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AN INVESTIGATION OF EXPLORATORY UNITS IN JUNIOR HIGH SCHOOL

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by

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The kind encouragement and helpful suggestions of my Advisory Committee, Dr. S. L. Eby, chairman, Dr. W. L. Collins, and Dean L. A. Pechstein have contributed much to whatever merit this dissertation has. They must not, however, be held responsible for errors that may have crept into the work.

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CHAPTER I

THE PROBLEM

Statement of the Problem

The problem at hand is the investigation and analysis of so-called exploratory units in the junior high schools, so as to discover their present status and trends and to contrast this actual practice with the theory as revealed by the writings and opinions of experts in the junior high school field. As far as the schools themselves are concerned, the field of investigation, merely to reduce the gathering and digesting of data to a reasonably manageable job, has been limited to junior high schools in systems where the senior high schools are members of the North Central Association of Colleges and Secondary Schools. The field has been further limited to the study of separately organized junior high schools, comprising grades 7, 8, and 9 in a system definitely set up on the 6-3-3 plan; this further limitation of the field was dictated not so much by the practical reason mentioned above, as by the idea that such schools would present a more homogeneous field that would render the data more genuinely comparable, and would obviate possible spurious conclusions, and that such schools, belonging to a system that has taken the most approved and most common step in the reorganization of secondary education, would reflect the most progressive and thoughtful practice.

Late statistics show that of the 3526 reorganized secondary schools, this 6-3-3 plan with 814 schools is the most common one (57:212).* The problem really reduces itself then to an investigation of the best practice and the best available opinion of the practice, and a comparison of such practice and opinion with the most expert theory available.

A check-up on such junior high schools as this investigation will study, made on the basis of (1) a List of Public Junior High Schools, prepared by the Division of Statistics of the United States Office of Education as of May, 1929, and (2) of the school directories of all states where such directories were available, showed that there were 321 such schools located in the 20 states of Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, West Virginia, Wisconsin, and Wyoming. Table I shows the distribution of the schools by states. The period covered by the investigation is what may be designated as the modern period, including the years 1919-1930 with special emphasis on developments and literature of the last five years of the period.

The field of exploration has been further narrowed to the study of <u>specially set-up exploratory</u> units; that is, units that are primarily designed to carry out exploration of definite

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*Figures refer to bibliography on pp. 159-63.

Table I

NUMBER OF QUESTIONNAIRES SENT AND RETURNED

States	Number of schools	Questionnaires returned		
		P-1	P-2	Total
Arizona	1	0	0	0
Arkansas	6	1	2	3
Colorado	12	2	4	6
Illinois	28	4	4	8
Indiana	18	9	6	15
Iowa	22	5	5	10
Kansas	23	4	9	13
Michigan	41	11	10	21
Minnesota	22	3	3	6
Missouri	21	5	6	11
Montana	2	0	0	0
Nebraska	10	1	3	4
New Mexico	2	0	0	0
North Dakota	4	0	2	2
Ohio	56	7	20	27
Oklahoma	10	5	5	10
South Dakota	5	2	3	5
West Virginia	16	4	3	7
Wisconsin	21	10	2	12
Wyoming	1	1	0	1
Totals	321	74	87	161

kind in clear-cut fields, as distinguished from units in which exploration is not the primary concern. It has been advisable for two reasons, however, to devote much space to the exploratory function in general: In the first place, this discussion is necessary in order to give the proper setting to the handling of the special exploratory units both in theory and in practice; in the second place, as will appear in the later chapters, the distinction between special exploratory units and other units becomes increasingly difficult to make. As will be shown in chapter II, the theory of the purposes or functions of the junior high school has always included, prominently, exploration as one of the functions. There is not revealed in the literature any diminution in the support of this as a proper function, and no challenge to its acceptance. It seems justifiable then to see to what extent the theory of exploration has entered into the thinking and practice of those who are workers in the field of junior high school education, and to see what has happened to the theory at the hands of the workers.

Justification of the Investigation

There has been no comprehensive investigation of this field. Such information as we have in the literature bears on a limited number of cases and aims to reflect the best samples rather than the most typical cases. These reports, too, as we shall see in chapter II, are invariably confined to parts

of the whole field of exploration--to certain kinds of exploratory units--either because of a lack of data or because of lack of clearness as to what exploration really includes. Typical of such reports is the excellent and elaborate description by Bruner (10). Bruner limits his discussion to "try-out" courses in which pupils explore by dint of actually working with samples of the activity, and omits mention of exploration in general over-view, appreciation units; he also describes only the work done in the one school system of Okmulgee, Oklahoma. The above, of course, is not meant to disparage those who have reported experimental work, and covered parts of the field; it is merely said to justify the statement that an investigation such as the present one has an opportunity to make a needed contribution to the theory and development of the junior high school. The very lack of clearness alluded to above is not due to faulty scholarship, to mental laziness, or to failure to gather data; such concepts as exploration are cleared up only by the interplay of theory and practice over a considerable period of time, and those who pioneer either in theory or in its application are more to be praised than one who tries to look over the scene of action and to bring to point the results of the pioneering.

Because it is a most recent addition to our public school system, and because it is, in theory at least, a new departure, untrammeled by tradition, the junior high school has been peculiarly a fertile field for experimentation. As a matter of

fact, the very freedom to try has led to a condition that is little short of chaotic in practice and thinking. Moreover, strange to say, this chaos that results from fresh freedom has been aggravated by a reactionary, conservative spirit; this medley of progress and reaction is a common occurrence in the history of education. And so, in the ten years or more of fruitful experiencing, the junior high school has provided a rich welter of ideas and movements. The time seems ripe now for several surveys of the field--surveys that will interpret what is as a basis for pointing suggestively toward what ought to be. Of such needed surveys, a survey of exploratory units is one of prime importance.

Such syntheses of experimental and pioneering work are necessary from time to time so as to clarify the issues, define the terms, record and evaluate the results of impact of theory and practice, and provide a new point of departure in the way of a new set of principles that have grown out of the refining process of experience. This effort then will succeed just to the point that it gives a demonstrably true description of the present status of exploratory units in the junior high school, shows what has happened to the theory that gave them birth, and sets up clearer definitions and better principles for the guidance of the next stage of development.

Apart from the easy inference from the nature of things that human strivings need from time to time stock-taking surveys and evaluations so that proper reorientation may prevent

the waste of aimless wandering and provide encouragement for fresh endeavors, there have been voices to give evidence that specifically the junior high school, in passing through the modern period, has needed such a survey. At the opening of the period we hear: "We have established and are establishing the junior high school, but already we are forgetting the reasons. In fact many people never knew the reasons." (2:523). Glass (36:19-22) says: "The junior high school has been made the pivotal point of reconstruction....because it has been unhampered by tradition and prejudice" and then adds that there is danger of allowing the school to lose its individuality by making it merely a "physical mixture" instead of a "chemical product." In 1927, the same warning seems still necessary: "The junior high school is a new educational unit. It would be unfortunate if it were 'swamped out' through compromise with conventional procedures." (34:4). As will be noted later, the exploratory function, and especially definite exploratory units as such, are peculiarly characteristic of the junior high school in theory; certainly, an investigation of how these units fare in practice is justifiable.

Method of the Investigation

The method used to accomplish the results noted above is four-fold: (1) A questionnaire (designated henceforth as questionnaire S) sent to 38 experts in the field of secondary education that sought to secure the latest authoritative opinion

on the theory behind exploratory units. (2) A questionnaire sent to the 321 principals of junior high schools that sought to uncover prevailing practice in exploratory work and prevailing opinion of principals on the results of the practice: two forms of the questionnaire were used--a longer form designated henceforth as P-1, and a condensed form of P-1 (to be designated as P-2) sent to those who did not respond to the longer form; to the important points of the investigation, found in both forms of the questionnaire, 161 replies were received from the 321 schools addressed. (See Table I). (3) A survey of the literature in the field that (a) reflects the origin and development of the concept of exploration in theory, and (b) summarizes reports on practice during the last decade. And finally (4) a critical treatment of the data: (a) an analysis and synthesis of the data gathered so as to realize the picture and discover trends, contradictions, and the like, (b) a comparison of theory and practice, and (c) the derivation of a set of conclusions and principles that accurately sum up the present condition, refine to some degree the theory of exploratory units, criticize and evaluate existing practice in the light of such a theory, and help to set the stage for the next period of investigation and experimentation.

CHAPTER II

THE FUNCTION OF EXPLORATION IN THEORY

Historical Background

Resume of Historical Development of the Junior High School Idea. Davis (27:15-16) refers interestingly to the possibility that the roots of the junior high school may extend through the three-year non-college-preparatory course of the Boston English Classical School (1821) back to Comenius and Rousseau; certainly the interest in the psychology of the adolescent, in the stages of development that justify separate organization, in individual differences, and in exploratory activities find statement in Rousseau.

The real impetus, however, was given by President Eliot's address before the N. E. A. in 1888, and the consequent deliberations and reports of the Committee of Ten (1893), of the Committee of Fifteen (1895), and the Committee on College Entrance Requirements (1899). The contribution of these events was not in the direction of a separate secondary-school division, but did emphasize a reorganization of secondary-school curricula and a lengthening of the period of secondary-school instruction.

The second stage lies between the years 1895 and 1915. In 1895-7, the Richmond, Indiana, school system actuated by the suggestions in the reports just mentioned, formulated a

plan of "pushing down" into the elementary grades secondary-school subjects, methods, and administration. The seventh and eighth grades were housed in a separate building, the work was departmentalized, and promotion was by subject; algebra, German, Latin, and manual arts were added to the program of studies, and a complete reorganization of the whole program was outlined so as to include these new subjects, eliminate "dry wood", make better the articulation between the elementary and secondary schools, and provide better for those pupils who were not going to college and for those who would drop out of school at the end of the eighth grade. Home rooms were established, guidance based on past record and try-out in algebra and foreign language was used to direct pupils into academic and non-academic curricula. This school probably has, in fact, the right to the claim of being the first junior high school. Similar experiments were going on in Kalamazoo, Michigan (1902), and in Muskegon, Michigan (1904). Berkeley, California (1909), Grand Rapids, Michigan (1911), and Los Angeles (1911) organized separately grades 7-9 as a part of a 6-3-3 organization. During these years also the Commission of Twenty-One (appointed by the National Council of Education in 1907), and the Committee on the Advisability of the Six-Six Plan (appointed by Department of Secondary Education in 1905) were deliberating and making their reports. All of these emphasized a revision of the organization; there was, however, no mention in the recommendations of these bodies of a

separate unit for grades 7-8 or 7-9.[2] Here was a case where practice got ahead of theory; it was practice of the workers in the field against theory of academic-minded college professors, who either composed or dominated the theory-making bodies.

With 1915 begins the third period. The Commission on the Reorganization of Secondary Education was organized in that year and several reports of its sub-committees (1915-1923) advocated the 6-3-3 plan. The great influence of these reports added to the example set by the schools mentioned above established the practice of a separated junior high school with a program of studies of its own.

The modern period may well be dated as beginning in 1920. There had been (as has been said) prior to this time junior high schools and a certain amount of practical experimentation had been done. Furthermore, the Commission on the Reorganization of Secondary Education was beginning to produce its reports on secondary courses of study. The time was ripe for a survey of the field and a critical evaluation of what had been accomplished. The first survey and what is still one of the best sets of philosophical conclusions on the functions of the junior high school, one finds in Briggs' The Junior High School (7) which appeared in 1920.

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[2] One member of the Committee on Economy of Time in his report, made individually (1913) did recommend a 6-3-3 division, however.

This book and the teachings of Dr. Briggs in his classes, addresses, and periodical contributions set the theoretical basis for the last ten years that have seen the junior high school become intrenched as a separate unit in our public school system. Up to the beginning of this period there were about 557 junior high schools (13:111-2); the latest figures (14:4-5) give the number in 1928 as 1127. The scope of the present investigation is confined to this last period of development, 1919-1930.

Development of the Concept of Exploration as a Function of the Junior High School.

Prior to 1920. As has been noted, in Richmond, Indiana (1895-1910), the early purposes of the separated seventh and eighth grades included: pupil election, a simple guidance system, two curricula, and the earlier beginning of so-called high-school subjects by those who seemed qualified; past records and actual trial in "pushed-down" subjects were utilized as bases for advice; a failure in Latin was not charged as a "loss of credit but as a gain of experience." By 1910, there was sectioning by ability, the homeroom teacher was definitely an adviser, the senior adviser was acting as dean, guidance was on a really modern basis, and the School Board officially dubbed the school a "junior high school." In the period 1915-1919, the courses of study were being changed so as to provide more really secondary work, and some of the subjects--science,

foreign language, mathematics and practical arts particularly--were being overhauled so as to make the work more nearly adapted to the capacities and needs of pupils of the seventh and eighth grades; an exploratory unit in general language, largely of try-out material, was introduced in 1918, and in 1918-20 experiments were under way in a general-business course, in general science, and in general mathematics. Exploration was in a rather confused stage; in general science and general language, the try-out method was uppermost, in general mathematics the general over-view aim was paramount.[3]

The original actuating reason for home-room groups was the felt need to make easier the transition from the one-teacher scheme of the lower grades to the departmentalized scheme of the new school. Individual differences, in the very early days, seem to have been discovered (or were they assumed?)--as evidenced by the presence of some differentiation in subject election or curricula. The steps, from this beginning, to counsel in the choice of courses, counsel after failure in certain electives, and general counsel based on all available data on

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[3] The source of the material for this paragraph is an interview with N. C. Heironimus who was the principal of the school described from 1895. He is still principal of Dennis Junior High School, Richmond, Indiana. Cf also: N. C. Heironimus, "The Teacher-Adviser in Junior High School," Educational Administration and Supervision, III (February, 1917) 91-4.

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pupil performance were natural. Guidance-exploration seems to have been a working composite function of the school almost from the beginning. The first exploration was really of the try-out kind in which pupils actually tried, one or two years earlier than usual, units they otherwise would have to choose in the ninth grade; general courses began to appear only late in the second half of the period, 1895-1920. Finally, be it noted that exploration was a function of the school before re-organization of subject-matter for that purpose (or any other) was begun.

This and other similar experiments were influenced by the reports of the various bodies that were examining, for one reason or another, the organization of secondary education; in certain of these pioneer schools, practice was in advance of the theory.

Theory began to catch up with practice in the period 1915-1920 as educational leaders began to collect data on the pioneering attempts and to build a philosophic basis for the junior high school as a separate individuality in the American public school system. In 1915, Johnston (40:684), who pointed to so many things in advance of their coming, clearly states the "junior high school idea" as the reorganization of courses, method, and administration so as "to direct pupils in finding themselves by exploiting their various possible powers and aptitudes." Again in 1916, while he speaks more particularly

of exploration in manual arts, exploration in general is implicit in his insistence on the "study of the individualities of pupils." He does not, however, limit the purpose of reorganization to that of exploration; he also enlarges on the value of general units as a means of enriching and adapting the content for the early adolescent mind. As far as courses are concerned, exploration with him, when explicitly mentioned, seems to be of the try-out kind. His emphasis is also rather on discovering aptitudes than on revealing future work. (41:413-4).

Cox, who was a pioneer worker and thinker on junior high school problems, writes at the same time about individual differences, vocational guidance, pre-vocational training, grouping by interests, differentiated opportunities, and such elasticity that "pupils who take up one line of work may change to another with the minimum loss of time;" he also introduces the idea of making the ninth grade the "readjustment year" when as a result of previous experience the pupil will find his best place in the educational scheme. Individual differences assume great importance but it is their utilization rather than discovery that is in mind (23:619-22 and 24:605-24). Bonser urges a similar course (5:567-76).

