one. The situation is roughly analogous to part-time student accounting, in which part-time student hours are converted into equivalent full-time students. Yet I think all of us would candidly admit that at either the undergraduate or graduate level equivalent full-time students do not equal a

full-time resident student. Neither are parts of faculty time equal to full-time faculty time.

GRADUATE RESEARCH ASSISTANTS

The use of graduate research assistants on a curriculum project serves a double purpose---to subsidize the graduate program and to provide production hours. Graduate research assistants are assigned to faculty for supervision. In light of the comments made above concerning faculty time in-puts, it is not surprising that it is also difficult to manage the time of graduate research assist--ts. At the same time, faculty expectancy of graduate research assistant production exceeds the role originally assigned to the assistant. In fact, there is a tendency of the faculty member to transfer his responsibility to the assistant, and to give the assistant only cursory supervision.

DEPARTMENTAL COOPERATION

Additional problems are posed by the fact that in a cooperative project, involving faculty from different colleges, there occurs a difference in perspective as to the nature of the project. While a certain forbearance on the part of staff members minimizes this difficulty, it does not remove it. Cooperation in theory implies mutuality; in practice, it sometimes can become a one-way street. But the perspective of the direction of cooperation depends upon the departmental position from which viewed.

RECOMMENDATION WITH RESPECT TO STAFF

In consideration of the foregoing, it is recommended that a curriculum development project staff be a full-time staff, recruited by the project director for the specific purpose of accomplishing the various curriculum tasks---production, field testing, and evaluation. Specialized skills not requiring full-time personnel should be procured through performance contracts negotiated by the project director with the individual, with payment contingent upon completion of the contract within the time schedule. The curriculum project should operate as an autonomous unit, with project staff responsible exclusively to the project director. The project director should only be

responsible to one person in a university for reporting purposes.

PHYSICAL FACILITIES

Universities are not normally equipped with specialized facilities for curriculum production, since they do not usually have components which produce curriculum materials. Since space at universities is usually not adequate to meet the usual demands for office and teaching space, the usual pattern in a cooperative USOE project is to make available to a curriculum project whatever space is already available to faculty who are assigned to the project. The result is that no new space is made available to meet the special project needs. This difficulty is minimized when project staff fortuitously occupy contiguous space. However, where special faculty skills are required, this is not likely.

At the present time, faculty and graduate students on the Anthropology Curriculum Project are located in tow different buildings. In one building, education staff are dispersed over three wings. Some graduate assistants, assigned to education staff, actually occupy working desks in another building.

The physical dispersion of staff interferes with staff contact and the necessary dialogue for the exchange of ideas and viewpoints. Formal meetings are less satisfactory sometimes than an exchange of remarks over a cup of coffee. The lack of adequate room to house curriculum production is also inefficient. Particularly important is a good project library, where materials are always at hand. While the project library can never take the place of a central library, a curriculum project should have available a variety of materials easily accessible for consultation and use at the particular moment they are needed. University policies with respect to the acquisition and housing of materials, however consistent with good library management, are frequently inconsistent with curriculum project needs.

RECOMMENDATION WITH RESPECT TO PHYSICAL FACILITIES

Ideally, each task of the curriculum project should not only be converted into staff needs, but into physical facility units which can then be converted into a total project facilty to house the various project operations. There is, of course, a limit to independent provision of facilities. For example, where a university has a complete media production center for visual

and audio materials which can provide resources on a contract basis, it would be unrealistic to expect the development of a duplicate facility. The point is stressed, however, that many difficulties in the production task of curriculum projects can be traced directly to inadequate physic facilities. It is suggested, therefore, that before a curriculum development project is initiated, that each curriculum task be converted into facility needs. Sometimes such needs are widely overestimated, but equally serious is the under-estimate of needs and the attempt to produce materials without any consideration of task space requirements.

BUDGET

Inexperience with curriculum development poses certain financial difficulties which affect project management. The first difficulty arises from the lack of cost accounting figures. Inexperience with curriculum development and the absence of cost data figures make realistic budgeting difficult. Just how much does it cost per finished page of textual material? Per overlay? Per frame per filmstrip? Per minute per teaching tape or teaching film? Per illustrated page? Per page of programmed text? Commerical guidelines, even if they were available, are not of much use, because such costs are predicated on potential sales and a reasonable profit margin. It is entirely one thing to invest in materials which might have a potential sale of 100,000 copies as compared with a sale of 1,000,000 copies. Even when a curriculum project does not have to concern itself with reasonable profit margins, university accounting procedures are not usually geared to cost analysis which will provide a project director realistic cost control information on the basis of actual experience.

A second difficulty arises in curriculum development projects from hard and soft money budgeting. Hard money is a term sometimes used to describe actual cash money which becomes available to carry on the project; soft money is a term used to describe the local contribution which is to come from the cooperating university but is not separately budgeted in the curriculum project but is made available through some department or agency budget. The result is that the budget director has two types of funds available---hard money which he can actually budget, and soft money which he can only convert into actual resources through further negotiation. If the promised support is actually budgeted in another budget than the project budget, no unusual difficulties may be experienced. If the money is not actually allocated, however, there is a risk that the local support will not be available. Let us take, for example, a local item set up under the heading

"travel" which is supposed to take care of the travel expenses of the project staff. There is, however, no project travel item on any local budget. Since universities tend to run short on travel funds, the project director is never certain that the travel funds are going to be readily available at the end of the year.

A third difficulty arises sometimes from the inflexibility of local budgetary and accounting procedures. While in the past many cooperative curriculum projects required an initial line item budget, the final contract permitted full discretion on the part of the director in the use of project funds, consistent with good management and attainment of project objectives. However, it sometimes happens that an attempt is made to apply all university internal accounting procedures to project accounting, so that the financial flexibility needed for project management is not available, or does not become available as expeditiously as it might.

RECOMMENDATIONS WITH REGARD TO BUDGET

It is suggested that a curriculum project have a separate budget, for local as well as federal funds, and that the project director, or the financial officer for the project, be thoroughly conversant with university fiscal and accounting procedures. Sometimes budgetary difficulties arise purely from the unwillingness of the project manager to conform to such procedures, many of which are imposed on an institution by statute or by auditing regulations. It is perhaps unrealistic to expect the implementation of cost accounting procedures. Without such information, however, I can assure you that it is impossible to do anything but the most general budget planning. For example, I should be able to tell you how much it cost to develop the 15-item, four distractor multiple choice picture tests, Forms 1 A and B, for the Anthropology Project, and the cost of revision. I can not. I can go back to the records and add up the cost of the art work, printing, and the salary of the evaluator. This would be only a partial reflection of the cost, however, for my time, that of the Co-Director, and several other staff members were involved. It would be useful, for subsequent years of the project. to be able to estimate how much it would cost for test development.

TASK DEFINITION AND PRODUCTION GOALS

Thus far we have discussed some practical problems relating to staff, physical facilities, and budget. These take on their real significance, however, from the actual tasks of the curriculum project.

Curriculum development projects have a multiplicity of facets, and range from the indentification of concepts, generalizations, or key ideas to the actual production of text-book type material to be ured in instruction. An example of the concept approach is exemplified by the Social Studies Curriculum Center at Syracuse University.[3] The Syracuse plan follows a model popularized by Hanna[4] and the work of his graduate students at Stanford University. In reality, however, as Hanna notes, it is a continuation of an approach begun by Rugg and his associates in the 1920's. Although the process of arriving at the generalizations is different---Hanna's students analyzed texts and monographs, those of Price abstracted from position papers prepared by consultants---the end result is the same, themes which can be used for writing instructional materials.

The Anthropology Curriculum Project, as you will note from the material which has been separately provided, has followed a more direct approach, proceeding directly to the preparation of instructional materials in a subject area. In this model, there are some practical questions which needed to be answered, such as: What part of the total school program is to be allocated to use of the materials? Are the materials to constitute a self-contained instructional package, or are they to be regarded as supplementary to other materials which are to be used? Will the instructional materials require particular training of teachers, or should they be designed for instructional use without specific teacher training? How large should the pilot sample be for field trial and evaluation? In what form should the experimental material be produced? How will the production schedule relate to requirements for field testing?

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[3]Roy A. Price, Warren Hickman, and Gerald Smith, Major Concepts for Social Studies (Social Studies Curriculum Center, Syracuse University, Syracuse, New York, 1965).

[4]Paul R. Hanna and John R. Lee, "Content in the Social Studies: Section One: Generalizations from the Social Sciences," in John U. Michaelies, editor, Social Studies in Elementary Schools (National Council for the Social Studies, Washington, D. C., 1962), Ch. III.

The tentative answers to these questions were then converted inco a sequence of production operations, accompanied by a tentative schedule of completion dates. This production schedule serves the dual prupose of outlining the various production tasks and of specifying the time in-puts available to meet calendar deadlines. The production schedule also serves as a means for allocating manpower and measuring the extent to which the curriculum project is meeting its production goal deadlines. At any time, therefore, the project director is in a position to make a firm estimate of production achievement.

It cannot be over-emphasized that a curriculum project which has as its objectives the preparation and field testing of materials must be production oriented. Unlike individual research, in which production may be open-ended, production of field tested materials operates within a closed production schedule, in which the breakdown of production in one area compromises the overall production schedule. It is probable that curriculum developers will never be quite satisfied with the material they prepare, and it is therefore essential that the project director have sufficient control over various aspects of the project so that there can be a feed-in into the total production schedule.

I shall try to illustrate this problem of production scheduling with some concrete references to the Anthropology Curriculum Project. The Project initially began, as do many academic projects, with an attempt to outline the conceptual framework of the field of anthropology. This phase of the project was frankly abandoned after six months of effort, after it became obvious that the refinement of this task would compromise the whole production schedule. An ad hoc decision was made, therefore, to select unifying unit themes for each grade level, develop topical writing outlines, and include and extend the basic concepts as necessary in the topical outline.

Two types of material are produced---teacher background material and pupil texts, each of which are accompanied by appropriate guides. Originally the production schedule called for the simultaneously. Because of the lack of staff experience with writing pupil-level materials, it was decided to first prepare the background material for teachers, and use this material as a control for writing the pupil text and related material. The translation of teacher background into pupil material is not, I should emphasize, a simple matter of reduction. The preparation of pupil material is an independently creative act, not only in style but often in terms of organization. One of our major difficulties, which we have not yet satisfactorily solved, is the writing of the pupil material.

In this connection, one of the controlling questions for purposes of development is not the completeness with which a particular writing task is accomplished, but how well it is modified into the overall schedule. You will recall that I indicated that a very practical matter is how much time is to be devoted to the instructional material to be developed in the school situation? The treatment of a topic, concept, or idea must be restricted to its relation to the overall tasks. If, for example, when it was decided that about fifty pages of new content appeared to be the maximum that should be written for the fourth grade pupil text "Concept of Culture", Chapters composing the unit had to be compressed---we could not spend as much time on the chapter "How an Anthropologist Studies Man" as an intensive treatment might have warranted. Incidentally, we included too much material in this unit, and, on the basis of experience, a decision was made to delete the chapter on "Cultural Dynamics". This chapter will be treated at a higher grade level in an expanded form, because it was found that an extensive treatment at the grade four level overburdened the fourth grade unit and was not consistent with good learning---the chapter lacked the inductive explanatory illustrations necessary to support conceptual exposition. What I am saying is that there must be a willingness to change production procedures, when experience shows a change is needed, rather than arbitrarily adhering to a particular production model which is the outgrowth of an idea of the way curriculum development ought to proceed, and to change grade placement of material on the basis of informed judgment, and teacher feedback even where not supported by test evaluation.

Experimental material should reach teachers in sufficient time for them to become familiar with the material prior to the scheduled time of experimental instruction. Even though you may surmise that your cooperating teachers will not make much attempt to study the material in advance of teaching period, because of intervening commitments, cooperating teachers have a greater sense of security and are more favorably disposed to the experimental material if they feel that they have adequate time to become familiar with it. I can only express our appreciation to our cooperating teachers, especially the control teachers who did not have the benefit of instruction in anthropology the preceding summer, for their forbearance with the failure of the project to make material available in accordance with the production schedule. Our experimental design did not call for any contact with cooperating teachers before they attempted to use the material, but it is suggested that adequate time be allowed between receipt of experimental material and its use, whether or not any special contact with cooperating teachers is planned.

In a separate release, you have been given a year-by-year description of the activities of the Anthropology Curriculum Project. One of its features has been the training of teachers, and the use of trained teachers in instruction compared with untrained teachers. The training of teachers in the summer program was initiated before the anthropology units by grade level were written. On the basis of experience, such prod action scheduling is not recommended even when necessary to fit the grade levels within the project time. The first year should be primarily devoted to producing the first curriculum materials, with any teacher training to follow and not precede material development. There is a difference of opinion within our own project as to how much "tooling up" time should be allocated. On the one hand, there is the view that the first year should be primarily devoted to initial planning, organization, position papers, and similar preparation steps. My own view is that the curriculum task should be defined task, and attempts made to solve the tasks defined without too much time devoted to planning and preparation. This can become an end in itself, without leading to very productive results. Certainly, however, it seems desirable that teacher introduction to a project should occur after the project has thoroughly jelled, and no in the beginning phase.