The workers on the Commission for the Reorganization contributed also the development of the principle of exploration. Bunker would have the secondary school "offer a reasonably rich and flexible curriculum in order that pupils might choose

their studies in keeping with their interests and capacities.... furnish vocational information" and "survey the chief departments of human knowledge....before the individual settles down to an intensive study...." and then he goes on to speak of "general courses." (15:146).

At the same time Weet is working and thinking along similar lines in Rochester; he puts more stress on pre-vocational try-out in manual arts required of all. He calls it "indefensible" either to encourage vocational choice in the junior high school or, at the other extreme, to give no attention toward directing pupils' thoughts toward the problem of vocational choice. (62:433,447).

One very important advance in theory, and one behind which practice (and much modern theory) still lags, is made by Jones a few years later (1918). "One very important method of educational guidance is that of providing opportunities for experimentation....as will reveal the special aptitudes and interests of each pupil both to the teacher and to himself." He advocated required try-outs in all academic, and in manual, and commercial lines in the seventh and eighth grades "to give to all experience in representative lines of study and activity." Exploration is to be of the try-out variety, is to be in all phases of school and world activity, is to be required of all pupils in all lines, is to be a means of discovering as well as fitting in individual differences, is to be a phase of guidance (42:110-28). It will be shown as this study proceeds

that in this statement of the problem lies all but one of the essentials to its solution; the missing one is the rôle of general units.

The missing essential in Jones' discussion is emphatically and authoritatively stated in the famous joint pronouncement of Judd and Bagley in 1918. After a discussion of the rôle of the junior high school in providing for individual aptitudes in vocational and other lines, the authors agree: "This is not a plea for a narrow trade training; it is rather an assertion that there must be a vigorous effort toward the development of a comprehensive view of industry, so that the individual may choose his career after a broad view of democratic opportunities" "Whenever trade training is given, it should be accompanied, just as far as possible, by broadening, sympathy-cultivating instruction." Enlargement of the scope of the junior high school curriculum merely by adding more subjects will lead to distraction and lack of mastery (44:313-23).

A summary of the development of the theory of exploration from 1895 to 1920 shows the following points:

1. All of the ingredients of the problem of exploration were at hand: individual differences, differentiated curriculum, election, guidance, and the like.

2. Both general and try-out units are mentioned, but exploration, when explicitly described, generally has in mind the latter form.

3. There is some strong support for making exploratory

units required of all pupils.

4. Reorganization of the whole curriculum, partly for the purpose of exploration, is definitely advocated.

5. While the essentials of the aims of exploration--discovering the hidden possibilities of children, revealing future varieties of study and vocational opportunities,--are all present, they are not generally synthesized into a real working concept of exploration for discovering special feasible adaptations to study and vocation.

6. The means of exploration are, of course, not all present at this date; some are at hand, however: past school records, trial and success in immediate courses, some special try-out units, the beginnings of general units, guidance in elementary fashion as a kind of clearing house; two most conspicuous absences are tests and guidance in the comprehensive modern sense.

Dr. Briggs and Exploration Since 1920. The work of Dr. Briggs has been used in this investigation to mark the beginning of the modern period of the junior high school. In the latter part of 1919, he secured by a questionnaire the opinions of experts on the purposes of the junior high school. Of forty-four items, exploration leads in importance all other items except "enrichment of courses of study" and "reorganization of courses of study for elimination of merely traditional subject matter." (8:283-301). In subsequent writings on the matter of exploration, his dicta have been perhaps more often quoted than those of any other worker in the field. The second of his two "general purposes of the school" is "to reveal higher types

of activities and to make these both desired and to an extent possible (7:157). With direct reference to the junior high school, he says: "....it proposes to explore by means of material in itself worth while the interests, aptitudes, and capacities of the pupils, and at the same time to reveal by material otherwise justifiable the possibilities in the major fields of activity, both intellectual and industrial." (7:42,165). These two statements have been quoted or alluded to whenever the functions of the junior high school have been discussed. He adds: "The intermediate school should explore in all the important fields of learning," and "it is believed that most, if not all subjects, can reveal their possibilities.... with no loss to themselves and with assured values to the pupils...." and that to fulfill "the ideal would seem to require exploratory courses....followed by continued and increasing differentiation...." (7:160-9).

These statements comprise all the elements of the concept of exploration that will guide us--and trouble us--later:

1. Exploration as a fundamental function in all schools.
2. Exploration as a fundamental function of the junior high school.
3. Exploration of the capacities and interests of the pupil.
4. Exploration of the courses of study ahead of the pupil.
5. Exploration of the range of possible vocations.
6. Exploration of the range of possible avocations.

7. Exploration as an objective of every course of study.

8. Exploration by specially set-up exploratory units, ideally, in every department of field.

Here are both emphasis and specificity couched in clear and simple language. It is not strange that exploration and exploratory units have been given universal attention, and conceived (in theory, at least) largely in Dr. Briggs' own terms. It is hardly proper to speak of development of the concept of exploration after his discussion; it remains only to note the essential agreement of succeeding writers on the subject.

Two years later Van Denberg (61:15-6) gives similar emphasis to exploration. His first aim of the junior high school is to prepare pupils "to look ahead to the thing they will do next" and his second is to enable pupils "to choose more wisely what this next work will be." This choice implies a course of study one chief aim of which is to train "pupils to find their own aptitudes, talents, and preferences for further work and study." "The ideal junior high school is therefore a finding and sorting school." Later (61:61-2) he wants the exploratory materials and methods so handled that the pupil recognize the work as exploratory and be "conscious....that he is....for the time concerned with information and training that is a sample of the work necessary for success" in future activities; the course of study is to be so organized that the pupil will make his choices intelligent "as a result of actual first-hand experience in his classroom." (61:86-7). This view is less

comprehensive than that of Briggs, but is essentially the same in content and degree of emphasis. Glass at about the same time gives, if possible, a more strong emphasis on exploration, and gives a new connotation to the term: he makes it a part of a more comprehensive guidance function of the junior high school. "The method of the junior high school is guidance, and upon its method, more than on its organization and objectives, will depend its progress and its fullest service." (36:21). He goes on in the same article to discuss this guidance method in terms of "finding," "sorting," "trying-out," "testing," the junior high school period is "probationary" while individual differences are explored, future educational and vocational opportunities are revealed, and courses of study adapted to individual needs. In another place (51:117-8), in stressing articulation as a purpose of the junior high school, he suggests, as a means, the use of "general courses of study" to provide survey of subjects for the discovery of aptitudes, interests, and future opportunities and for the development of an apperceptive base for more specialized courses in the senior high school. In a bulletin on the junior high schools of Pennsylvania (35) he would devote a whole year to "exploration and preview." Glass thus introduces decisively guidance as the dominant factor in junior high school work, and makes exploration the chief means to the attainment of this end; he also stresses exploration as a means of discovering individual differences, of necessity implying that exploration should be carried out in constants or required units. This treatment of exploration gives it a

definiteness of duty and a logical placement in the program that we have not found before. Hines agrees to the relation of exploration to guidance: "Guidance involves exploration to discover aptitudes and individual differences...." (38:170).

Like Glass, C. O. Davis gives exploration first place in the functions of the high school; "Of all the functions of the junior high school that which seeks to aid pupils in discovering their own capacities and limitations, interests and distastes, powers and weaknesses is, in the judgment of the writer, the most important. It is this function, above all others, that justifies the reorganization of the schools on a new basis." (27:99). In his discussion at this point Davis does not make clear the meaning of "discovery"--whether it is the result of a broad guidance program of which exploration by units is a part, or whether it is done primarily by such courses. Later he does say that "the junior high school being, primarily, a testing place, opportunity must be allowed for explorations." (27:115).

Above we noted that Briggs definitely mentioned exploratory units as such; he also believed that all courses could be exploratory, or perhaps that all courses could have exploratory units in the beginning. For some time this latter specific challenge was not rejected, nor was it accepted even though exploratory units were mentioned and approved. But Bruner at Okmulgee, Oklahoma, had been putting the plan to test. In his report of the experiment (10:18) he mentions

twenty-eight different exploratory units of the "try-out" variety that gave the pupil actual samples of what was "in store for him if he continues....later in the senior high school...." These were electives, however, except that four must be chosen in the seventh year and from two to four in the eighth year. Thus, the "ideal" of Briggs was approached in the matter of course of study, but much of the exploratory value for many pupils was wasted. Throughout the report these units are called "broadening and finding courses," and the treatment helped greatly to give proper emphasis to the point that had been running through all the previous discussing of exploration--that exploration, while it might narrow the sharpened interest of the pupil as he discovered his capacities and interests must also broaden his interests by giving him new contacts all the while: this would be true even in such concrete sampling courses as were worked out in the Okmulgee experiment. Davis had made a significant remark in this regard: "....the fundamental purpose of the junior high school is liberal culture on an elemental plane. The junior high school is to individuals of the early adolescent stage of development what the college of literature, science, and the arts is to the prospective student of law or medicine." (27:101). There is noted here an attempt to differentiate and yet to unite in one kind of treatment two widely different phases of exploration: (1) the discovery of certain specific abilities and interests of the individual and the exploration in certain

narrowed fields of work, as opposed to (2) the discovery of the whole individual and the exploration of the whole world. Glass and those who see exploration as an integral unit in the broad field of guidance are stressing the latter conception of exploration, some who worked with try-out units that attempted to sample work to come were interested primarily in the first conception; Bruner would attempt to reach both goals with one form of unit.

Smith makes an attempt to gather together all the factors that aid in the guidance function of the junior high school, which he considers "the very keystone of the junior high school idea" (58:377); this school must provide "abundant facilities for the progressive discovery and experimental direction of pupils' interests, aptitudes, and abilities, involving especially....(a) exploratory activities in varied occupational fields; (b) general and survey courses in the major academic fields; (c) individual and social diagnosis; (d) flexibility in curricular organization and administration; and (e) educational and vocational guidance." (58:203). Despite what seems to be an unfortunate narrowing of the term "exploratory," this is a good concise statement of all the factors involved in guiding the pupil into knowing himself and the means by which he can realize himself. The first step in getting a clear view of a problem is to gather together all the factors that are germane to the problem.

The Fifth Yearbook of the Department of Superintendence

gives a "composite statement," made up from a survey of the literature; in this statement, the junior high school is defined as "essentially an exploratory, try-out and information school." A ranking by school administrators and specialists of the "special purposes of the junior high school" puts "meeting individual differences....enabling pupils to follow the lines of their interests and ability, first. Second in rank is "Prevocational training and exploration." Third comes "Counselling or guidance." "Providing for self-activity--early development of leadership, individuality, and initiative," "Introduction of new subjects," and "Stimulation of educational advancement" are also three of the remaining twelve "general purposes." (34:14-21).

The North Central Association Committee on Standards for use in the Reorganization of Secondary School Curricula has also set forth plainly its belief that the exploratory function of secondary school content should be kept in mind. The following statement in its preliminary report indicates such belief: "....the (secondary) school furnishes to many young people practically the only opportunity to discover and develop abilities"; "Differentiated needs require more accurate determination than now obtains." One immediate objective is stated thus: "Knowledge functioning directly in developing dispositions and in discovering and developing abilities." (55:389-395).

Koos, writing in 1927, says that "the ascendancy of this purpose (guidance-exploration) is one of the most significant

movements which have latterly affected junior-high-school issues." He uses exploration and guidance as "two phases of essentially a single grand concept." "The first of these is concerned with 'try-out' of subjects and subject groups, and experiential contacts in the school shops or elsewhere with occupational life. The second is concerned with other phases, such as assistance in course and curriculum selection, in the choice of present and future lines of activity, such as occupational, recreational, social, etc. The function is one." (47:52-5). Guidance is later described as the complex of advisory activities, centering in a counsellor-staff and home-room organization, and seeking to gather together all data (test scores, extra-curricular activities, behavior, home conditions, health) to the end that personal counsel may be given as the pupil goes through his school. "....it must be placed among the few most important purposes" of the junior high school. (47:405-25). Finally, Koos regards exploration-guidance as necessary to the discovery and handling of individual differences; they are "corollarial."(47:53). Koos enriches both the concept of guidance, first made so explicit by Glass, and the concept of exploration by treating them as two phases of the same activity--the activity being what Glass has in mind when he says that "guidance is the method of the junior high school." If one extends Koos' meaning of exploration from "try-out" in courses to a trying-out of the pupil in all respects: testing, interviews, extra-curricular activities

and the like, it is easy to expand the implications of Koos' treatment and to say that guidance is the coördinating and directive phase, while exploration is the experimental and data-gathering phase of what Inglis called years before the "diagnostic and directive function." (39:718).[4]

[4] cf. also William M. Proctor, Educational and Vocational Guidance. New York: Houghton Mifflin Co., 1925. Proctor takes the broader view of guidance here set forth, and in his discussion of what he calls "adjustive," "exploratory," and "preparatory" functions of the junior high school (pp. 96-7) includes much the same activities as we have incorporated under "exploration."

Summary of Chapter

1. There is unanimous agreement that exploration is a main function of the junior high school.

2. Exploration is defined in terms of discovery of abilities and aptitudes and of revealing the nature of future school and life activities.

3. The later writers make explicit the fact that exploration is not an end in itself but a means to be used in improving the educational advantages of the pupil--that a thorough-going guidance system is needed if exploration is to justify itself; the junior high school must be more than a "finding" school, it must be a "directing" school.

4. Exploratory units in the various courses of study are recommended as a means of exploration.

CHAPTER III

EXPLORATORY UNITS IN THEORY

Survey of the Literature

In the preceding chapter, the concept of exploration was treated as it evolved in the hands of theoretical discussion during the last ten years. In this chapter, the problem will be to take one phase of the exploration function--the reorganization of the courses of study so as to contribute to the realization of the function with special attention to so-called special exploratory units.

We shall organize our discussion on the basis of Briggs' thinking in the field. He makes these contributions to the concept:

1. Reorganization of course of study. He definitely recognizes reorganization of the courses of study as a means of exploration. In fact, in his general discussion of exploration in The Junior High School (7:41-6, 165-7), he speaks of no other means of exploration. "This conception (exploratory) of the junior high school requires more reorganization of courses of study than does each of the other conceptions that are widely held." Of course, the omissions are not particularly significant because, at the time of the discussion (1920), tests, personnel work, and the like had attained no such importance as they developed later. He does in 1928 refer to "other information" as exploratory materials (6:203). Of

course, he does not mean that the exploratory function is the only reason for making a new set of courses for the junior high school, but there is no doubt that it is a major reason. Merely "pushing down" regular high school pabulum is not enough. Van Denberg concurs in this as a specific reason for reorganization, and cites as one difficulty in meeting the exploratory function the "bias for traditional subject matter." (61:87-8). An example of such bias may be seen in this recommendation by the National Committee on Mathematical Requirements: (In grades 7-9) "it is also especially important to give pupils as broad an outlook over the various fields of mathematics as is consistent with sound scholarship (Italics not in original) (16:17). Davis (27:99-100) agrees with Briggs, and Proctor looks upon reorganization of the program of studies for exploratory purposes as a requisite to effective guidance (52:96-8). Bruner has his twenty-eight different "broadening and finding" units as a contribution to exploration (10:18). Smith makes three demands on course reorganization: "try-out" units in occupational fields, "general survey" units in the major academic fields, and "flexibility in curriculum organization." He also lays his finger on a particularly sore spot in secondary curriculum reorganization: the fact that subject aims rather than the educational objectives (exploratory, for example) dictate the content of courses (58:203, 386).[5] The Fifth

[5] cf. also E. C. Cline, "A New Orientation in Secondary Curriculum Making," High School Teacher, VII (January, 1931), pp. 3-5, 28

Yearbook of the Department of Superintendence, entirely devoted to the reorganization of the junior high school curriculum, recognizes exploration as a dominant aim and the divisions devoted to the different subject fields take cognizance of this fact, for example, literature, general mathematics, and foreign language (34:152,185,295). Touton and Struthers devote two chapters to a discussion of the methods and devices that can be used to bring out the exploratory values of courses: study helps, visual aids, library facilities, museum collections, excursions, interviews (60:chaps. VI,VIII). Koos says the exploratory function "may not be accomplished without a much enriched and enlarged program of studies....administered with the performance of this function specifically in mind (47:56). A late study based on a questionnaire concerning practice in junior high schools in New York concludes that a "junior high is a real junior high school to the extent that it has revised its course of study" and that one of the three purposes in reorganization is the "need for teaching each one of the junior high school subjects so as to yield some exploratory values for the pupils." (25:72-9).