RECOMMENDATIONS WITH RESPECT TO TASK DEFINITION AND PRODUCTION GOALS

The first need of any curriculum development project is to define its tasks operationally and to convert these into production goals. Where the objective is the preparation of materials for classroom try out, the entire project must be production oriented, and practical decisions made to facilitate the production objective. Much curriculum theory, such as unit preparation, is presented in terms of teacher resource material rather than material which is to be used for day to day instruction purposes, and is not very useful in material production.

All instructional material, irrespective of its nature, embodies programming, since the attainment of the learning task progresses through the logical presentation of material. While a variety of methods may be used to initially define the learning task, the act of developing the materials in the form of actual use is one which is only programmed in the actual phase of writing or preparation. To borrow a term from the theatre, the original script frequently has to be scrapped or modified. Hence, it is imperative in a curriculum project that the actual process of material preparation be attacked at the earliest possible moment, and not too much time be invested in the theoretical aspects of

curriculum development. The plot, to use an analogy, must be converted into a script, and the script, into a play.

SUMMARY

This paper has attempted to deal with certain practical aspects of curriculum development projects which are cooperative efforts of universities and federal agencies. It does not pretend to be complete. However, university staff generally lack experience with curriculum development. Problems of task definition and production objectives, staff, facilities, and budget are practical issues which must be handled as efficiently as possible if material useable in the classroom is to result from curriculum development.

GENERAL SUGGESTIONS FOR WRITING RESEARCH PROPOSALS

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There is a common thread to be found among the criteria proposed in different government research programs for judging the merit of proposals submitted under that program. Such sets of criteria differ in details and in their extensiveness, but one can distinguish five major topics:

(1) Is the problem significant for those engaged in education?

(2) Has the investigator taken full advantage of currently available related research and new developments?

(3) Is the research design sound?

(4) Are the available personnel and facilities adequate?

(5) Does the study promise enough to be considered economically efficient in the light of its costs?

The Informal Check-List for Proposals developed by the Division of Adult and Vocational Education is no exception. Embedded in that check-list are to be found virtually all of the same questions that were distributed to you as the basis of preparation for this afternoon's paper and the subsequent discussion of proposed projects. This paper is addressed to those proposals generally. The panel this afternoon and tomorrow morning will deal with them specifically.

A few preliminary remarks regarding matters the Informal Check-List for Proposals lists as "Procedural Questions". Question 4 asks if a one-page abstract has been prepared. This is most important. Any reader asked to evaluate a proposal will turn to this first and read it thoroughly before proceeding to consideration of the details of the proposal. It had better be good. It needs to be as clear and complete an introduction to the total work as can be accomplished in a page. It should go without saying that this introductory summary should be written after the main document has been prepared to do full justice to the proposal as finally designed.

Question 6 asks if all headings have been included and information provided under each. Again, as a courtesy to the reader who often must read several proposals and sometimes compare them, headings should be included as guides to efficient reading. Moreover, even if the point covered by a particular heading has been covered under another heading, it should be repeated under the heading which specifies it. This is where the reader will look for it if he wants to check that point specifically. For example, if the time-table for carrying out a project has been fully explained in the section on procedures, it should be repeated in convenient reference form under the heading for "Time-table".

Question 8 asks if the cost-sharing principle is reflected in the budget. This is essential. In the case of our Research and Development Center, the federal contribution of $3.2 million over a five-year period is often all that is mentioned. But the University of Georgia is contributing another $1.8 million in terms of faculty time diverted from instruction to research, space allocations, equipment, and related general services. Commitment by the local institution to the project is evaluated as part of the proposal.

Seemingly, all sets of criteria for appraising research proposals put <u>first</u> the question of <u>significance</u> of the problem to persons engaged in education. In the language of the day: So what? What is the value of knowing the answer to the question or questions posed for solution by the study?

Sometimes a study answers a very specific question about a definitely local practice. This is generally seen as being of limited value by supporting agencies, and rightly so. But sometimes such a study provides a useful model for others to follow. A comprehensive, systematic study of the value of a particular service in one place may serve as a model for other studies. In my first job, as a college personnel officer, the sudden death of the President of the Board of Trustees brought in a new man who knew little of the operation of the institution, so he proposed a survey. Evaluation of our counseling and testing program was done by the late Walter V. Bingham. He took as his point of reference the high attrition rate in our day school that prevailed seven years earlier when our program began and compared it with the current attrition rate. He arrived at a dollar value by adding up the total faculty salary at each date and multiplying by the proportions graduating in the regular four years. The difference came to $50,000 at a time when our total counseling and testing budget was $10,000. When I pointed out that we had passed through a period of increasingly selective admissions, he countered with

the observation that little if any improvement had been shown in the night school where selectivity had increased quite as much, but there had been no counseling program. The model of increased utilization of the faculty in producing graduates is of value anywhere any time, even though the study showed only that a particular program in a particular institution had paid for itself several times.

It is generally important to show results that are generalizable to many other similar situations, but often situations vary sufficiently from place to place, or from institution to institution, to make generalization uncertain. And there is nothing quite so convincing as a local demonstration. So a study's significance is to be judged in terms of the generalizability of the method as well as of the findings themselves.

The second question raised is whether the presentation of the problem shows knowledge of theproblem proposed for investigation. If, for example, the problem has to do with achievement or learning in school and the presentation ignores consideration of socio-economic factors, the evaluator may well question the investigator's grasp of the real situation. In vocational studies, to disregard differences in employment practices or working conditions and concentrate on wage rates and retirement benefits is to convict oneself of lack of a comprehension, realistic grasp of a situation. You will think of other examples of studies in which failure of the investigator to take into account all the major forces operating in a situation led you to discount the significance of the findings reported.

The third question is related to the second. It has to do with clarity of statement of the problem. Can the reader tell from the statement of the problem exactly what the investigator conceives the problem to be so as to be able to judge that the problem can be treated as proposed. The old saw that "it is better to remain silent and be thought a fool than to speak and remove all cause for doubt" will not suffice here. I assume that in these days we are all in favor of flexibility as contrasted with rigidity of approach, with adaptation to individual differences, creativity, and the like. But the critical reader needs to know exactly what is proposed. Perhaps all of you have heard of the man whose creativity was evident only in his spelling. But, more seriously, what specifically is proposed by way of adaptation to individual differences in a given situation? Does the proposal make clear that different instructional materials are to be used or that individuals are to be enabled to proceed at their own pace or that different levels of final accomplishment are to be set in accordance with some current estimate of capabilities? Even

more specifically, if different instructional materials are to be used, in what essential respects will the materials differ? Vocabulary and reading level required? Amount of pictorial or diagrammatic illustration included? Number of different illustrations given to teach each principle or concept? Amount of practice on a technique in comparison with time given to preliminary demonstration? If individuals are to proceed at their own pace, what checks are to be available on their progress to guide them at various points or intervals? Is the individual to be allowed a set maximum time in one area, then be moved to another with whatever mastery he has achieved in the first area? Or is he to be allowed to move only after achieving a certain level of mastery in the first area, thereby limiting the number of areas in which he will attain a specified minimum level of mastery? The reader, even if he is a specialist in the area of the study needs such detail? It does no good to say "You know what I mean." I am sure you share my feeling when people give you directions as to how to get to a place you have never been before and conclude their statement with "You can't miss it." You can, and I have. Explicitness of the sort I have been advocating can be overdone. We have all heard the story of the little boy who thanked his grandmother for the book about penguins she had given him for Christmas and concluded his note with the statement that he had learned more about penguins than he really cared to know. As a general rule, however, it is better to err on the side of being too explicit than on the side of being so cryptic that the reader could not satisfy himself on an essential point.