2. Specially set-up exploratory units. Briggs advocates that, in certain fields at least, specially set-up exploratory units be offered--units, like general language, for example, that would be new under the educational sun (9:55-9). It is possible that too much has been read into his incidental references, and that such misreading has led curriculum makers

astray. In speaking of try-out units in practical arts he does approve of their use even though they are only "somewhat valuable to those who do not continue the work."(7:42). In advocating (as a sample) an entirely new unit such as "general language," it might also be inferred that specially set-up exploratory units are generally recommended. Van Denberg does not suggest such units unless we except his discussion of "introductory foreign language."(61:ch.V). Similar suggestions of special units are found in Davis (27:161,234). Bruner's twenty-eight units are specially designed for exploration (10). Cox approves of Bruner's units and describes specially set-up general units in foreign language and commerce (22:266, 282-4, 379-80). Smith advocates a full set of such units in the academic as well as in the occupational fields (58:203).

3. Exploration in all fields. Briggs believes that all major "fields of learning" should provide such exploratory material. "It is believed that most, if not all subjects can reveal their possibilities...."(7:169). Van Denberg agrees and suggests "general" units in all the fields later to be entered by the pupil; "the subjects must be necessary and useful for understanding the new work that lies just ahead."(61:68,75). Bruner has made the most comprehensive attempt to date in building special exploratory units in all lines of work(10). Exploratory excursions into "aesthetic and recreational activities", the formation of "habits of participation in many of these during leisure hours, and an appreciation of their

value in leisure time activities when school life is over" are among the aims of Touton and Struthers (60:9-10). Koos says that the inclusion of variable courses in great numbers is certainly desirable although perhaps not always feasible. "Decreasingly the function of exploration and guidance is thought of as applying only to occupational life and increasingly it is being spread to the other major relationships of life, the avocational, the social, and health. For the most part this trend is wholesome...."(47:55,185). Smith, as has been said, also agrees to the above principle.

4. Exploratory units otherwise justifiable. Briggs insists that units that are designed for exploratory purposes be "otherwise justifiable" in the sense that they "contain material in itself worth while", "however small" the unit, contribute to some of the other enumerated purposes of education", and "be primarily valuable to each pupil"--to those "who drop out no less than to those who continue."(7:43,161,166,169). And so does Van Denberg: "At the same time we must not forget....that what we teach must be immediately useful either for its own sake or as a necessary step toward some other useful information that is clearly within sight"(61:63). The last phrase (referring to deferred values), innocent enough in appearance, common enough in educational argument, and (as stated) perhaps correct enough, is particularly dangerous in exploratory units and can easily lead to much waste of energy if the pupil is supposed to take many exploratory units in lines that he does

not pursue further. Briggs is most insistent, as we have seen, that these units be worth while in themselves--even to the extent of saying that one distinghishing feature of them is the freedom from "deferred values."(7:169). And yet deferred values may represent the only justification for actual"sampling" in certain courses; what but deferred values will actual sampling of a French course have, assuming that it lasts only a few weeks? And if a pupil does not continue French, will the guidance value alone justify the time spent on the trial? Already the question of exploratory units begins to bristle with problems. Davis insists on "positive values" for all exploratory activities(27:100). Bruner calls his exploratory units "broadening" as well as "finding" and says that the "broadening" aim is the chief one (10:20,33).

5. Exploratory units required? As a natural consequence of the preceding two statements, it may be inferred that Briggs would have these units required rather than elective. "It is argued by the proponents of this plan of exploration that it should be prescribed for all, or nearly all, pupils....for the purpose of integrating (not exploring!) the whole social body." (7:45-6). And so thinks Van Denberg (61:65), but he has in mind a clientele that has rather simple college-preparatory futures. Davis is more emphatic on this point: "....every pupil should be given access to the general try-out courses.... offered to others." And "pupils not only shall have opportunity to test themselves....but shall be encouraged and

required to do so" because exploratory material properly organized "suitable for one pupil may be equally suitable for all." (27:100). We perhaps do not have the right to interpret "encouraged and required" as equivalent to "required", however. Proctor sets down the exploratory units as "electives or variables"(52:97); and Bruner, after organizing twenty-eight different units, and after claiming that their chief aim is "broadening" still has them largely elective: four must be chosen in the seventh grade and from two to four in the eighth (10:18); of course, it is difficult to see how, with so many units, prescription of all of them is possible. Bennett advances another argument for making exploratory work required--the opportunity to develop "hobbies."(3:121-7). While Koos says that all have exploratory possibilities, he lists numerous "variables" (electives) as necessary for meeting the demands of exploration (47:177-90). Cox expressly advocates that it is not "good practice" to include special exploratory units among the prescriptions, and would allow pupils to go to study rooms if they do not evince interest in the exploratory opportunities (22:262-5). Smith on the other hand: "In part, at least, such exploration must be effected through constant materials...."(58:243).Theory is unsettled here, obviously.

6. General and try-out material. Briggs seems to distinguish between two types of exploratory units, "general" and "try-out."(7:42, 167, 169-171). He does not explicitly define these terms, but "try-out" units seem to be those in which the

pupil actually tries his hand at samples of the kind of work explored, whereas "general" units seem to be composite forms such as general mathematics in which arithmetic, algebra, geometry, and the like are combined so as to "reveal the possibilities in the general field" of mathematics and perhaps to reveal the broader usefulness of mathematics in general in solving worth-while problems; there is study about, as well as in, mathematics. In his discussion of the general-language unit in a later writing (9:55-9), he would combine these two elements about equally: half to the study about language as a social institution, and half to a try at the kind of school work foreign language is. Van Denberg mentions only "general" units and has Briggs' conception of them (61:67 ff). Davis (as we saw above) makes very little, if any, distinction, using the expression "general try-out courses" in one instance (27:100). Bruner's broadening and finding courses" claim to meet the demands of both kinds of exploration, but certainly are primarily designed as try-out work with actual samples of the work to come; he stresses the obvious necessity of making try-out units bona fide "cross-sections of later work" and illustrates the point with an instance in which conjugations "cured" a girl who persisted (with her parents) in a determination to do Latin (10:18-24). It is to be noted, too, that of his twenty-eight exploratory courses, fifteen were in the field of practical arts, and that only science, foreign language and some special phases of English of the academic fields were represented

and they by only six courses. Smith discusses, separately, exploratory activities in occupational fields and general survey units in academic fields--a distinction in type and in fields in which each is to be used (58:203). Cox speaks of "general exploratory courses" in foreign language and commerce, and of "try-out short-unit courses in fine arts, and in industrial and home arts"; "....the object of try-outs is to lead pupils to select in what special field....they wish to take formal electives; whereas the object of practical arts is unspecialized general efficiency."(22:262-3). Here is a clear distinction of terms although his statement of the difference between a try-out unit and a regular unit seems to be at variance with the insistence of others quoted above who insist that all exploratory units, even try-outs, be broadening and worth while to all pupils.

7. General type preferred. From his dictum that exploratory courses must be worth while in themselves, and generally suitable to all pupils, and from his description of the general-language course, it is also inferred that the "general" type is preferred by Briggs, or at least that this approach should be made in any case. He says in fact that "an acceptance of this aim of the junior high school (exploration) demands that it offer the possibility of a great deal more than merely a 'try-out.'" The courses should be formulated so as to be primarily of value to each pupil whatever his future election, so as to stimulate him toward the highest career for

which he may prove to be fitted, so as to furnish a sound foundation for his future studies in the same field, and finally so as to integrate the whole group" (Italics not in the original) (7:43). As we saw above, Van Denberg mentions only 'general' units (61:67 ff). Glass would have a 'general' unit at least as a first unit: "This first general view of the secondary school subject matter is restricted to simpler aspects of the whole subject field, prior to any attempt to cross-section it into parts. This general introductory course offers opportunity for the exploration of aptitude for the whole subject field and for an apperceptive basis for cross-sections of the subject. Properly, therefore, junior high school courses are designated as general mathematics, general science...."(35). This idea is also a part of what Glass has in mind when he speaks of the content of the junior high school as "chemical" rather than "physical." Davis quotes Glass, as above, approvingly, and, while he approves of introductory units and try-out units of short duration, he has this strong statement: "The fundamental purpose of the junior high school is liberal culture on an elemental plane. The junior high school is to individuals of the early adolescent stage what the college of literature, science, and the arts is to the prospective student of law or medicine."(27:100-1). While these latter statements do not refer specifically to exploratory units only, he does say about "general language": "What is advocated is a course about foreign languages and the people who speak them rather

rather than a course in several foreign languages."(27:161). "....the approach to each new field of thought should be by way of general introductory courses....outlooks and overviews are what should be sought....The large and fundamental aspects.... should be studied...."(27:53) so as "to afford each pupil a preliminary survey of every field of knowledge he is expected to enter by making all first courses exploratory courses." (27:122). Even in approving try-out units in practical arts, he insists that "social and civic aspects" of such training be emphasized, otherwise the units are worthless for all except those who are definitely on the way to a trade vocation (27:235). As we have seen, Bruner, while his units are frankly "try-out in the literal sense, admits the necessity and advisability of making them "broadening" rather than "narrowing" as close adherence to fragmentary samples is likely to be. Bruner called his courses first "finding", then "finding and broadening", and finally "broadening and finding" as his theory and practice veered about to the general form (10:17-8). Touton and Struthers emphasize the "appreciation" phase of each aim--an objective impossible to attain unless there is a general gathering-together of the materials and experiences (60:8-10). Those who write of exploration as an <u>activity</u> or <u>end-in-itself</u> are likely to put undue emphasis on the isolated specific trials and successes; those, however, who look upon exploration as a <u>means</u>, as the <u>experimental phase of guidance</u>, stress the general, survey, preview, overview, and informational phase of

the activity. For example, Edgerton and Herr, writing from the standpoint of vocational guidance where a narrow view of exploration would be most expected, set forth that exploratory units contribute to guidance of pupils:

"a. By broadening their understanding of economic production and increasing respect for different workers and their respective occupational pursuits.

"b. By preparing them for greater insight and wisdom in judging and using various resources, products, and services.

"c. By helping them develop general appreciation and occupational intelligence.

"d. By offering them opportunities for testing interests and capacities as a basis for selection of....educational programs and....vocations...."(33:14).

As we have seen above, Cox limits the "general" approach to certain types of subjects and specifically says that "try-outs" are not of general nature (22:262-3). Smith gives the clearest description of the advantages of general units when he says that the general form of organization "has everything to commend it from the standpoint of the learner. It is in the very nature of the case psychological rather than logical; that is, it presents the materials of instruction in the order and in the form in which the learner can deal with them most advantageously, rather than from the point of view of the specialist, or with regard to the exigencies of logical organization....The net outcome of such a procedure is that the individual's mental

horizon grows ever larger and ever more varied, but instead of being confused by the increasing vastness and the growing diversity of the world about him, he becomes more confident and secure. In other words, he is finding himself with regard to the great world about him."(58:237-8). He also says that "try-out courses are quite inadequate in themselves."(58:388).

8. What is explored? Briggs makes a clear distinction between exploring the "interests, aptitudes, and capacities of pupils (his third purpose of the intermediate school) and revealing "to pupils....the possibilities in the major fields of learning" (his fourth purpose); fields of learning....include industrial activities."(7:165-9 and 6:199-204). Thus he really distinguishes two varieties of exploration or at least two aims of exploration:

a. To explore personal equipment of pupils

b. To reveal future opportunities in school subjects and vocations.

It is implied that these purposes may both be fulfilled by the same exploratory units ("try-out" units for example, are used to illustrate the attainment of all purposes), but that point is nowhere explicitly made. The division of the field for the sake of emphasis is justified, no doubt, but the separation of the functions without a synthesizing discussion has led to a lack of carefully thought-through applications of the principles. Another misleading factor is the (no doubt, unwitting) tendency of Briggs to regard exploring personal capacities in terms of

fitting pupils to some school activity or vocation and to omit reference to the advisability of discovering traits for character and citizenship development. For example, the illustrations in Briggs refer to trying to make scholars where mechanics are predestined, to enabling pupils to get the most out of their subjects, to adapting training to pupils, to reducing failures, to exploring the major fields of learning, and so on (7:165-9). In a later discussion, Briggs makes much more of developing and respecting interests, is less sure that interests are innately predestined although the ends mentioned are primarily what the pupils will do (9:38-41). There is no claim that there is anything wrong in the trend of the argument or in the illustrations; the mere omission of a warning has made possible some mistaken attempts at exploration or has led to a too narrow conception of the exploratory function. Van Denberg's insistence that the junior high school is a "finding and sorting" school also differentiates the two activities. Davis follows Briggs (27:99-100). Bruner agrees in substance but his emphasis on trying-out pupils with samples of work brings out more baldly what seems to be the previously mentioned serious omission in all the discussions: the fact that exploration of pupils' capacities seems to be largely confined to testing them in terms of what they can do rather than in terms of what they are, think, and feel as whole individuals. Here arises the whole question of the negative effect of specialization on integration of character, and the no less

fundamental one of whether what one does is fully indicative of what one is--of whether such "broadening" is not likely to be narrowing in just the sense that Davis has expressed a warning. Smith warns that exploratory (try-out) units in occupational fields are particularly liable to become formalized and inflexible in routine so as not to meet or develop individual differences at all (58:386). In the light of our discussion of the guidance-exploration function, the findings of Edgerton and Herr (33:15-6) on expert opinion concerning the objectives of a guidance program are significant; the ranking of the aims was as follows:

1. Contributing to all-around development of general experience and intelligence - - - - - - - - - - - - 39%
2. Aiding in choice of life occupation without encouraging early choice - - - - - - - - - - - - - 33%
3. Enriching school experiences by concrete situations 26%
4. Preparing for direct entrance into a vocation - - 2%

"During this period (years 7-9) the chief emphasis is....to help all pupils to develop a reasonable amount of perspective and reasoning power in connection with life situations as a basis for purposeful election of courses, proper choice of occupation, and later adjustment in employment." The emphasis, in other words, is on developing the person rather than on subject and vocational adjustments. Bennett would use exploration as a means to develop "hobbies."(3:121-7). In a questionnaire on "essential" and "desirable" outcomes of junior high school

education, 82% of the experts considered exploration of the interests and aptitudes "essential" and 97% "desirable", while only 55% thought exploration of subjects and industries "essential" and 90% thought it "desirable."(8:283-301). Davis' conception of the liberalizing function of the junior high school should be recalled in this connection also (p. 23). Character, says Dewey, is the name given to the working interaction, "interpenetration of habits." Unorganized habits, "an untied bundle....of isolated acts" is not character (28:38).

9. Short units. Briggs definitely sanctions exploratory units of short duration even to a possible two-week unit in foreign language, provided the work be worth while and not in "fragments."(7:161). Davis (27:234) and Bruner--especially Bruner--agree (p. 32).