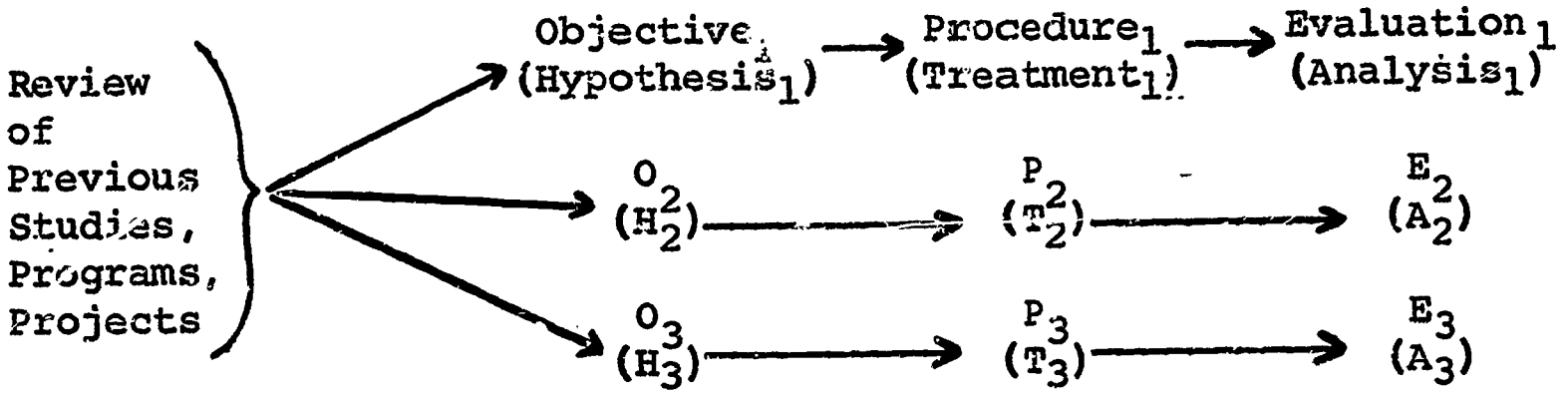
The fourth question I have propounded relates to much that has already been said about showing grasp of the problem. It has to do with the review generally included of related developments. The great E. L. Thorndike, father of the Robert Thorndike you hear quoted widely today, used to tell of the graduate student who came to him with a proposed dissertation study and assured him that it was an original study because he (the student) had read nothing on the subject. Readers of proposals spot such geniuses early, and stop reading. In some instances there is little that has been done, but that needs to be said and evidence of just how little has been done needs to be presented in support of the statement. Such evidence is best provided in the form of studies that come nearest to dealing with the subject. Often related studies have been done at different levels of schooling. A procedure may have been applied and studied at many secondary schools, but not at the post-secondary level, or vice versa. Only fragmentary attempts may have been made with a new approach, which the investigator proposed to apply to the total program of a school.

The reviewer of a proposal is happier if he finds the investigator is familiar with specific related studies rather than general summaries or digests of such studies. Occasionally so much has been done that general summaries are most appropriate as references, but even then some specific references need to be added. Recently, Dr. Callaway of our Reading Clinic was asked to prepare a bibliography of studies of the teaching and learning of reading for our Research and Development Center in Educational Stimulation with particular reference to the problem of teaching beginning reading early. So many studies of the teaching of reading have been published because of the central importance of reading skill in all education, formal and informal, that several journals publish annual summaries of such research, some even classified by level. Much of his bibliography might be termed a bibliography of bibliographies, but it did put a special emphasis on new developments in teaching beginning reading before age 6. As a generalization, I think it is fair to accept the conclusion that primary sources are to be preferred to secondary sources.

The next two questions may be lumped together and related to what has just been said. The review of the literature in a proposal should do more than show one's background of knowledge, it should constitute in considerable measure a justification for the proposed study and the specific way in which the study or project is to be carried out. Doctoral candidates, who are expected to include a review of the related literature in their dissertations, sometimes submit as a first draft a compilation which is relevant and complete, but not organized to lead naturally and logically to the thesis of the dissertation. It almost seems as if they are trying to live up to Stephen Leacock's definition of the Ph.D. as meaning that the individual has been examined for the last time and pronounced completely full. I can assure you that reviewers are greatly impressed by reviews that make them anticipate what studies or projects are needed to extend present knowledge or practice, so that the proposed study and its detailed procedures which follow come as an answer to questions formulated by the reviewer as he read the preliminary review.

Pursuing this line of thought carries us naturally to the question of whether the objectives have been so formulated that they can be tested and the following question as to whether the procedures proposed are feasible and directly related to the objectives. Among the "Substantive Questions" in the Informal Check-List for Proposals Question 8 states the issue this way: "Is the proposal internally consistent? Has the initiator presented a direct, straight-line relationship between the objectives,

the procedures, and the evaluation?" This question links the exposition together in an important way. In my immediately preceding remarks I have really been insisting that the review of the literature or of trends and developments needs to fall on the same straight line, perhaps at the beginning. Thereafter, the objectives, which are generally stated as formal hypotheses in research studies but more as purposes in demonstration projects, should be perceived by the reader as leading inevitably to corresponding treatment procedures and methods of analysis and evaluation. We might picture it thus:



Each part of this model needs to fit into the relationship, but each also needs to meet particular criteria in so doing. As previously remarked, the objectives of the study must be clearly and specifically stated. For example, the word "appreciation" is an athema to all experienced reviewers because it has two distinct component meanings and one can seldom be sure what combination of those components is intended. Appreciation involves an element of comprehension or understanding, a definitely congnitive component. At the same time, appreciation also involves value judgment, a definitely affective component. In any particular instance, appreciation may mean any weighted combination of these components. Most generic words suffer from the same lack of definition, so we turn to taxonomies of objectives of the sort listed in your bibliography by Bloo, Krathwohl, and others or to careful spelling out of exactly what we mean in the particular instance. The same may be said of procedures or treatments, including the specification of individuals whose behavior is to be studied, and the evaluation instruments and statistical procedures to be used.