10. Variety and continuity. While he approves of a great number of units in great variety to meet the demands of exploration (among others), Briggs would have continuity. A good exploratory program insures continuity because it will develop reasoned choices in the pupils, and start them correctly in differentiated lines of work; continuity is hardly justifiable, he thinks, unless such an exploratory program exists. If the short exploratory units have values in themselves, dropping out after the exploratory unit, however, is not wasteful for those pupils who do not care to go on with the kind of work (7:159-62). Van Denberg adds something to this point when he advises that courses of study be planned so as to "enable the

pupil to make his successive steps of progressive differentiation and specialization....come as a result of actual first hand experience in his classroom (61:86-7). This implies, too, a great variety of units, more definitely brought out at another place: "The subjects of study selected for our junior high school work must be capable of furnishing such a variety of vocational experiences as will assist the pupil in his selection of the line of work and study upon which he will sooner or later specialize."(61:62-3). But for the means of securing continuity despite this great variety of activities, Van Denberg has a good suggestion: The subjects that the pupil will later pursue are to be begun as early as possible,in the seventh grade if possible, and be continued on through the secondary period under a unified plan of supervision (61:87-9). In addition, he recommends inter-visitation of the teachers of junior and senior high schools so as to make each familiar with the subject-matter of the courses in both schools--especially that the junior high school teachers be familiar with the courses of the upper school which Van Denberg pictures as set by college entrance requirements and tradition (61:89-92). Cox secures continuity by a "core-curriculum" only incidentally exploratory (22:11,262).

Summary of the Opinions Concerning Exploration by Means of the Courses of Study.

Before an attempt is made to show in greater detail expert opinion in regard to the reorganization of particular courses

of study, it will be well to summarize the preceding discussion of general principles.

1. Reorganization of the courses of study as a means of exploration has the support of all the specialists. In the light of the dominant rôle that exploration plays among the functions of the junior high school, it is obvious that the courses of study ought to bear decided signs of reorganization in order to further the ends of exploration. Just what these signs ought to be will be mentioned when we discuss the different courses of study.

2. There are some possible implications in theory and some examples in practice favoring, in some subjects at least, the construction of specially set-up exploratory units--units that are called into being primarily for exploratory purposes.

3. All the subject fields, all the vocational opportunities, and even the leisure time activities ought to be explored, although the possibility and particularly the feasibility of providing units for all such purposes is doubted.

4. These exploratory units must be "otherwise justifiable"--must have values apart from their exploratory uses. Despite the importance of exploration, it alone apparently can not justify time spent in a school subject. Stated in its baldest terms, the theory is that even though a pupil fails completely to show any interest or aptitude for a unit, he must have gained some good from the unit beyond the knowledge of his unfitness.

5. As for prescribing exploratory units, only Davis

suggests making all the exploratory units required, and one can not be sure that his language means making all exploratory units constants. The advisability is agreed upon, and, since all exploratory units are really to have values of other sorts, the values of such to all pupils are admitted. In suggesting actual practice, however, the preponderance of opinion is decidedly against having the exploratory units prescribed for all.

6. There seems to be a tendency to distinguish between "general" units that give an informational over-view and survey of a field of knowledge or of a vocational field, and "try-out" units that contain actual samples of work that lies in the future.

There also emerges from the discussion the idea that these two types might have different degrees of usefulness or suitability in different fields; the "general" units, for example, are generally illustrated by the academic subjects, and "try-out" units by the practical arts field.

Unfortunately, also, there is discernible the fact that specialists do not always distinguish clearly between the two terms, never making an attempt clearly to define the two terms, and sometimes even using the two interchangeably.

7. The "general" seems to be preferred--at least, the "general" approach or the "general" style as a basic organizing factor is preferred. From what was said in the preceding paragraph, it is obvious that no clear inference of such preference can be drawn. The inference is logically based not so much on what the experts say directly as from the fact that more

attention seems to be given to the "general" units, and that a discussion of "try-out" units generally includes a warning that they must not be too narrow, that they must be more than bald trials, and that they must be worth while to all pupils; general "binding" material is generally recommended for try-out units.

8. Two different objectives evolve from the experts' opinions:

a. To explore the individual capacities and interests of the pupils.

b. To reveal the nature and possibilities of the different specialized subject fields, and of vocational opportunities.

Of course, these are not always mutually exclusive, but they are two different explorations.

9. Three noticeable omissions occur in the opinions: in the first place, the two varieties or objectives of exploration above are not clearly distinguished. Secondly, there is no discussion as to whether those two objectives may be reached by the same units and same methods, or whether they must be aimed at separately and sought by different methods and materials. A third omission is the fact that exploring seems to be confined to finding out what a pupil can do or likes to do in terms of a relatively limited array of opportunities to the neglect of a more complete analysis of the individual's make-up; more emphasis is put on matching certain differences with certain

specialized activities than on discovering all the individual's differences for the purpose eventually of integrating them into a person.

10. Short units of two weeks or longer are approved.

11. Continuity in midst of necessary variety is mentioned as a desirable feature in the junior high school. Since the exploratory units are the worst offenders in the matter of variety, the problem of the desirability of continuity will have direct bearing on them. Continuity is desirable only if exploration has started the pupil aright; on the other hand, if exploratory units have intrinsic values, the discontinuance of a line of work causes no loss.

Exploratory Units as Such in Theory.

The general theory of exploration may be further clarified if we review the expert opinions on the construction of units that are designed to carry out the function. Of course, if exploration is a general function, all units should contribute to its fulfillment. However, in order to make this discussion converge to the point of this investigation--the status of specially set-up exploratory units--the units chosen will be those that are commonly looked upon as having been constructed with the function of exploration specifically in mind. The references cited below are not those that merely mention the unit in question but mention it explicitly as a means to carry out a special phase of exploration. What are some units that are thus conceived?

1. A practical arts unit, mentioned by Briggs (7:45,264), Douglass (31:262), Davis (27:230-5), Cox (22:207-8, 356-7) Koos (47:275-86), Bruner (10), The Fifth Yearbook of the Department of Superintendence (34:420), and Edgerton (32:1-7,29).

According to the references above, the exploratory unit in practical arts should be a try-out, sampling unit in which the pupils have first hand experiences with the content of the occupational field. Generally there is recommended either a "general shop" (4:43-6) in which projects, entailing the use of composites of techniques belonging to various trades, are "performed, or a rotation scheme (48:171-4) in which pupils try out short allotments in various specialized shops in turn. Some general principles laid down are:

a. While there is general agreement as to the value of such actual trial-and-error units, there is general insistence, too, that mere "walking through" the introductory phases of a trade is not enough. The units must be per se valuable, and, besides, the complexity of the occupational world precludes a trial in all possible lines; therefore, some general survey material is necessary in order properly to orient the pupils. In other words, the try-out feature needs basic supplementation by general overview and preview materials. It is largely for this reason that a unit in vocations is so generally recommended.

b. As a corollary to the above, the cultural and integrative character of junior-high-school education demands

that these units give pupils an "appreciation of the kinds and nature of the practical activities of the....world about them" (Davis). Cox would have them as only "incidentally" try-out courses. Even Bruner would make them "broadening" as well as "finding."

c. The units are designed not only to explore fields but also to explore the capacities and interests of the pupils,--not for personality development but for adjustment to study and occupation.

d. Only Davis explicitly and Briggs by inference would have these units required of all pupils.

e. Reorganization of the practical-arts course is always a part of the program.

2. General language mentioned by Briggs (9:55-9), Bruner (10:39-40), Davis(27:161-7), Van Denberg (61:150-1), Cox (22:262,282-8), Douglass (31:261-2), and the Fifth Yearbook of the Department of Superintendence (34:296-7).

a. The consensus of opinion is that there should be a combination of try-out materials in foreign languages and general survey of language in general as a human tool. Although there is wide variation of the amount of emphasis on each, the weight of opinion favors the predominance of general material. Davis and Van Denberg would have the unit primarily a study about language while the Fifth Yearbook favors the try-out feature; Briggs favors a fifty-fifty allocation of time to the two. The general introductory material includes study of the origin,

evolution, and nature of language, of the geography, history, and culture of the people who used the languages, of forms, words, and linguistics. The try-out material is sometimes based on one language, usually Latin, or on several languages with four to eight weeks devoted to each. This unit clearly reveals the actual differences between these two types of exploratory material, and the need for careful distinguishing of the two.

b. The unit is to discover the capacity and interest of pupils for future language study, and to reveal the nature of future courses.

c. The material, even the try-out material, must have value in itself.

d. The unit is generally intended as an elective.

e. The unit calls not merely for the revamping of beginning foreign-language units but for the building of a new content.

f. The content suggested (except that by Davis) implies that the unit is to be a general-foreign-language or pre-foreign-language unit, rather than a general-language unit.

3. General business training mentioned by Davis (27:234, 249-50), Cox (22:220-3,262,379-80), Koos (47:298-300), Lewis and Sorensen (49:567-8), Glass (51:25), Bruner (10:44-5), The Fifth Yearbook of the Department of Superintendence (34:431-3), and The Commission for the Reorganization of Secondary Education (11:25).

a. The units suggested contain varying amounts of the following different kinds of content: (1) general overview

material bearing on commerce as a great division of the world's activities--on its nature and service, and major activities; (2) genuine try-out materials such as bookkeeping, typewriting, and stenography; and (3) actual experience in handling so-called try-out materials selected not from the content of future courses (as in 2), but from common, every-day business procedure: business habits, thrift, forms, deposits, checks, credit, penmanship, traveling, and the like. There is more uncertainty here than in any of the other exploratory units.

b. A general appreciative overview is nearly always stressed.

c. The unit is generally elective, although it is held to be more deserving of inclusion as a constant than either of the two preceding units, and much of the material is believed to be valuable enough to be included as parts of other constants (cf. Cox especially).

4. General mathematics mentioned by Briggs (7:44,170), Van Denberg (61:126,131-5), Davis (27:199-202), Reeve (54:473-83), Cox (22:177-206), and the Fifth Yearbook (34:185 ff).

a. While this is generally looked upon as a unit that reveals the nature of advanced mathematics, the content and approach advocated is of the general type. Cox says that this unit has succeeded even better than general science in "coördinating the various aspects of science and in promoting the practice of thinking in relation to them." Many of the weapons of mathematics--arithmetic, algebra, geometry,

trigonometry--are introduced not primarily as samples but as means to solve worth-while problems; out of the unit the pupil not only gets insight into new problems and new solutions, but he gains an appreciative idea of the mathematical constitution of things and of mathematics as a way of thinking and interpretation--as a tool to manage one's experience (59:229-30).

b. This unit will explore the capacities and interests of pupils, the world as revealed by mathematics, the advanced courses of mathematics; some mention is made of occupational exploration.

c. The unit is generally recommended as a constant, not however for exploratory purposes primarily, but because of its practical and cultural values.

d. Thorough reorganization of secondary mathematics is demanded so as to produce a composite of the mathematical tools selected on basis of actual need in solution of problems.

5. General science mentioned by Briggs (7:44,169-70), Van Denberg (61:165), Caldwell (17:630), Koos (47:252-9) Davis (27:211) and The Commission for the Reorganization of Secondary Education (12:25).

While, as Cox says, general science may not be as successful in meeting the demands of the junior high school as some of the other reorganized courses, its evolutionary history--perhaps because of its mishaps--typifies excellently the travail undergone in junior high school curriculum making, and is particularly illuminating for the present discussion.

Briggs set the general basis for general science when he said that "early adolescence is the age for acquiring the facts of science and the simple principles which, while useful in themselves, reveal the possibilities of future study"; the content was not to be "matured knowledge" but answers to "naïve questions."(7:170-2). There are several implications in Briggs' outline:

a. The unit will be general rather than try-out. He believes that the "vertical stratification" of science into chemistry, biology, and the like, is not a matter for junior high school pupils; "this exploration gives the pupil some knowledge of the general field."

b. The unit is to explore the natural environment, the general field of science, the divisions of the field that later may be elected, and the capacity and interest of the pupil in science.

c. The unit must be worth while in itself regardless of the child's future elections, and the worth depends not only on its exploratory value but primarily in its immediate value as a means of answering the child's own questions.

d. As has been shown above, Briggs would have the unit a constant.

e. The unit demands a complete reorganization of content, and one of the two reasons given for such reorganization is the need to provide information about future courses.

That the exploratory unit should be of the general type is usually agreed. It is true that Bennett recommends try-outs

in such fields as photography, chemistry, geology, agriculture, and the like (3:22), and that the Fifth Yearbook of the Department of Superintendence seems to recommend a presentation based on senior high school sciences (34:150). On the other hand, Van Denborg's course would open up the field of a scientist to the pupils but not attempt to "give even the beginning of that training."(61:165). Caldwell would not give the pupil the "impression that he has had a course of study in the special sciences."(17:628). Touton says the consensus of opinion is that the course should be on the "play level," general, and extensive, emphasizing the consumer's rather than the producer's viewpoint, and having the content organized on the basis of the problems of life and not on the basis of the science fields (160:305-6). Davis, speaking particularly of science, says that the"beginning courses in any subject should concern themselves with the large fundamental aspects of the whole field of related ideas rather than with the detailed specialized portions of the subject (27:211). Koos says that "leaders in the teaching of general science have long since abandoned the practice of making up the course in general science....of dissociated portions or chapters of the special sciences. They have been seeking out a principle of organization of content that will make of the courses coherent wholes." He cites the plan of unit organization of such topics as combustion, to the understanding of which any or all the sciences may be called upon to contribute (47:257). Van Denberg is so far from the try-out

form that he does not want the unit to delude pupils as to what advanced science is really like or to encourage them to study electrical engineering on basis of their interest in home-made buzzers and batteries; and yet he says that one aim is to open up each pupil's mind to the possibilities of work in the field of science (not sciences) (61:165-71). This represents a far swing away from try-out experiences. Cox, it is true, goes even farther in his criticism of the presence of try-out material; his primary objective is "scientific behavior" developed in the beginning through extremely rudimentary applications of science. But he goes so far as to say that exploration should come only in specialized science courses, so that he is outside the pale of those who would use general science for such purposes (22:179-80).

On the second point that the unit must be worth while in itself, there is no dissent, but unfortunately there is not the strong emphasis found in Briggs.

It is illuminating at this point to review briefly the historical development of general-science texts. First they were a series of introductions to the different sciences with simplified samples from the province of each. Then all this material was "unified" by using one of the sciences, physiography for example, as a "core" around which the other material was more or less logically grouped. The final stage represents material organized about worth-while problems arising out of our natural environment (weather, sanitation) for the solution

or comprehension of which facts, principles, and procedures are drawn from all the field of science; the particular scientific materials used are determined by the problems to be solved, not by any design to present typical materials--in fact, with some it was taboo even to mention a specific science by name. The exploration will be in this order of emphasis: vital problems in our environment, our environment in general, scientific aids to solving these problems, appreciation of the values of science and scientific method, some insight into the specializations of science and the opportunities for study and livelihood therein. Not only will such a course be more valuable per se to all pupils than a more formal specialized one, but actual exploration will be more intelligent and better motivated because the field is presented as working, doing things, and answering the desirable questions junior high school pupils will be asking anyhow (cf. 31:259-60; 1:9-24; 56:67-8).

There is also general agreement with Briggs' third point as to what general science should reveal. It should "provide a basis for discovery of interest in special sciences and of vocational opportunities,"(12:25), give "glimpses of the interesting fields that science explores,"(50:99), and "provide a basis for a measure of understanding and appreciation of the nature of the content, method, and purpose of the special sciences...."(17:253-4 and 47:253-4). The Science Committee in the Fifth Yearbook of the Department of Superintendence (34:150) recommends that the three senior high school sciences,

biology, chemistry, and physics form the core of the successive units of the junior high school work to gain an "apperceptive mass insuring comprehension of such science courses as may be taken later in the senior high school." Touton and Struthers want the course to lay basis for a"wise choice" of future sciences (60:306). That the unit should reveal science as a general field of human endeavor is also held by others. Davis would use general science to reveal "the wonders of science especially to those leaving school early."(27:211). Crecelius' investigation of the aims in fourteen texts on general science gives "understanding and appreciation of the natural environment" as one of three aims most common (26:198 and 60:306). The topics suggested by the Science Committee of the Commission on the Reorganization of Secondary Education are based on environmental phenomena and not on the traditional divisions of science (12). Briggs' suggestion on this point has been generally embellished by more stress on an appreciation of the general contributions of science to human welfare (34:150 and 26:198).