One comment has to do with the word "feasible". Are the procedures feasible? If teachers or other adults are asked to take tests or answer questionnaires, will the cooperation be forthcoming on an adequate scale? At the time Project Talent was being planned the question arose as to how much testing time one might expect school authorities to be willing to allow. It was finally decided to ask for ten classroom hours per student and this proved generally acceptable. A related question was how

willingly and effectively students would cooperate. It is to the great credit of the investigators associated with Flanagan in that project that several schools reported better than average attendance on the two days the tests were given. Accessibility of records of certain socioeconomic data, ethnic information, and certain personal information present special problems.

The question of defining the population to which generalizations are intended and the generalizability of findings to such populations may present difficulties. Since the 1936 presidential elections, we have all heard the expression coined at that time "As Maine goes, so goes Vermont." In many cases generalizability to the nation as a whole or to whole classes of individuals is proposed. When such broad generalization is feasible, a ten-strike has been scored in favor of the study. This is seldom possible and to claim such generalizability naively is to score a ten-strike against the investigator if not to rule out all consideration of the proposal. Often local or limited regional generalizability is all that can properly be claimed and the study or project is approvable with such limited generalizability accepted.

The question of whether the data obtained are valid merits several strong injunctions or strictures. First, responses of preference or choice on questionnaires and inventories constitute dubious evidence except where one may assume that the respondents have no interest in presenting a favorable or unfavorable view of themselves. Most of us are generally honest, we could not maintain our society as an operating scheme of living together if we could not generally trust one another. However, studies have indicated that participants in new projects are generally hopeful of the success of such projects. Even people who are reporting their opinions without fear of retaliation often make statements about themselves and other matters that reflect a desire to put themselves in the best light or to please the kind gentleman who is working so hard to gather data for his dissertation. Much has been done by providing for anonymity of response and inclusion of verification scales to check on irresponsible or biased responses, but the doubt remains. Volunteer procedures and incomplete returns to questionnaires are also suspect. In many cases, only such evidence can be obtained. If so, let us observe all the safeguards we can and carry on.

But this brings me to the second stricture. Last evening Dean Williams characterized himself as a pragmatist and proposed that the best criterion of success or improvement was to be found in the product, be it farm animal, plant, industrial product, or school graduate, and what that product could perform. Performance is then to be measured. For many school outcomes we

have achievement tests, for many areas of vocational education we have evaluative check-lists, performance rates, gauges, etc. More can be developed under careful procedures monitored by specialists. Such tests and performance measures have a quality that self-reports or subjective judgments of value lack. They represent an achievement than can not be faked under ordinary surveillance. Let me range myself alongside Dean Williams in challenging you wherever possible to measure success of a procedure or program by performance. Let me close discussion of this point on what I refer to in my classes on tests and measurements as Findley's Law: "You can't do better than you can do, but you may do worse than you can."

A third stricture applies to the development of evaluation instruments as part of a study. I would not believe it if I had not had the experience myself, but I received a Small Contract Proposal to review in which the principal investigator proposed to develop a measure of creativity as part of the study. Reputedly a brilliant scholar in another field, he literally proposed spending three consecutive Saturday afternoons with the help of one colleague and two of his ablest graduate students to build the test that would be used as the criterion measure in his study. This is but an extreme example of a frequent fault in studies proposed to the United States Office of Education. A situation very frequently faced by their advisory panels is to have a major study proposed in which a crucial feature is the development of a measuring instrument. It is quite true that suitable instruments are often not available for purchase from a publisher who has carried through the standardization procedures necessary to establish the reliability of the instruments and their validity for the use intended in the study. Either a new instrument must be developed or the study must be carried through with instruments less than wholly satisfactory. The common reaction of advisory panels under these circumstances is to send the proposal back to the investigator with the suggestion that he redesign his approach in phases, Phase I to be the development and validation of his criterion measures, and Phase II the original study, to be approved and carried out only if the test validation phase resulted in a satisfactory instrument.

One note of a positive sort has to do with curriculum improvement studies, where the objective is the evaluation of curriculum materials and/or procedures, rather than individual pupil performance. Where test results are used to describe the performance of individuals, it is customary to insist that each score or measure have a reliability of .90 within a single grade or for the group within which discrimination is being attempted. This is not necessary when the purpose is only to determine results

for groups, as in curriculum studies where materials or methods rather than individuals are being evaluated. In such cases the requisite data may be obtained from shorter tests where the group is of moderate size. Where large samples are available, a special procedure for using comparable sub-samples has been developed which is worth recounting here. It is used by many test publishers in standardizing test batteries. For example, Educational Testing Service had the task of standardizing the Sequential Tests of Educational Progress (STEP), consisting at each level of six different subject tests, each test having two forms, and each form requiring seventy minutes of testing time. It was impossible to ask the same children to take twelve seventy-minute tests, a total of fourteen hours of testing time. The schools would not have heard of it and the results would have been of dubious value if obtained because of the fatigue and even boredom they would have induced. Instead, the twelve test forms were arranged in recurring order so that every twelfth student in each class took the same form. By spreading the tests over a wide variety of schools it was possible to obtain adequately representative and comparable samples of 500 from a total of only 6,000 students examined for only seventy minutes each. The National Assessment Program now being developed to describe and appraise the general status of education in the United States will take advantage of the same pattern. Each of several measures in different fields of learning will be administered to adequately representative and comparable samples of students without any individual student being required to take more than a small fraction of the total battery. In fact, no single school, school system, or state will be tested completely, the samples being representative only at regional and national levels and the report being made only in those terms to guarantee local anonymity.

Let me add a footnote to this last discussion. It is true that short tests and/or special sampling procedures may be used in studies where only group data are needed for evaluation. One needs to be careful, however, that the data thus obtained are not made available, intentionally or carelessly, for use in interpreting individual achievement or in evaluating populations of which they are not proper samples. The practice of promising a cooperating school or teacher data about children tested is not permissable in these instances because the results of short tests may give quite undependable evidence about many of the individuals. Similarly, data reported back to a scholar school system that has been included in a sample which is representative of a larger population--region or nation--may be unwittingly interpreted as reflecting the general status of achievement in the smaller unit. In such instances, it is best to request cooperation from schools in terms of contributing to knowledge or research, rather than

promise returns in the form of test data or other results that are subject to serious misinterpretation in the hands of statistically less sophisticated school personnel.

Much could be said about statistical procedures. I leave most of this to discussion by the panel in connection with the specific projects you have submitted. I will simply refer you to Robert Thorndike's "The Concepts of Over-and Underachievement" for advice on designing studies in which you may think of comparing achievement with some estimate of expected achievement.