The exploratory searching has to do, it is noted, primarily with the field and divisions of science and with capacities and interests therein; exploration of the person per se is passed over. Furthermore, there is always a preponderance of references to "science" rather than "sciences"; the concern is primarily with the development of an attitude toward science as a great human achievement, and with the desirability of inducting the child into the world as science reveals it, and of giving him

some power to attack problems with the scientific method. This is well summed up by a recent statement of the purposes of general science by two men who have followed the development of this unit long and intelligently: "The course in general science is designed to be a purposeful part of the life and thought of the pupils who study it. Those interests which are helpful and enjoyable are used, encouraged, and developed. The spirit of inquiry regarding the facts of life and experiences is used as a means of developing a working belief in guidance by truth. General science tries to give to pupils not only scientific attitudes toward common occurrences, but the beginnings of acquaintance with the leading divisions of science knowledge." (18:iii).

There is general agreement that general science should be required of all pupils. However, the primary reason is the importance of science and of a knowledge of science in making one's adjustment to the modern world.

Reorganization of science material also has universal agreement.

Confusion of Terms

An item in the literature that is far from being as insignificant as it seems at first blush is the confusion of terms used in describing the exploratory units. Briggs, as has been seen, distinctly differentiates between "general" and "try-out" units, the former being composites of general principles and facts selected on basis of immediate worth and giving a general

overview of the field, the latter being composed of samples chosen because they are primarily bona fide representations of the work one would actually do later if one continued in the field. However, Davis speaks of "general try-out courses" at one point (27:100). Koos uses the term "try-out" for the activities concerned with the whole exploration phase of his exploration-guidance concept (47:54). Cox says "general exploratory courses are frequently instituted in junior high schools to encourage pupils to sample various aspects of foreign language or commercial education" while with him "try-out" units seem to be distinguished only by being "short-unit" courses confined to fine and industrial arts (22:262-3). One report of the Commission for the Reorganization of Secondary Education has this: "The committee believes that 'try-out' commercial education of a general character may be given in the seventh and eighth school years."(11:23). Smith adds further confusion by linking "exploratory" and "try-out" as synonyms, distinguished from "general" or "survey."(58:203,388).

Results of Questionnaire to Specialists

In order to get a last minute consensus of opinion on points concerning exploratory units, questionnaire S was sent to thirty-eight specialists in secondary education including those who have made the junior high school their particular field. Thirty-one replies were received.

General and special training. The first question was: "Do you consider general or special training more important

in junior high school? (For example, in science, GENERAL training refers to study of science as science, as a type of human achievement, as a way to understanding our world: SPECIAL training refers to study of separate sciences such as biology.)" The question was purposely made rather extreme in that the term "general" was defined so as to exclude such courses as biology from consideration, and yet the replies ran:

General	22
Special	0
Both	2
Not answered	7

Only one objected to the extreme form of the definition and one of those who voted for both qualified his answer by saying that all required units should be general, and the electives special. There seems no doubt from this response that specialization, even pre-vocational specialization, once regarded as a serious menace by opponents of the junior-high-school idea, has faded from the picture as a fundamental function.

Purpose of exploratory units. The purposes reported are tabulated:

1. Specific orientation - - - - - - - - - - - - - - - 48
   - Discovery of capacities and interests - - - 15
   - Revelation of vocational opportunities - - 14
   - Revelation of educational opportunities - - 9
   - Specific sampling mentioned - - - - - - - - 5
   - Revelation of avocational opportunities - - 3
   - Begin vocational training - - - - - - - - - 2

2. General orientation - - - - - - - - - - - - - - - - - 21

General broadening of experience - - - - - - 8

General overviews of fields - - - - - - - - - 5

General information - - - - - - - - - - - - - 5

Creative adventure - - - - - - - - - - - - - 2

Discovery of the self - - - - - - - - - - - - 1

A tabulation of "purposes" is always rather unsatisfactory because the connotations of the statements are not known, and the definition of an educational purpose is not fixed; for example, "sampling" would seem to many to be a method rather than a purpose of exploration and one who gave "general overview" as a purpose might, if pressed, add: "in order to discover capacities in the field, and to reveal the opportunities of the field." Therefore, it may be safer to consider only the general picture revealed than to try to draw close distinctions. These conclusions seem to stand out:

1. The emphasis is especially directed to discovery of what the pupil can do, rather than to what he is; this was noted before.

2. There is distinct emphasis on the general education as we have noted in other connections.

3. Of the aims of education, the vocational receives by far the greatest attention.

4. The exploratory units must discover capacities and interests, must reveal future lines of activity, and must withal

have value per se as broadening or informative units. These general purposes have been met before.

In short the results of this question merely confirm the findings from the survey of the literature.

Types of exploratory units. A third question to the specialists had to do with the possible types of exploratory units. The question was worded as follows:

"We may say that there are four possible types of exploratory courses:

A. Try-out courses, in which the pupil works with actual samples of future work or subjects.

B. General, over-view courses in which the pupil learns about a field in a general informational way without actually performing any operations in the field.

C. Combination of A and B, A predominating.

D. Combination of A and B, B predominating.

a. Do you agree with the above statement?

b. Would you say that the type used should depend on the subject matter or that one type is preferable in all subjects?

c. In case you believe that the type used should depend on the subject, list after each type subjects for which it is best suited.

Type A

Type B

Type C

Type D"

The answers to a are tabulated thus:

Yes - - - - - - - 21

No - - - - - - - 6

The six dissentients voted thus: two for type B only; one each for C only, for D only, for B and A in equal amounts, for elimination of A.

The answers to b run as follows:

Type depends on subject - - - - - - - 14

One type preferred for all - - - - - - 9

For type D - - - - - - 4

" " C - - - - - - 2

" " B - - - - - - 1

" " A - - - - - - 1

" " C or D - - 1

Majority opinion favors a variation in the type of material used, depending on the subject-field to be explored.

The grouping of subjects by types as called for by c gave these results:

TABLE II

SUBJECTS AND TYPES OF EXPLORATORY MATERIAL

	A	B	C	D	Weight of opinion
Industrial arts	9	0	6	0	A,C
Home economics	7	0	2	0	A,C
Commerce	4	1	3	4	A-D,C
Foreign language	4	1	2	2	A
English	3	1	3	1	A-C
Art	2	o	3	2	C,D-A
Science	2	5	1	2	B
Mathematics	1	3	3	0	B-C
Music	1	0	5	0	C
Vocations	0	3	0	2	B,D
Social studies	0	4	1	3	B,D

There is more general agreement in the above table than is apparent at first blush; while there is considerable disagreement as to whether the pure type (e.g., A) or the mixed

type (e.g., C) should be used, there is substantial agreement in all save two subjects as to whether the try-out types (A and C) or the general types (B and D) should be used; that is, while nine preferred type A for industrial arts and six preferred type C, all the fifteen obviously considered the try-out type either in pure form (A) or in a mixture with some general material playing a minor role. The two subjects about which there is real confusion are mathematics and commerce; we noted above the confusion in commerce and, in the main (despite some agreement), there is the same difference of opinion, crying for experimental decision, that was noted in the survey of opinions about this special exploratory unit.

There may be some significance in the frequency of mention of the subjects used to exemplify the various types of exploration; all the subjects are mentioned but in varying frequencies:

Industrial arts	15
Commerce	12
Science	10
Home economics	9
Foreign language	9
Art	7
English	7
Mathematics	7
Social studies	7
Music	6
Vocations	5
Physical education	1

It will be seen that in the top half of this tabulation

science is the only subject for which the try-out types are not preferred in Table II. The try-out type is the more tangible of the two, the easier (apparently) to set up, and seems to have been the type first experimented with. Despite theory, the try-out idea does have an insistent presence beyond the importance it gets in general theory.

Difficulties in constructing exploratory units. The fourth question asked the specialists to list difficulties as they see them in the organization of exploratory units. The results are:

Spurious sampling of materials or activities	13
Lack of broadly educated teachers	12
Cost of materials, facilities	6
Lack of clear-cut objectives	5
Poor organization of content	4
Too general, vague	3
Poor articulation with other units	3
Results of exploration wasted by lack of a guidance program	3
Courses too short	3
Refractory traditional content	2
Pressure of schools above	2
Courses not valuable per se	2

These data were gathered only for comparison with similar data from the principals--a comparison to be made in the next chapter.

Minority against exploratory units as such. It remains to call attention to an emphatic and significant opinion expressed by a minority group (of six) of those who answered questionnaire S. This group denied the assumption that exploration is a function of the junior high school--at least in a degree or manner different from its utilization in any other part of the school system; specially set-up exploratory units have no place anywhere. They are "a passing fad--one of our many. A few years from now the term (exploratory units) will be obsolete, the movement as dead as the dodo." The entire statement (question 3 of questionnaire S) grows out of an erroneous conception of the nature of the educative process." "To assume that some courses are 'exploratory' while others are not is to misinterpret education." "Every course, from kindergarten to professional school should enable the student to explore some realm of knowledge or of practical procedure." "I have never found any ground to admit....that 'one of the chief functions of the junior high school is that of exploration.'" "I became convinced some years ago that it was preposterous nonsense to expect our school shop, even when well-equipped to give any but sham guidance toward such great fields of work as....railroading, truck driving, steel mill work, highway building, pottery manufacture...." "If we were teaching in a really vital way in our junior high schools, many of the questions which you ask might lose their point." Two of the six believe that exploration, if done at all, ought

to come in the senior high school, while the junior high school should concern itself with general training.

These opinions, it must be added, were expressed by those who stand out in secondary education as a whole rather than in the specialized field of the junior high school. However, there was a striking unanimity in the answers, and significant emphasis. The point of view of those who see exploration from perhaps a higher vantage point raises some interesting questions:

1. Is exploration really a special function of the junior high school, or have the protagonists of the junior high school "discovered" something already implicit in genuine education, and labeled it as peculiar to junior high school education?

2. In their enthusiasm over exploration as a special function of the junior high school, and in their failure to see exploration in the light of a large educational philosophy, have the junior high school theorists carried exploration to an extreme and invalid interpretation, especially in so far as the concept involves specially set-up exploratory units--more especially units of the sheer try-out type?

3. Is not any unit that is set up primarily to meet a recognized educational objective or vital need better suited to explore the pupil and to enable the pupil to explore what merits exploration, than a unit concocted primarily to explore and secondarily to educate? In other words, has there not been a tendency in junior high school curriculum making to confuse exploration as a function with exploration as an

objective of education?

While these questions are raised by a minority, they take on added importance and significance when we go back and recall the summary of opinion contributed by the junior-high-school specialists themselves. The predilection for general units, or at least for a general background for exploratory units, the insistence that the content of the units be worth while apart from their exploratory values, the significant story of the evolution of general-science courses (now exploratory only in the sense that these six would use the term)--all this seems to pile up evidence for a conclusion that Davis' concept that the purpose of the junior high school is to provide a liberal arts education for the early adolescent is nearer the correct point of view than that implied or expressed by himself and others--to the effect that at least a great part of junior-high-school education should consist in piecemeal "contacting" of this and that. Is not this confusion of purposes just the crux of the trouble practical junior high school principals meet in attempting to set up exploratory units?

Summary of the Chapter

1. Exploration necessitates a thorough reorganization of the curriculum to the end that exploration is made an objective in every subject-field.

2. Exploration demands that, in certain fields at least, specially set-up exploratory units are to be added to the curriculum.

3. Exploratory units must be of such content that they are justifiable on the basis of intrinsic worth--worth beyond their exploratory value.

4. Theory is not explicit on the point as to whether these exploratory units should be required or elective.

5. Two types of exploratory material are distinguished: "try-out" material that actually samples the future work, and "general" material that tends to give a survey or overview of an entire field.

6. The theory as revealed by the literature has a preference for the "general" type of material--at least, this material is advised as a"binder" and as an orienting agency.

7. Exploration has two definite aims: to discover abilities and to reveal future fields of study or work. The emphasis, however, is distinctly on what pupils can do rather than on what they are. Exploration in theory is not emphatically "child-centered" in the sense that it seems primarily interested in him as a person.

8. A vigorous minority opinion is noted, questioning the whole "special theory" of exploration and especially of special exploratory units.

CHAPTER IV

EXPLORATION AND EXPLORATORY UNITS IN PRACTICE

The foregoing discussion has attempted to survey carefully the literature on the junior high school in order to discover the fundamental theory back of the exploratory function and back of the so-called exploratory units. This discussion of the theory is designed to throw light on the data revealed by the investigation of actual practice in junior high schools by providing terms in which the practice is stated and by providing means of comparisons and contrasts.

As has been said before, the data on actual practice were secured by sending questionnaires to junior high school principals. The procedure to be used in interpreting the data is to present the data in tables, each table followed by a discussion of its own significance, and then general conclusions will be drawn from the data and compared or contrasted with the results of the survey of the theory. An attempt will be made to group the different bits of data so that related data will come together.

General or Special Education

The first question on questionnaire P-1 was on whether junior high school education as a whole should be general or special. (The same question that appeared on questionnaire S).

The answers were, as was to be expected, unanimous in

favor of general training as defined. This question was largely an "orientation" question; that is, it served to call the attention of the one addressed to a fundamental point of view with regard to the junior-high-school curriculum. Of course, the answers also provided proof that practice is really committed to the opinion that junior high school is the place for general education and not for specialization; two (out of 74) principals did qualify their answers by saying: "General followed by special," and one disagreed with the definition of special by saying that "biology properly taught could also provide general training."

This result agrees entirely with the opinion revealed by the survey of the literature on exploration, and with the answers of the specialists to exactly the same questionaire S.

Purposes of Exploratory Units

An important question naturally was that concerning the purposes or functions of exploratory units. This question was included in both questionnaires P-1 and P-2. The purposes stated are given in Table III below.

The tabulation of answers to such a question presents the usual difficulties in interpretation of the real meanings of the answers. In the table below, the aim has been to err rather in the direction of separating possibly identical answers than in recklessly grouping all answers that seemed similar. For example, there is little doubt that many, if not all, answers

TABLE III

PURPOSES OF EXPLORATORY UNITS

Purpose	Frequency
1. Discovery of pupils capacities, interests, etc.	94
2. General knowledge, broadening	61
3. Revelation of fields of knowledge and work	57
4. Vocational guidance	30
5. General guidance	21
6. Provision for individual differences	10
7. Foundation for future work	10
8. Development of personality	5
9. Holding pupils in school	5
10. Creating interest in a subject	3
11. Mental discipline	3

that include the word guidance in some form imply as a precedent to guidance the discovery of capacities and the revelation of the activities that lie before the pupil--in other words, items #1 and #3 are very likely larger in reality than the figures show; in the table, however, such answers are kept separate.

As far as exploration per se is concerned, it is obvious that the principals agreed on two phases: the discovery of what the pupil can do or likes to do, and the revelation to the pupil of the various kinds of activities that lie before him in school

and in the work of the world. This agreement is no surprise. As has been seen, expert opinion agrees on these two special purposes of exploratory units. It is no particular surprise to one who is familiar with the literature of the junior high school to note the frequency of the word "guidance" in the answers.

There are two very significant items, however, that are surprising. The first one is the high position of "general knowledge and broadening" as an aim; it is surprising when one considers that the principals were asked not for the purposes of the junior-high-school program of studies, but for the purposes of exploratory units, in questionnaires that stressed exploration throughout. Exploratory units obviously must satisfy the principals that they are more than merely exploratory. This is wholesome evidence that the great insistence of the experts that these units must be "worth while in themselves" has born fruit in the thinking of the junior high school principals. The principals have in general the same conception of the purposes of exploratory units as the experts except that the emphasis on exploration is less, that on general worth of unit, greater. Later data will show, perhaps, that principals do not love general knowledge more, but exploratory material less.