The question of whether the investigator is competent to conduct a proposed study is seldom answered in terms of the individuals' name or general reputation. It does give the reader some confidence to know that the proposed study will be in the hands of a well-known investigator, but only if the proposed study or project is adequately described. If not, a panel's reaction is apt to be "Send it back. He can do better than that." A poorly presented proposal convicts the competent investigator of careless disregard of accepted standards of which he is well aware. Conversely, a well-stated proposal is evidence of an order of competence worth rewarding with an opportunity to prove ability to perform, even if the investigator is little known. Every great investigator had to start somewhere with a first project.

The availability of consultants is generally taken for granted in major institutions. Proposals from institutions not so well established in this regard would do well to give special effort to describing specific competences of local or outside consultants to be employed.

The question of arrangements with cooperating institutions and authorities can generally be answered in the affirmative. But such arrangements do need to be made and to be reported in the proposal as having been made. Letters of intent to cooperate which express reasonable expectations of the results of the project add credibility to the investigator's claims of promise and of careful planning in advance.

Adequacy of resources to carry out a particular project depend on the project. It is true, nevertheless, that most substantial studies benefit from the use of electronic computers. A proposal should state specifically, by identifying names and numbers, the computers available. If conference facilities are an integral feature of a project, they should be described. It does our proposals no harm to be able to cite this Center for Continuing Education as a resource. A number of your institutions have similar facilities.

The last two questions, under economic efficiency, may be discussed together. The project may be good, yet cost too much. On the other hand, your proposal is more likely to be faulted for failure to ask enough support than for asking too much. After all, the negotiators can cut down what appear excessive cost estimates if a project is otherwise worthwhile. But a proposal asking insufficient support renders the investigator suspect for failure to take account of essential elements of the problem. We used to say "Don't send a boy to do a man's work." A modern variation of that injunction is the motto over my colleague, Professor Rice's, office door which reads "Don't start vast projects with half-vast ideas." On the other hand, I have always enjoyed a story about the Texas Rangers of frontier days. On one occasion, a community was threatened by rioting and requested help from the Rangers. They watched intently for help to arrive and were dismayed to see a single six-foot Ranger step off the train. When they protested sending just one man, the Ranger replied "You only reported one riot." The balance is to be struck somewhere between the minimum exemplified by "one riot, one Ranger" and excessive demands for support. A project costing $700,000 that promises to be able to save only $100,000 over a ten-year period would be a bad bargain. But I hark back once again to Dean Williams' remarks of last evening, to the point where he stressed the importance of the team approach, perhaps with an interdisciplinary group. We stand committed to the thesis that most significant projects, whether they be research studies or demonstrations, call for the combined efforts of many trained specialists, supported by adequate staff, over a considerable period of time.

An excellent example of this point is Project Talent, already mentioned. That study involved testing 440,000 high school students, a representative 5% sample of the high school population of this country in 1960. It cost over a million dollars and additional millions will have to be appropriated to follow these students five, ten, and even twenty years later. But a more limited study would have been less efficient. Local, state, or even regional studies could notehave coped with the mobility of our high school graduates today, not to mention problems of combining data of separate studies. Only a large and inclusive sample can provide data years hence on the backgrounds, abilities and experiences of successful workers in occupations that do not even exist today, just as nuclear physicists and electronic experts did not exist as occupational specialists twenty years ago.

Not everything big is good. Nor is the day of the small individual study gone. But substantial studies hold the promise

of being our most efficient investments in many instances. In curriculum development projects of the sort many of you contemplate, as in dealing with broad new areas of study like our concern for early educational stimulation in the local Research and Development Center, the project may well need to be substantial in order to be efficient in use of specialists and in dealing with problems on the scale they require.

Writing proposals may seem a chore. Such requirements are here to stay. And each of us, in our roles as citizen-taxpayers, are bound to want to insist on limiting public expenditures in this area to projects that qualified judges at the start can evaluate as holding clear promise of contributing to the improvement of vocational education in our schools and colleges.

THE DEMAND FOR CURRICULUM REVISION

IN

VOCATIONAL EDUCATION

David S. Bushnell
Director, Division of Adult and Vocational Research
U. S. Office of Education

INTRODUCTION

While these have been exciting months during the establishment of a major research and development effort in vocational and technical education, I would venture the opinion that our ultimate measure of success will be the extent to which we succeed in updating, revitalizing, and expanding the vocational education curriculum. The measure of excellence in any program is, of course, what is taught. The availability of training geared to today's jobs; our success in providing youngsters with a broad base of adaptive learning skills; and the type of orientation and attitudes generated through participation in vocational education programs -- these are the issues and questions to which I hope you will address yourselves this week while basking in the warmth and hospitality of the University of Georgia.

The changing structure of today's labor market is frequently cited as the major force underlying the structural unemployment in our economy. The decline in the availability of unskilled and low-skilled occupations, many of which constituted the entry jobs for high school graduates, has served as a prime stimulus in the increased need for higher levels of vocational training. The rapid obsolescence of skills argues for a broader base of training as well as greater adaptability of the trainee. The shift from production-oriented occupations to service occupations has accelerated the need for communicative and reasoning skills in addition to the more familiar manipulative skills. Each of these trends creates a new demand for a different type of vocational trainee.

Vocational education has a dual responsibility in not only qualifying students for entry occupations but also giving them the background to advance once they have made such a choice. Thus, there is a need for identifying in advance emerging occupations for which young adults entering the labor market can qualify. An advancement after entry into an occupation is not necessarily

dependent upon those skills which qualify a student for a job initially but requires basic learning abilities and flexible attitudes towards change. It is this concern with inculcating attitudes and learning skills which has led to a searching analysis of the current curriculum in vocational education.

It is not difficult to identify that which is inadequate in many of our vocational programs in our public schools. The updating of curriculum content has lagged too far behind changing job demands with too great an emphasis upon local rather than regional or national requirements. Frequently, commitment to specialized training programs comes at too early an age. There is insufficient opportunity to develop interest in aptitudes appropriate to the student's career aspirations. Inadequate occupational information for counselors, teachers, as well as students, contributes its share to the problem of identifying appropriate careers for students who will terminate their formal education at various grade levels.

The tendency to separate general and vocational education in the past has led to a dual system of education and thereby penalizes both those who aspire to an academic program as well as those who are vocationally bound. A large segment of the high school population is not enrolled in either a vocational program or an academically oriented preparatory program and therefore receives little, if any, understanding and training for the world of work. From the perspective of providing for the optimum development of all students, the present allocation of resources and courses for occupationally oriented programs is inadequate. Those who plan to go on to college certainly need some general orientation to the industrial and business community while those pursuing a vocational course should not be penalized for their participation in a non-college commitment. The interchangability of course credits would provide some assurance that both the vocationally and academically bound students would be permitted to develop those necessary basic learning skills needed in all walks of life.