Another surprising fact is the frequency with which "vocational guidance" is mentioned specifically. Vocational guidance seems to play a preponderant role in the exploratory

program of the junior high school, or else vocational "finding and fitting" is more successful--or seems more successful--at the present time than other forms of pupil adaptations. Later data will throw some light on this question.

Perhaps, it may be listed as a pleasing surprise, too, that so few (10) gave the propaedeutic as a purpose of exploratory units, and that only three mentioned "creating interests in special subjects." Perhaps, there is nothing intrinsically wrong with such purposes in junior high school, but it is refreshing to note that units that explore future courses have apparently freed themselves from the temptation to become mere "feeders" for such courses, rather than worth-while assimilative materials for ends of the junior high school. Some exploratory units, notably general language, have fallen into trouble by not avoiding this pitfal (20:510-4).

Content of Exploratory Units

Following a discussion of the purposes of exploratory units, it is logical to discover what principals believe is the proper content of such units. In order to arrive at the general nature of the content, four types of exploratory material were defined as follows:

"There are four possible kinds of content designed for exploratory purposes:

A. Try-out materials, in which the pupil works with actual samples of future work or subjects.

B. General, over-view, informational courses, in which the pupil learns about a field in a general way without actually performing any operations in the field.

C. Combination of A and B, A predominating.

D. Combination of A and B, B predominating."

In both questionnaires the principals were asked to indicate which of these four types best represented the content in each subject field. The results are in Table IV.

TABLE IV

TYPE OF CONTENT USED TO MEET EXPLORATORY FUNCTION IN SUBJECT FIELDS

Subject	Type of content--frequencies				
	A	B	C	D	% A + C
Art	48	19	31	11	72
Commerce	34	19	24	12	65
English literature	22	31	20	26	42
Foreign language	36	23	23	19	56
Mathematics	28	27	25	29	49
Music	49	20	32	10	73
Practical arts (boys)	74	11	30	9	84
Science	20	47	32	22	43
Social science	15	39	25	28	38
Totals	326	236	237	166	

In questionnaire P-1 the principals were asked to indicate which types, in their opinion, were best suited to bring out the exploratory values in each subject field. Tabulation is found in Table V.

TABLE V

PRINCIPALS' OPINION OF CONTENT BEST SUITED FOR EXPLORATION

Subject	Type of content best suited--frequencies				
	A	B	C	D	% A + C
Art	22	2	20	6	84
Commerce	18	2	16	8	77
English literature	12	8	16	7	65
Foreign Language	18	3	14	7	76
Mathematics	14	7	21	8	70
Music	20	3	20	5	83
Practical arts (boys)	32	5	19	2	88
Science	16	8	20	9	68
Social Science	10	7	14	12	56
Totals	162	45	160	64	

Two facts stand out in these two tables.

1. The principals are, in both practice and opinion, strongly in favor of try-out materials as a means of exploration. In both tables, type A (try-out) outranks any of the other types, and A and C (try-out material predominant) combined far outnumber B(general) and D(general predominant) combined; in Table IV, A and C combined include 58% of the totals, in Table V,

they include 75%. Therefore, it is noticeable, too, that the principals' bent toward try-out materials far exceeds actual practice. One is surprised to note that even in mathematics, science, and social science, three subjects in which practice leans toward the use of content of general nature, the principals prefer the try-out type. This is all the more astonishing when one recalls the story of the evolution of the general-science course and the numerous and important experiments in the field of unified social science. One may conclude from this that at least try-out materials are not likely to lose ground in the future building of exploratory units. It is especially notable that in fewer than 5% of the cases do principals favor pure general units.

2. In spite of this leaning toward try-out materials, it must also be noted that a great majority of the principals, in practice and opinion, would insist on at least an admixture of general material; in practice 66% of the courses are either C (general in minor role), D (general predominant), or B (pure general); in the principals' opinion, 62% should be of such types.

In addition to this description of the junior high school subject-fields as a whole, the principals were asked in questionnaire P-2 to indicate the type of content used in specially set-up exploratory units; i.e., in units in which presumably the special attention of the principal was directed to the fulfilment of the exploratory function. The answers are in Table VI.

TABLE VI

TYPE OF CONTENT IN SPECIAL EXPLORATORY UNITS

Subjects	Type of content--frequencies				
	A	B	C	D	% A + C
General art	20	10	12	5	68
General language	14	7	6	2	69
General mathematics	15	10	14	5	66
General music	19	9	12	3	72
General science	16	23	13	10	47
General shop	33	9	9	2	80
Unified social science	6	11	8	9	41
Totals	123	79	74	36	

Before proceeding further it may simplify matters to tabulate the totals for the past three tables, and put the frequencies of mention of each type in percents for each of the tables.

TABLE VII

SUMMARY OF TABLES IV, V, and VI

Subjects	Types of content used--frequencies and percents							
	A		B		C		D	
Table IV	326	35%	236	24%	237	24%	166	17%
Table V	162	37%	45	10%	160	37%	64	24%
Table VI	123	39%	79	25%	74	24%	36	12%
Totals	611	36%	360	21%	471	28%	266	15%

There is substantial agreement in the figures above derived from all three sources: the ratio of A(try-out) to BCD(more or less general) is almost identical for all three tabulations; the sums AC (try-out and preponderantly try-out) in all three cases outnumber greatly the sums of BD (general or preponderantly general). It is noted that:

a. The content of specially set-up exploratory units does not differ significantly from that of the program of studies taken as a whole.

b. This agreement in content seems to evidence a rather stable situation in regard to exploration in general in that all units, exploratory or not, seem to be guided in the same directions.

c. It also seems to indicate that the bent of the principals toward try-out materials has not produced any significant results in the very places where such desire would most likely make itself felt: in the organization of special exploratory units.

A summary of data thus far tabulated on content designed to meet the demands of exploration:

1. Both try-out and general material are approved, the emphasis being on try-out material although the majority would have at least a part of the content of general nature.

2. The principals' opinion leans much more strongly in the direction of try-out material than does the actual content of courses.

3. There is no significant difference between the content of special exploratory units and the content of the program of studies as a whole. There seems to be a fundamental philosophy of curriculum making in the junior high schools that influences the construction of all the units; in other words, the making of the special exploratory units seems not to be blazing new trails or to be running amuck. The special exploratory units must justify their existence, not by providing a new method of exploration, but by providing facilities for exploration in new fields. It would be correct to say, finally, either that there are no special exploratory units, or that all units are, as a result of curriculum policy, exploratory.

4. In practice there seems to be evidence that special exploratory units do not exist in fact as entites distinguishable from other units. It is significant to recall in this instance the opinion of those specialists who insisted that they ought not to exist; or--

5. There is here a foreshadowing of a later development of the investigation: exploration as a special function of the high school is not making its presence felt in a positive fashion.

How does this picture of the actual working of exploration compare with the theory?

1. Theory and practice agree in recognising two possible kinds of exploratory material: the general, overview,

orientation type, and the try-out or sampling type.

2. Theory and practice agree partly that general material should compose at least a part of the exploratory material.

3. However, while practice places the emphasis on try-out material, theory emphasizes general material.

4. The minority opinion of specialists that there is no such thing as special exploratory units, finds some support in practice.

In questionnaire P-1 the principals were asked to rank the subject-fields according as the exploratory function stood out explicitly in their schools. The results of the ranking are given in Table VIII.

TABLE VIII

RANKING OF SUBJECT-FIELDS IN EFFICIENCY OF EXPLORATION

Subjects	Efficiency Rank
Practical Arts - boys	1
Science	2
Commerce	3
Art	4
Social science	5
Foreign language	6
Music	7
Mathematics	8
English literature	9

When one correlates (using the method of rank-differences) the ranking of the courses in efficiency of exploration with the ranking based on the percent of frequency of A and C type (try-out) of content as shown in Table IV, there is a correlation of .33. When a similar correlation is calculated between the ranking for efficiency and preference of principals for A and C type material (Table V), it is found to be .38. That is, there is some positive relationship between the rated efficiency of the courses for exploration and the amount of try-out material present in the courses. The correlation is hardly large enough, however, to be of great significance. Moreover, it is noted that while practical arts, a course usually of try-out type, is first, general science, a course strongly general in type is second in the list, and social science, the purest of the general type, ranks fifth. Internal evidence gleaned from the questionnaire slightly favors, but hardly supports the marked leaning toward try-out material revealed by the descriptions of the courses and by the principals' opinions.

In both questionnaires, the special exploratory units were similarly ranked for efficiency in carrying out their exploratory function. These results are given in Table IX.

The efficiency of the subject-fields as a whole and of the special exploratory units differs particularly in that the special exploratory unit in foreign language seems markedly superior in efficiency to the regular course, while just

TABLE IX

RANKING OF SPECIAL EXPLORATORY UNITS IN EFFICIENCY IN EXPLORATION

Subjects	Rank
Practical arts (boys)	1
Foreign language	2
Science	3
*(Commerce)	(3)
Social science	4
Music	5
Art	6
Mathematics	7

(*Commerce, unfortunately omitted from questionnaire P-2, ranked 3 on data secured on questionnaire P-1.)

the reverse is true in art. The correlation (figured as above) between the efficiency ranking and the content-type of the special exploratory courses gives a small positive correlation (.30). Two characteristic try-out units rank at the top, but the two equally characteristic general units (science and social science) rank next. This tabulation furnishes corroborative evidence for that of the previous one: the units with try-out materials show some small superiority in efficiency,

but the amount of superiority belies the emphasis that seems to be put on such material: The superiority, though slight, however, adds its bit to accumulating evidence that try-out materials are receiving in practice somewhat more attention than they are in theory.

Questionnaire P-1 sought by two other means to arrive at the nature of the content of exploratory units. First, the principals were provided an extensive check list (see item #18 in questionnaire P-1) by means of which they were to indicate the nature of the content of their exploratory units. Four of the units that were most frequently marked as specially set-up exploratory units and that were described frequently enough in the literature to make comparisons possible, have been selected for discussion at this point: foreign language, science, mathematics, and practical arts. These units also are representative of those that are characteristically of the try-out type (practical arts), of the general type (science), and of the rather neutral type (mathematics) as has been revealed by the data in Tables IV and VI.

Second, the principals were asked to give to their teachers of these four units blanks on which the teachers were to write, in their own way, the aims of the units as they believed them to be.

The following sections will give the data secured from these two sources, and will compare them with each other and with the recommended content of these same units as it appears

in the writings of the specialists.

1. Practical arts. Table X gives the tabulation of the aims of the exploratory unit in this department, generally called "general shop," as reported by 32 teachers of this subject. 48 out of 74 schools reported having such a unit.

TABLE X

TEACHERS' AIMS IN GENERAL-SHOP COURSE

Aims	Frequencies
Discovery of abilities and aptitudes	30
Discovery of aptitudes 12	
Try-out opportunities 9	
Aid in choice of vocation 8	
Individual differences 1	
Knowledge of every-day jobs and tools	28
Expertness	6
Appreciation of world of work and workers	6
Develop interests	4
Character training	4
Vocational efficiency	4
Broadening	3
Worthy use of leisure	3
Mental discipline	3
Health	1
Citizenship	1

The remarkable unanimity in aims is the first item noted in the tabulation. The next is the unmistakeable predominance of try-out rather than general type of materials; such factors as "broadening" and "appreciation of the world of work" come far down in the list. The fact that try-out materials are preponderant accords with the data in Table VI, and is a situation to be expected. The fact that shop teachers pay such a negligible amount of attention to setting forth general industrial and vocational points of view is surprising; if any unit in practical arts offers such an opportunity, surely it is the general shop. This lack of attention is not explained by the presence of special units on "vocations"--such units exist in only 12 of the 32 schools from which the reports came. The interest in practical arts is distinctly not that of a general overview of the field.

What according to the principals is the nature of the practical arts exploratory units? Table XI.

The principals, of course, are describing all units regarded as special exploratory units, not merely the one type known as "general shop." This tabulation is chiefly interesting here in its corroboration of the reports of the general-shop teachers that the practical arts exploratory units eschew study of the industrial world as such, and devote their time to exploring or trying bits of the field; the "finding" takes precedence over the "broadening" feature, and the pupil orients himself by making contacts here and there with industrial activities,

TABLE XI

PRINCIPALS' DESCRIPTION OF CONTENT

OF EXPLORATORY UNIT IN PRACTICAL ARTS

Content of unit	Frequencies
Experiences in different shops	34
Project work in general shop	23
Short-unit rotation in shops	13
Pre-vocational work	11
Study of industries and industrial life	3

and discovers his capacity and interest by noting which of these activities appeal to him rather than by reflecting on the nature of industrial life itself and on the relation the separate tried activities have with this industrial world. The exploration is by narrow, pragmatic, motor acquaintance rather than by broader, reflective, intellectual study.

How does this view of exploration in practical arts agree with that envisaged by the theory of the specialists? Both agree in making the unit mostly try-out. The main point of disagreement is in the amount of emphasis on general content. All of the specialists recommend survey of industry as a part of the unit, and some say that without this the exploratory unit is largely futile; the actual unit seems to have no place for such general material. Moreover, the insistence of the

specialists for a unit on vacations is not realized in practice; only 37% of the schools reported such a unit. Theory and practice are widely at variance in this unit.

2. General language. The aims of the exploratory unit in foreign language, commonly called general language, are given as reported by 19 teachers of that subject out of 26 schools that reported such a unit in a total of 74 schools to which the questionnaire was sent.

TABLE XII

TEACHERS REPORT OF AIMS IN THEIR GENERAL-LANGUAGE UNITS

Aims	Frequencies
Discovery of abilities and aptitudes	19
Help in learning English	11
Story of language as a human institution	10
Broadening (other lands, other people, etc.)	6
Foundation for future work	5
Creation of interest in foreign language	4
Revealing nature of future courses	3
Training to think	1

While the discovery of abilities and aptitudes stands out at the head of the list, it is noticeable that the next three aims are of general nature: "help in learning English" indicates some attention to language as such, to language in general; "story of language as a human institution," and such

"broadening" items as the customs and history of other lands are of decidedly general nature, the former being really what the term "general language" means, if it means anything more than an arbitrary symbol. "Revealing future courses" comes markedly low in the list; sampling can hardly be considered as revealing more than the bare mechanics of getting the lessons.

Now for the principals' description of the exploratory language unit in Table XIII.

TABLE XIII

PRINCIPALS' DESCRIPTION OF THE EXPLORATORY LANGUAGE UNIT

Nature of the course	Frequencies
Study based primarily on one language with incidental study of others	20
Study of language as a social institution	15
Study of samples of several languages	13
Regular study of one language as basis for guidance	9

Here again, it must be remembered, that the principals are describing all foreign-language units considered as specially exploratory. These units as a whole are much more of the actual sampling kind than are the general-language units, which is to be expected. However, even so, there is evidence of a distinct attempt to introduce material of a general type.

The evidence derived from these statements of aims and the tabulation of the types of content used to bring out exploratory values in Tables IV and VI agree: there is somewhat greater emphasis on the try-out material with the attention to general material, however, not neglected.

With some few exceptions (Bruner, for example) in theory, general language has decidedly more of general content than in practice, even though some of the theoretical units may include up to 50% of pure sampling material. As in the case of practical arts, the unit would be entirely too lacking in general content to suit the theorists.

3. General mathematics. Only 10 teachers of general mathematics responded to the request for aims although 33 schools of the list getting questionnaire P-1 offered the unit. The aims are tabulated in Table XIV.

These data represent such a small number of schools that comment will be reserved until the data from the principals' description of the exploratory courses in mathematics are presented in Table XV.

With the data given in this subject, it is hardly justifiable to try to establish conclusions. One point does seem quite clear in both sets of data: the exploratory aim is not as outstanding as in the preceding subjects; everyday knowledge stands first in the teachers' aims and discovery of pupils' abilities is not even mentioned, while in the principals' reports over one-third of the units are not

TABLE XIV

TEACHER'S AIMS IN GENERAL-MATHEMATICS UNIT

Aims	Frequencies
Knowledge and skills for life needs	7
Revelation of future courses for guidance	6
Overview-------3	
Sampling-------1	
Mental discipline	3
Ability at problem solving	3
Preparation for future courses	3
Appreciation of value of mathematics	2
Culture	1
Vocational efficiency	1

TABLE XV

PRINCIPALS' DESCRIPTION OF EXPLORATORY MATHEMATICS UNIT

Nature of unit	Frequencies
Special mathematics (algebra, arithmetic)	21
Unified mathematics based on life needs	20
Unified mathematics based on demands of future courses	13

specially organized as exploratory units. Unified mathematics, of course, refers to content of the general type in the sense that all mathematics is drawn upon as the need arises to provide solution of specific problems, although the actual operations are samples of algebra, geometry, trigonometry. Thus unified mathematics can be classed as a representative of both types. This agrees with the rather neutral position mathematics holds in Tables IV and VI when the description of content is stated in terms of general or try-out type.

In theory, of course, general mathematics is recommended as the exploratory unit; in practice it is not very common (about 40% of the schools offer it). The content of the general mathematics in theory is based largely on practical vital problems--also in practice. In practice exploration plays a rather less conspicuous role than in theory. In general, the agreement as to content is close.

4. General science. 53 schools out of 74 reported a unit in general science, and 28 teachers wrote their aims of the unit as noted in Table XVI.

This is obviously a unit of general type; "discovery of pupils' abilities and aptitudes" is low in the list while "revelation of the nature of science study," "scientific attitude," "curiosity about nature" rank high. It will be noted, incidentally, that, as we pass down these four units from the purest try-out type to more and more general types, "discovery of abilities" and "revelation of the nature" of

TABLE XVI

TEACHERS AIMS IN GENERAL SCIENCE

Aims	Frequencies
Knowledge and information	24
Revelation of nature of science study	22
Scientific attitude toward problems	14
Curiosity and interest about nature	14
Worthy use of leisure	7
Discovery of special abilities and aptitudes	6
Vocational uses	4
Foundation for future study	4
Health	3
Home membership	2
Citizenship	1

the subject-field tend to change places, "discovery of abilities" ranking higher in try-out units, "revelation of future work" higher in general units.

The principals' description of the exploratory phases of the science course follows in Table XVII.

While a surprisingly large number of principals described the work as a "sampling" (try-out), the first two items give overwhelming evidence of the general nature of the courses; and this and the preceding table present a picture that agrees with the conclusions drawn from the data of Tables IV and VI.

TABLE XVII

PRINCIPALS' DESCRIPTION OF EXPLORATORY WORK IN SCIENCE

Nature of course	Frequencies
Study of environment as basic content to illustrate scientific procedure and facts	27
Study of science as a field of human endeavor	23
Study of samples of special sciences	16

It is interesting to note that the exploratory work in science and particularly the general-science unit are abreast of the advanced theory in the field. As was seen above, science was the first field thoroughly to revamp its content in order to meet the exploratory function of junior high school education; it tried out two sampling schemes--using one science (phydiography, for example) as a sample, and then combining in one unit samples of several sciences; both these attempts were abandoned, and a general overview unit in science as a human achievement and a daily friend of man was worked out. The evidence of this investigation, while it shows some vestigia of past evolutionary struggle, demonstrates that the final stage is in practice, and in successful practice. Its success is shown by its high ranking in efficiency as an exploratory unit (Table IX), and by the fact that it tied with the exploratory unit in practical arts in frequency of occurrence

in the schools' curriculum (Table XVIII).

Some general observations can be made on the data given on the constitution of these four special attempts at exploratory work.

1. There is a noticeable attempt to make these units worth while apart from their exploratory assistance. The items of "knowledge," "everyday knowledge," "study of environment" rank at the top or close to the top in all the tabulations. This is in agreement with the dictum set up by the theorists.

2. The two aims of exploratory units set up by the theorists: to discover pupils' abilities and aptitudes, and to reveal the nature of future work and study are both recognized in practice. However, there is apparently a significant variation of emphasis as the content of the units change: discovery of abilities seems to stand out when the content is of a try-out type, while revelation of future work stands out in units of general type and discovery of ability tends to fade away. If this is necessarily true--and both the data and common sense indicate that it is--then here lies one of the critical problems in building units for exploration. A combination of the two types would seem to be the solution; however, the two outstanding successes in the field of exploration--in industrial arts and in science--are not combinations but stand at the opposite extremes in type, while such combination units as general language and general mathematics are, as will be shown later, finding difficulties

in gaining recognition.

Popularity of Special Exploratory Units

Four devices in the questionnaires sought to get data on the popularity of special exploratory units. First, the securing of the relative frequency of occurence of the units in the schools; second, getting a history of changes, additions and eliminations of such units in the past five years; third, an expression by the principals of their opinion as to whether exploration could be done by such special units more efficiently than by use of the regular courses, reorganized or not; and fourth by an expression of opinion as to the relative value of exploratory units compared with other means of exploration, such as testing.

1. Relative frequency of special exploratory units. (Table XVIII) From this table, the following facts appear:

a. Some attempt at special exploration is made in every subject-field.

b. There is great variation in the extent to which such exploration is made--from almost no attempt to an attempt in two-thirds of the schools.

c. Besides, there are many subject-fields in the various junior high schools in which no special attempt at exploration is made--in fact 56% of the total subject-fields have no such unit.

TABLE XVIII

FREQUENCY OF OCCURRENCE OF SPECIAL EXPLORATORY UNITS

Unit	Frequencies (in 161 schools)	% of schools	Ranking on Exploratory efficiency Table VIII
Industrial arts	104	65	1
Science	104	65	2
Art	79	50	4
Music	69	43	7
Mathematics	62	39	8
*Commerce	(30)	36	3
Foreign language	52	33	6
Social science	51	33	5
*English literature	(7)	8	9

(*By mistake, commerce and English literature were omitted from P-2; percents are figured on basis of 74 schools that returned P-1).

d. There is marked correlation (.79) between frequency of exploratory units and efficiency in exploration. This, however, does not mean necessarily that the presence of special attempts at exploration increases the exploratory efficiency of a subject-field; it may just as well mean that special exploratory units are most frequently found in those fields in which they can most easily be constructed; that is, in fields whose content as is lends itself most easily to

exploratory uses. Later data will attempt to throw some light on a question that may be raised here: is there any apparent attempt to improve the exploratory values of the subject-fields, now weak in this respect, by the addition of special exploratory units?

2. Changes in special exploratory units during last five years. Changes in offering of specially reorganized units are set forth in Tables XIX, XXI, XXIII, and XXV, while Tables XX, XXII, XXIV, and XXVI give the reasons for the changes.

TABLE XIX

CHANGES FROM GENERAL TO SPECIAL UNITS

Changes	No. of schools
No changes	116
General mathematics to algebra	20
General science to biology in 9th grade only	4
General shop to special shops	2
General language to Latin	1
General science to special science	1
General social science to special units	1
General business training to special units	1

TABLE XX

CAUSES FOR CHANGES FROM GENERAL TO SPECIAL UNITS

Causes	Frequencies
Domination from higher schools	10
Unsatisfactory content	6
No pupil demand	2
Special unit better for exploration	2
Expense	1
Tradition	1

TABLE XXI

SPECIALLY SET-UP EXPLORATORY UNITS DROPPED WITHOUT REPLACEMENT

Units dropped	Frequencies
No change	119
General language	15
General business training	4
General mathematics	3
General science	1
General music and art	1

(This table differs from Table XX in that these units are those dropped without replacement or substitution.)

TABLE XXII

CAUSES FOR UNCONDITIONAL DROPPING OF EXPLORATORY UNITS

Causes	Frequencies
Lack of pupil interest	6
Failed in exploration	4
No competent teachers	2

TABLE XXIII

CHANGES FROM "OLD-LINE" TO GENERAL UNITS

Changes	Frequencies
No changes	81
General mathematics for special	25
Manual training to general shop	14
General language added	13
General science for special science	11
General social science for special units	10
General business training added	7
English reorganized	3
Homemaking for special girl's units	2
Vocations	2
General art and music added	1

TABLE XXIV

REASONS FOR CHANGES TO GENERAL TYPES OF WORK

Reasons	Frequencies
Exploration	19
Meeting pupil needs	10
Meeting demands of general educational aims	6
Broadening	6
Keeping step with junior high school progress	3
Imposition from above	1
Motivation better	1

TABLE XXV

SUMMARY OF DATA ON CHANGES MADE IN GENERAL UNITS

Units	Added	Dropped	Net gain or loss
General shop	14	2	+ 12
General science	11	2	+ 9
General social science	10	1	+ 9
General business training	10	5	+ 5
Reorganized English	3	0	+ 3
General mathematics	25	23	+ 2
General girls units in practical arts	2	0	+ 2
Vocational	2	0	+ 2
General music and art	1	1	0
General language	13	16	- 3
Totals	91	50	+ 41

Conclusions drawn from the data on changes:

a. The stability of the junior high school curriculum as reported is remarkable. Over 70% of the schools reporting have not dropped a single exploratory or general unit in five years; and although only 56% of the subject fields had general or exploratory units, only half of the schools have introduced any such unit in the last five years. One can, in face of such data, lightly accuse the junior high schools of conservatism, traditional bias, laziness and the like, but it seems much more proper to raise the question whether or not practice may not be disproving theory: i.e., that there may be something wrong with the theory that assumes the need or necessity of general or special exploratory units in every subject field--or even in any subject-field.

b. It is obvious that there is much greater activity in certain fields than in others.

c. In the three fields in which there is greatest successful activity, two of the units (general science and general social science) are of the pronounced general type, while the other one (general shop) is distinctly try-out in character. Neither type seems to have an advantage.

d. The two units (general language and general mathematics) that are trying to combine the two types in approximately equal parts are having the greatest trouble in establishing themselves.

e. Conclusions c and d raise the question

tentatively whether or not there may be a type best suited to each subject field, and whether or not a pure type is better than a hybrid.

Now let us combine the reasons for dropping these general and exploratory units, given separately in Tables XX and XXII.

TABLE XXVI

REASONS FOR DROPPING GENERAL AND EXPLORATORY UNITS

Reasons	Frequencies
Domination of higher schools	10
Lack of pupil demand	8
Unsatisfactory content	6
No exploratory value	6
Lack of competent teachers	2
Expense	1
Tradition	1

For immediate comparison with this table is a tabulation of the answers to a general question on the difficulties encountered by principals in reorganizing the curriculum to secure exploratory values. (Table XXVII).

The data from these two tables support the following observations:

a. Most of the difficulties are merely those that confront any reform in education; the junior high school is still a

TABLE XXVII

DIFFICULTIES IN REORGANIZING FOR EXPLORATORY VALUES

Difficulties	Frequencies
Expense, lack of facilities	40
Lack of competent teachers	29
Unsatisfactory content	17
Tradition	17
Domination of higher schools	11
Crowded curriculum	9
Public disapproval	9
Administrative opposition	6
Impossible to produce exploratory content in certain fields	4
Lack of an adequate general guidance program	4

reform, not entirely accepted among its own members, by other units in the system, by the public outside. There does not seem to be any intrinsic reason for an estoppal of the attempt to make the junior high school an exploratory unit. Lack of competent teachers, undeveloped curriculum, expense, tradition, lack of cooperation by other units, public opposition, are all familiar items in the history of the evolution of American education. Their presence still in forbidding force merely reflects on the prestige of the school unit.

b. Many of the difficulties would disappear or lose much

of their force if exploration were sought through the regular units (perhaps with some reorganization) instead of depending on specially devised units set up primarily for exploration. "Expense," for example, and "crowded curriculum" would disappear almost if not entirely; "tradition," "domination of higher schools," "public disapproval," would lose much of their force; lack of competent teachers, and unsatisfactory content would be somewhat less formidable. It would seem a feasible program to continue the special units in the fields already demonstrably successful (for example, general science), and to depend on internal reorganization of existing courses in others; finally, a thorough study of the trials and successes in exploratory units might light the way to a satisfactory exploratory scheme in fields where there is now evident dissatisfaction.

c. The list of difficulties agrees markedly with that of the experts. (p. 68)

3. Special exploratory units compared with use of regular courses as means of exploration. In questionnaire P-1 the principals were asked to express an opinion as to whether exploration is best served by specially set-up exploratory units, by reorganization of regular units, or by combination of the two means; they expressed this opinion for each subject-field with the results given in Table XXVIII.

a. This table gives the second indication and the first real evidence that special exploratory units are not so

TABLE XXVIII

MEANS BY WHICH EXPLORATION IS BEST SECURED THROUGH THE CURRICULUM

*Subject	Special exploratory unit	Reorganization of regular course	Combination of two preceding
Practical arts	27	12	20
Commerce	22	15	14
Foreign language	15	17	17
Art	18	20	20
Social science	9	14	27
Science	14	21	24
Music	15	21	17
Mathematics	10	24	21
English literature	6	27	21
Totals	136	171	181

(*Arranged roughly in descending order of emphasis on special exploratory units.)

popular with the people who are actually in the field as they are with the theorists. We noted in Table XVIII that in 44% of the subject-fields of the area covered there were no special units. It was noted then that there might be a better reason than inertia to explain the situation. Here is a better reason: in over one-third of the total instances, principals with actual experience do not believe that special units are the best means, and over a third more believe that

they are not sufficient by themselves. In only two fields does opinion favor special units over mere reorganization of the content of the courses as they are.

b. This has bearing on the point raised just above that the existence of special exploratory units may not necessarily be the only or the best method of meeting the exploratory function.

c. It is noted that the three leading exemplars of the use of try-out material (practical arts, commerce, and foreign language) lead the list; that is, the use of special units for exploratory purposes is most approved in case of units that use try-out material. Science, in which the exploratory unit is definitely of the general type, comes far down the list.

d. A qualification of the interpretation of the data of this table must be made, however. The dividing line between an extra unit constructed especially for exploration, and an existing unit reorganized for exploration is not always clear. For example, general language is an added unit of specially constructed material, general science is often merely regarded as a reorganized science course; both may be regarded as special exploratory units. In the question asked, general science could have been classed as a special exploratory unit, or as a reorganized science unit.

This ambiguity was recognized before P-2 was sent out, and the question was changed so that the third point was

"try-out in regular courses;" that is, the choice was among: (1) specially set-up exploratory units, (2) regular courses with reorganized content, and (3) mere try-out in regular courses. The result:

TABLE XXIX

WAYS OF USING THE CURRICULUM TO ACHIEVE EXPLORATION

*Subjects	Special exploratory units	Reorganization of regular subjects	Allowing pupil to try regular courses
Practical arts	33	13	21
Commerce	20	13	18
Foreign language	19	12	32
Mathematics	17	23	22
Art	14	18	30
Music	14	18	30
Science	14	29	23
Social science	10	28	21
English literature	9	22	25
Totals	150	176	222

(*Arranged roughly in descending order of emphasis on special exploratory units.)

a. One point developed in the preceding table (XXVIII) stands out even more clearly in this: The fields in which try-out exploratory material is used stand at the top of the list; general mathematics moves up to join its group, and the units containing the characteristically general material

(science and social science) drop farther down the list.

b. This question allows the same ambiguity between the first two points, but calls for an expression of opinion as to whether either special or reorganized units are the best means of exploration; the significant result is that practically two-thirds of the principals do not, with their experience, believe that either special units or reorganized units are most efficacious in exploration; to say it another way, two thirds of the principals believe that the old method of finding out by success or failure in a regular course is a better exploratory method than the elaborate machinery set up by theory as a characteristic element of junior high school education.

c. These two tables corroborate the evidence developed before that try-out material is preferred in practice to general material for exploratory purposes; and yet, according to the opinion of the same people and according to the evidence of the tables of casualties among the special units, general and try-out units are about equally successful. The corroborative evidence is in the ranking of the fields where exploration is of the try-out type, and the supprising volume of opinion in Table XXIX in favor of try-out in regular units. One cannot escape the conclusion that bias for try-out material exists in practice--without adequate supporting proof of ultimate success in attaining the end sought.