In the past, most Federal assistance in vocational education has consisted of either short-range measures designed to serve the immediate needs of qualifying personnel for a recently emerged occupational field or geared to the support of six or seven training categories traditionally associated with vocational education. Under the Vocational Education Act of 1963, many of these shortcomings have been rectified. Through the research and demonstration program, a new goal is emerging--one which serves to unite the two systems of general and vocational education in a unique manner which will meet the demands of the

most pragmatically oriented student and yet insure his continued adaptability when faced with change.

What implications do my remarks have for the planning and implementation of a new curriculum? It is obvious that when one considers the high unemployment rate of those with little education that there is an increased need for all workers to have higher levels of basic general education. Such a program should be experientially-based and hopefully would emphasize the development of competencies in reading and arithmetical skills.

The second implication already suggested is that the best defense against obsolescence is increased adaptability of our labor force. Thus one of the major functions of a vocational education should be that of preparing the trainee for change, in such a way that the individual does understand the changing nature of the labor market and the importance of flexible attitudes toward work.

A third implication is that the needs of society and the individual are better served if specific vocational training is provided at the latest possible period in the educational career of the student. A delay in commitment permits more basic education and more opportunity for the student to survey the range of occupations before commitment to any specific occupation or specialized training program.

A fourth implication is that the responsibility for training, particularly in the emerging occupations, requires new patterns of curriculum development and dissemination carried on by personnel outside of the established school system as well as within.

Now, with your permission, I would like to weave these implications into a fabric designed to meet the needs of our economy. First, let me review briefly for you the observations which I have already made. Eight out of ten students now in our junior high schools do not go on to complete four years of college. Only 10 percent of these students will become enrolled in a full-time pre-employment educational program before leaving the school system. Between the two extremes of academically or vocationally oriented programs fall a large number of "gray area" students who enter the labor force without adequate occupational skills at a time when the occupational structure offers few openings for those without appropriate training.

Hopefully, a new curriculum in vocational education will develop broad occupational competencies on the part of all students

and will expose them to a wide array of "vocational" information. While content and structure are difficult to state without a great deal more specificity, we can examine the objectives which might be set for a major curriculum development effort. Such a new curricula should:

(1) emphasize the articulation between academic and vocational learnings via the natural relationships between the two;

(2) be experientially-based, leading out to academic subjects;

(3) emphasize manipulative as well as verbal reasoning skills;

(4) take into account the clustering of a large number of occupational skills;

(5) relate student learning ability to appropriate stimuli -- e.g., visual, tactual, as well as verbal;

(6) emphasize broad as well as specific occupational competencies; and

(7) include an understanding of the concepts underlying our modern American economy as seen from the perspective of various disciplines such as sociology, psychology, economics, and anthropology.

While it is important to stress the need for broad occupationally oriented skills, it is nevertheless a fact of our society that most students must offer to their prospective employer a set of skills or competencies if they are to actually obtain a job. Thus, in addition to the broader occupational competencies described above, specialized training in many of the emerging occupations is necessary. The Division of Adult and Vocational Research has identified eight specific occupational groupings and is hard at work in stimulating and funding curriculum development efforts focused on these emerging fields. They are:

(1) Health Service Occupations

(2) Engineering-Technician Occupations

(3) Recreational Occupations

(4) Landscape Gardening Occupations

(5) Building Maintenance Occupations

(6) Public Service Occupations

(7) Social Welfare Occupations

(8) Office Occupations

There are some 40 proposals currently underway or in development covering these employment areas. We are now starting to organize and develop a better articulation of these on-going development efforts at the various grade levels and will, hopefully, culminate these efforts in a massive teacher retraining effort.

Some of the priorities in the structuring of this broad and specific vocational curriculum development program require certain first steps which we will, and are, giving support to. These are:

(1) A curriculum development effort which provides a new approach to planning vocational curricula so that junior high school programs will tie more effectively to senior high school efforts and, in turn, senior high programs to post-secondary schools.

(2) Once the structure of the overall curricula for grades 7 through 12 has been blocked out, priority should then be given to the development of curricula for grades 9 through 12, since the effect on those about to enter the world of work would be most immediate. Well trained students entering into post-high school technician level programs of a junior college program will facilitate the more rapid proliferation of specialized technician training now occuring in many of these institutions.

Several criteria can be and are being applied to the screen - and selection of proposals submitted to us. It is only fair to let those of you who aspire to the development of a curriculum proposal know what these are. This seminar is certainly an appropriate place to share such thoughts with you.

We feel that occupational clusters should be emphasized rather than too much of a focus on single occupational categories. Curricula, wherever possible, should be flexibly designed for use in the last two years of high school or post-high school institutions. The curricula should attempt to emphasize articula-

tion between the academic and vocational subjects. Instructional procedures should include classroom evaluations of the instructional materials by teachers and students, and provisions for modification of these materials based upon these experimental evaluations. Proposals which emphasize discovery and "clinical" types of learning experiences which help to lead the student to apply his basic learning skills will be given preference. Attention to manipulative and visual skills as a counterbalance to the present heavy emphasis on verbal learning skills will be stressed. Curriculum development groups should attempt to utilize the facilities of the new regional laboratories which are designed to assist in evaluation and dissemination. These have recently been established through the enactment of the Elementary and Secondary Education Act. In addition, our vocational research centers at Ohio State and the University of North Carolina at Raleigh offer excellent resources. Where feasible, the involvement of outstanding scholars and professionals in relevant fields with teachers and curriculum development experts will be looked upon with considerable favor.

In conclusion, I would like to review with you the recommendations of a summer study group which was supported at M.I.T. last summer. This group of some 60 experts representing vocational education and related disciplines spent six weeks in thinking and talking about a working philosophy which would provide a set of guidelines for a massive attack on the problem of curriculum development in vocational education. To quote from their summary review, it was agreed that "any significant innovation in and improvement of vocational and occupational education should be aimed not merely at current vocational programs but more college preparatory curricula and are not engaged in standard vocational education. . . . . any fundamental attack on vocational education would, of necessity, concern itself with all education." The report goes on to make the following recommendations:

I. IT IS RECOMMENDED that there be initiated the development of new curricula and instructional materials for generalized vocational education for all students beginning with the start of junior high school. This point of entry recognizes the potential in existing curriculum reforms at the elementary elvel. The patterns of learning in this type of development derive from working with materials, systems or processes, i.e., from "practice", and the understanding of practice requires more than the simple transfer of so-called fundamental knowledge as taught in traditional academic courses. Hence, there is need for the development of a codified body of knowledge that synthesizes the empiricism derived from "doing" with the abstractions of traditional academic disciplines. This process of "educational engineering" is not

resolvable into separate disciplines and hence must deal with a complex operational system of many variables. Consequently, to be effective, such curriculum development will require the leadership and participation of the very best talent available.

II. IT IS RECOMMENDED that, simultaneously and as part of the preceding process, projects be initiated for teacher education aimed at generating competence in cooperative group teaching with the new instructional materials in the new format of study for generalized vocational education. These must include in-service and pre-service programs along with expanded special, allied programs for counselors and administrators.

III. IT IS RECOMMENDED that a national system of multi-purpose Educational Centers be established. These Centers would serve as vehicles for the creation and implementation of the programs of curriculum development, of teacher education and also the development of new patterns of educational research. This research should be aimed at the effective planning, analysis and evaluation of generalized vocational education. In addition, new methods should be created to provide adequate and continuing information to school systems and educational agencies about new developments. This service may be provided either by the multi-purpose centers or by new regional information centers.

IV. IT IS RECOMMENDED that there be initiated special short-term programs for the development of transitional educational patterns in deprived areas while the new, more comprehensive programs begin to emerge. These bridging curricula should aim at providing a sizeable body of work-study courses with heavy community involvement, reflecting the apparent present urgent and relatively early need of these students for gainful employment.

V. IT IS RECOMMENDED that projects be initiated to strengthen and broaden the apprenticeship programs of Labor, of Industry, and of Government. Development of such intensified programs should aim primarily at the continuing education of apprentices and secondarily at the generation of transferable skills. These programs could then lead to effective roads back into further in-school education with advanced standing and thus provide a rich source of students for post-high school vocational or technical education.

With your help and the leadership which curriculum developers have evidenced in education in the past, we can bring about a substantial change in this traditional domain of vocational education. Our opportunity is a real one. For the first time, we have funds and the talent to mount a major attack on a coordinated basis. I hope that you will want to join with us in this exciting endeavor.

SEMINAR PROGRAM

MONDAY

FEBRUARY 7, 1966

Presiding: H. T. Lester, Jr., Vocational Research Seminar Director

8:00 - 8:30 Registration

8:30 - 9:00 Introductions and Plans for the Seminar

9:00 -10:15 Curriculum Studies - A Challenge an Opportunity
David Bushnell, U. S. Office of Education, Division of Adult and Vocational Research

10:15-10:30 Break

10:30-12:00 AVA Research Committee and Seminar Evaluation
Charles Hill, Cornell University, Project Director

Presiding: Bill Cheshire, University of Georgia, Head Distributive Education

1:30 - 3:00 Labor Market Analysis and Projections
Howard Rosen, U. S. Department of Labor, Office of Manpower, Automation, and Training, Assistant Director, Manpower and Automation Research

3:00 - 5:00 The Interpretation of Economic Data
Norman J. Wood, University of Georgia, Professor and Head, Department of Economics

7:00 Evening Activities
Reception

TUESDAY

FEBRUARY 8, 1966

Presiding: Aleene Cross, University of Georgia, Head, Home Economics Education

8:30 -10:00 Social Stratifications
Raymond Payne, University of Georgia, Professor of Sociology

10:00-10:15 Break

10:15-12:00 Relationships of Community Environment to the Vocational Education Curriculum
Selz C. Mayo, North Carolina State, Director, Center for Research, Development and Training in Occupational Education

1:30 - 3:00 Educational Psychology and the Curriculum
Joe Bledsoe, University of Georgia, Professor of Education

3:00 - 3:15 Break

3:15 - 5:00 Current Research Developments in the U. S. Office of Education
Duane Nielsen, U. S. Office of Education, Educational Resources Development Branch
Questions

7:00 Departmental Activities

WEDNESDAY

FEBRUARY 9, 1966

Presiding: G. L. O'Kelley, University of Georgia, Professor of Agricultural Education

8:30-10:00 Statistical Models in Curriculum Development Studies
Harry E. Anderson, University of Georgia, Associate Director, Center for Educational Stimulation

10:00-10:15 Break

10:15-12:00 The New Mathematics: A Pattern for Curriculum Reform
Joseph R. Hooten, Jr., University of Georgia, Professor of Mathematics Education

1:30 - 2:45 Curriculum Development and Evaluation in English
Mary J. Tingle, University of Georgia, Associate Professor of Education

2:45 - 3:00 Break

3:00 - 4:00 The Anthropology Curriculum Project as a Model for Curriculum Development: Practical Problems
Marion Rice, University of Georgia, Assistant Professor of Education

7:00 Banquet
Introductions

Institutional Research Programs
J. A. Williams, University of Georgia, Dean, College of Education

THURSDAY

FEBRUARY 10, 1966

Presiding: C. C. Calhoun, University of Georgia, Head, Business Education

8:30 -12:00 Panel---Review of Current Curriculum Studies

1. Development & Evaluation of an Experimental Curriculum for the New Quincy, Mass. Vocational-Technical School
Edward J. Morrison, American Institutes of Research, Director of Vocational Research

2. An Experimental Evaluation of Approaches to Preparing High School Students for Agriculture Occupations Other Than Farming
John Coster, University of Nebraska, Director, Agricultural Education Research

3. Occupational Requirements in Office Occupations for School Leavers
Fred Cook, Wayne State University, Chairman, Business Education

4. Evaluation of Secondary School Programs to Prepare Students for Wage Earning in Occupations Related to Home Economics
Helen Y. Nelson, Cornell University, Associate Professor, Home Economics Education

10:00-10:15 Break

1:30 - 3:00 General Proposal Writings
Warren Findley, University of Georgia, Director, Center for Educational Stimulation

3:00 - 3:15 Break

3:15 - 5:00 Panel---Formal Review of Prepared Curriculum Proposals

James B. Kenney, University of Georgia, Assistant Professor of Education

Kathryn Blake, University of Georgia, Associate Director, Center for Educational Stimulation

Karl King, University of Georgia, Assistant Professor of Family Development

Charles Johnson, University of Georgia, Associate Director, Center for Educational Stimulations

Leonard Pikaart, University of Georgia, Assistant Professor of Mathematics Education

7:00 Open

FRIDAY

FEBRUARY 11, 1966

Presiding: Karl Doss, University of Georgia, Head, Trade and Industrial Education

8:30 -11:30 Panel---Formal Review of Participant's Curriculum Proposals

11:30- 1:00 Luncheon
Completion of Seminar
H. T. Lester, Jr., Vocational Research Seminar Director

CONSULTANTS

Harry E. Anderson, Univ. of Ga.
Kathryn Blake, Univ. of Ga.
Joseph Bledsoe, Univ. of Ga.
David S. Bushnell, U. S. Office of Ed.
Fred S. Cook, Wayne St. Univ.
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