4. Effectiveness of special exploratory units compared with other means of exploration used in the junior high school.

a. In questionnaire P-1, the principals were asked to indicate the different means of exploration used in the various subject fields. Table XXX gives the result of this survey of practice. The means of exploration put in the check list are:

Achievement tests
General guidance program
Intelligence tests
Teachers' opinions
Prognosis tests
School marks in the subject
Actual try-out in regular units of course
Special exploratory units

b. In questionnaire P-1, the principals were also asked to indicate which of the means mentioned in the foregoing table were most effective (Table XXXI).

c. In both questionnaires the principals rated the eight means of exploration for effectiveness in general. Table XXXII gives the resulting ranking(in the second column) together with the rankings derived from the totals in Tables XXXI and XXX.

What shall we say of the data of the next three tables? It must be said, in opening, that these three items had the lowest percent of response in the questionnaires; it was an extremely trying task to rate, to the satisfaction of one's conscience, eight such procedures when in most cases there

TABLE XXX

MEANS OF EXPLORATION USED IN DIFFERENT SUBJECT-FIELDS

Subject	Ach. Tests	Guidance program	Int. Tests	Teach. Opinion	Prog. Tests	School Marks	Actual try-out	Spec. exp. units
Art	5	9	5	25	1	19	16	5
Commerce	8	6	9	20	3	19	11	12
English	16	4	11	20	3	16	13	5
F. Lang.	5	9	9	19	6	23	9	12
P. Arts	7	8	4	19	4	15	25	17
Math.	20	7	14	25	7	21	16	6
Music	5	6	4	23	2	18	23	8
Science	15	6	8	20	2	19	14	9
Soc. Sci.	13	6	9	15	1	20	10	7
Totals	94	61	73	186	29	170	137	79

(The figures under each means represent the frequency of mention of use.)

was probably little if any experimental evidence to support the rating. Only about 48% of the respondents tackled this rating. The results, therefore, are to be used cautiously; the following conclusions are made only on the basis of cumulative evidence--either in the three tables or in the three tables together with preceding data.

(1) Actual try-out in the regular courses ranks highest in efficiency of exploration as it did in Table XXIX.

TABLE XXXI

MEANS OF EXPLORATION USED THAT WERE MOST EFFECTIVE

Subject	Ach. Tests	Guidance program	Int. Tests	Teach. Opinion	Prog. Tests	School Marks	Actual try-out	Spec. exp. units
Art	1	6	0	7	0	3	7	7
Commerce	2	5	0	4	1	2	5	9
Eng. L.	8	1	3	9	1	5	6	4
F. Lang.	1	2	2	4	4	3	7	10
P. Arts	2	3	0	3	0	3	14	13
Math.	8	3	4	9	2	6	10	3
Music	2	4	0	5	1	4	11	5
Science	5	2	2	7	2	3	9	6
Soc. Sci.	7	1	1	6	1	1	8	2
Totals	36	27	12	54	12	30	77	59

(2) The traditional means of placing pupils--teachers' opinion and school marks--still lead in frequency of use although the evidence of their efficacy is not strong.

(3) Prognosis tests and intelligence tests rank consistently low in use and effectiveness; the rating of the former is no surprise, that of intelligence tests is -- especially in light of the fact that homogeneous grouping (based so heavily on intelligence tests) is quite a vogue in junior high schools.

TABLE XXXII

RANKING OF MEANS OF EXPLORATION IN FREQUENCY AND EFFICIENCY

Means	Ranking		
	General efficiency	Efficiency by subjects Table XXXI	Frequency of use Table XXX
Actual try-out	1	1	3
General guidance	2	6	7
Special exp. units	3	2	5
Teachers' opinions	4	3	1
Achievement tests	5	4	4
Intelligence tests	6	7.5	6
School marks	7	5	2
Prognosis tests	8	7.5	8

Are Exploratory Units Required or Elective?

The data on this point were secured through both questionnaires and are tabulated in Table XXXIII. Observations to be made on these data:

1. It will be recalled that, in the survey of theory, there was no clear-cut conclusion as to whether the exploratory units should be required or not. In practice (Table XXXIII), they are required in only 61% of the cases. In other words, in nearly 40% of the cases pupils are not explored at all.

2. It is to be noted that in the table, with one exception (general language), the academic subjects lead in the degree in which they are required.

TABLE XXXIII

EXPLORATORY UNITS REQUIRED OR ELECTIVE

Subjects	Required	Elective
*Eng. literature	7	1
Mathematics	47	16
Science	70	31
Social Science	38	16
Practical arts	65	37
Art	43	30
Music	40	29
For. language	20	31
*Commerce	6	26
Totals	336	217

(*In questionnaire P-1 only.)

3. With no exception, the units that are generally distinctively try-out in type according to the data in Table VI are at the bottom. Since these units are so largely elective, the pupils in them have already been largely selected on some basis, presumably of interest or ability; this significant fact may account for the quite emphatic belief of the principals in the efficacy of try-out materials in exploration.

Definition of Terms

In questionnaire P-2 the principals were asked to indicate which, if any, of the following list of terms were synonymous: general, try-out, exploratory, unified, finding, broadening, composite. The results are in Table XXXIV.

TABLE XXXIV

SYNONYMOUS TERMS

	General	Try-out	Exploratory	Unified	Finding	Broadening	Composite
General		3	3	12	2	19	18
Try-out	3		26	1	34	4	2
Exploratory	3	26		0	25	11	1
Unified	12	1	0		0	2	18
Finding	2	34	25	0		2	1
Broadening	19	4	11	2	2		4
Composite	12	2	1	18	1	4	

1. There is some confusion, but a rather significant agreement on the meaning of the terms.

2. "General" is rather definitely not looked upon as exploratory, while "try-out" is regarded as exploratory. Among the theorists, "general" is quite definitely used to describe an exploratory unit; as has been seen, however, "try-out" in practice is more highly regarded as exploratory material.

3. "General" is regarded as synonymous with "broadening," while "try-out" is not.

4. The confusion of terms in theory (pp. 60-1) is aggravated by a similar though less pronounced confusion in practice, and by the fact that the meanings in practice do not agree with those in theory.

Summary of Findings on Practice

1. The principals of junior high schools agree on two main exploratory purposes: (a) the revelation of what the pupil can do or likes to do and (b) the revelation to the pupil of the nature of future school and life opportunities. The two purposes, however, do not have equal emphasis; the first is generally preferred, but the emphasis varies.

2. In every instance where aims or purposes were at issue, there was a significant emphasis on the necessity for a general-knowledge value in exploratory units.

3. Only about 6% of the respondents mentioned the possible propaedeutic value of exploratory units.

4. Among special phases of exploration to reveal possible and desirable future activities, vocational activities assume a preponderant role, while personal and cultural activities such as social adaptations and use of leisure time are almost totally neglected.

5. The data indicate that the type of material used for exploratory purposes does and, in the opinion of the principals, should vary with the different subject-fields.

6. General and try-out materials are differentiated. As

between pure general and pure try-out materials, the principals report a strong leaning in practice and personal preference toward try-out materials. In the curriculum as a whole and in 6 out of 9 subject-fields, the pure try-out material outranks the other three types in frequency of occurrence and in rating for efficiency. However, when individual exploratory units are rated on efficiency, there is no significant evidence to justify this leaning toward try-out materials.

7. Despite this leaning toward try-out materials, the majority of the principals would have the try-out materials combined with some general material.

8. There is great divergence in opinion and practice as to what the content of any given exploratory unit should be.

9. Specially set-up exploratory units do not differ significantly in content from the program of studies as a whole.

10. Taking as a whole the junior high school courses of study, 56% of the courses have in them no special exploratory units.

11. In addition to the relative infrequency of exploratory units in the curriculum as a whole, there is wide variation in the occurrence of such units in different courses; the frequency of occurrence ranges from 8% in English to 65% in science and practical arts.

12. Despite this lack of special exploratory units, there is little change being made in the junior high school courses of study; stability rather than change is the rule.

13. The difficulties in the way of introducing special exploratory units differ in no way from those confronting any change in educational procedure.

14. There is abundant evidence to show that the principals do not place a high value on special exploratory units even as a means of exploring the various courses of study.

15. Special exploratory units are required of all pupils in only 60% of the cases. The units of general type are more frequently required than those of try-out type.

16. Neither special exploratory units in particular now exploration in general is a live issue in the present junior high school. Practice lags behind theory, but the theory is not attacked or criticised; exploratory units are not considered particularly successful, but no other means of exploration is used in significant amount.

CHAPTER V

GENERAL CONCLUSIONS

There have been finished now the report of two surveys: one of the theory behind exploratory units and one of the practice and opinion that actually prevail in regard to such exploratory work in the junior high school. In this chapter, two things will be attempted: first, to compare the findings of these two surveys and second to discuss these findings and make such suggestions as derive from reflection on the body of data as a whole.

Comparison of the Findings of the Surveys of Theory and Practice

For the sake of clearness, the ensuing discussion will follow, in general, the order of points as summarized at the end of Chapter IV.

1. Purposes of exploration. There is complete agreement on the two purposes of exploratory units: to discover aptitudes, capacities, and interests of the pupils, and to reveal the nature of future school and life activities. These two purposes are fairly evenly balanced in theory, but in practice there is considerable fluctuation in emphasis, with the first aim generally strongly preferred.

2. Intrinsic value. Theory strongly urged that the exploratory units must be justifiable apart from their exploratory values. Practice agrees and, in its lack of enthusiasm for purely exploratory units and in its great stress on general-

knowledge values, seems to place even greater weight on the need for making units worth while per se.

3. Propaedeutic value. As a corollary to the preceeding point, deferred values are frowned upon both in theory and practice.

4. Special phases of exploration. Both theory and practice stress what the child can do rather than what he is; the vocational is emphasized rather than the cultural and social. However, the over-emphasis in practice is greater than in theory.

5. Type of material in different courses. Theory and practice agree that the type of material should vary with the subject-field.

6. General and try-out materials. Both these types of content are sharply differentiated in theory and practice. Theory leans rather strongly toward general materials, practice just as strongly toward try-out materials, although no evidence was forthcoming that such materials are the better.

7. Mixture of general and try-out material. Despite the above difference in preference, both theory and practice in general advocate a mixture of the two types of material in varying proportions.

8. Variation in content. In theory somewhat, in practice notably, there is divergence of opinion as to what the content of any given unit should be.

9. Content of specially set-up exploratory units. In theory, exploratory units were set forth as specially organized

or thoroughly reorganized units, differing in nature from the regular courses. In practice, there is no distinguishable difference between the content of special exploratory units and the content of the rest of the courses.

10. Difficulties in organizing exploratory units. The difficulties listed by the principals agree with those suggested by the theorists, and are not different from those connected with other educational reforms.

11. Frequency of exploratory units. In theory these specially set-up exploratory units were recommended as possibilities in every field; in practice, this suggestion is accepted in only 44% of the cases. The highest frequency is 65%, the lowest 8%. Moreover, there is very little evidence of change in the direction recommended by the specialists.

12. Exploration by special units and by other means. In theory, exploration through the special exploratory units was advocated as a prime means. In practice, there is grave question of the efficacy of such exploration.

13. Exploratory units required or elective? Theory was not clear as to whether these exploratory units should be required or elective; the advisability of making them required was admitted but in the suggestions for actual practice, theory doubted the practicability of requiring them. In practice the exploratory units are required in only 60% of the cases.

14. Exploration as a live issue. Theory made of exploration one of the main functions of the junior high school, if not the

most important one. In practice there is abundant evidence that the function is in a moribund condition, and that there is no sign of a trend for the better.

15. Comparison of content in special units. Four subject-fields in which special exploratory units have considerable vogue in both theory and practice (general science, general mathematics, general shop, and general language) were compared as to content suggested in theory and as to content actually found in practice. In these four special exploratory units, practice agreed substantially with theory in two (general science and general mathematics), and disagreed in two (general shop and general language.) In theory both these latter units, while containing try-out material, were to have a strong background of general material; in practice, they are strongly of the try-out type and the general material is minimized. It is interesting in passing to note that one of these last two is the most firmly established of the exploratory units in practice, the other the one of most precarious existence. Of the first two, general science ranks high in practice as a successful unit, while general mathematics is relatively low. Apparently agreement or disagreement with theory is no criterion of success. (pp. 50-60 and 87-99).

Discussion of the Findings

In the first place, there is really remarkable agreement between theory and practice as to aims, purposes, and make-up of exploratory units. In the first 10 points of comparison above,

there are either no disagreements or there are disagreements in degree only. The junior high schools have obviously accepted, in the main, the theory that underlies exploratory units and are practicing that theory--in so far as they are doing anything in the way of exploratory units.

On the other hand, when one notes the limited extent to which the theory has been, and is being, put to work, the variation that exists in the offering of units, the chaos that is found in the content of the units, and the low value placed by the principals on the exploratory values of the units, one must conclude (with the minority of specialists) that the whole theory of exploration is fallacious, or that the junior high schools are failing in one of their major functions.

General Failure of Exploration

In general, one can not digest the data assembled in this investigation without realizing that the original enthusiasm and verve are missing from the present day junior high school as far as exploratory units are concerned. And if the assumption of the theory is correct that exploration is a principal, if not the principal, function of the junior high school, and that exploratory units are to play the leading role in exploration, then the present junior high school is falling sadly short of expectations.

The point was raised in Chapter IV that this discrepancy between practice and theory might not properly be laid to in-

ertia or incompetence on the part of the junior high schools, but to intrinsic weakness in the theory of exploratory units; this may be true. However, it is also true that there is no evidence that the shortcomings of the special exploratory units are being made up by use of means of exploration other than those used by the traditional high school. Intelligence tests, achievement tests, and prognosis tests are little used, and their efficiency when used is admittedly low; such a unit as vocations is found in only 37% of the schools; while general guidance ranks high in the opinion of the principals, in actual cases it ranks low in use, and it is difficult to see how guidance can function intelligently if it has no available data from exploratory units, vocations units, or modern testing facilities. Either the whole program of modern exploration is fallacious and futile, or the junior high schools are culpable of neglect of their opportunities.

Specific Defects in Exploratory Units

But even if the exploratory function and all its paraphernalia are neglected, such neglect would furnish the suggestion but not the final proof that exploratory units would succeed better in a more favorable environment. Is there any evidence of intrinsic defects in exploratory units as they now exist that will, apart from any enthusiasm for them, prevent or retard their success?

1. Effect of the chaos in content. While the tabulation

of answers shows trends in the mass in certain directions, it is obvious that great chaos exists in the junior high school world as to the content of exploratory units, especially in practice. General science, firmly intrenched as it is and with theory well agreed, still lacks stability as to content; according to Table VI, 25% of the units are pure try-out, 37% are pure general, while 38% are divided between the more similar combination types. In general language, theory is not entirely stabilized, but prefers strongly a content combining the try-out and general material in varying proportions. In practice 48% are pure try-out, 24% are pure general, and 28% (agreeing with most of the specialists) are combinations of the two. The issue here is further beclouded by a hopeless confusion of aims and terms. The first general-language units were organized under the auspices of the foreign-language department as a charitable gesture of the proud academicians toward the new junior-high-school idea, and as a means of bolstering up the interest of the pupils in foreign language electives; the aim was to reveal the nature of foreign-language study, the material was largely of try-out type--a sampling of the lessons of one or more foreign languages; the title of the unit should have been <u>general foreign language</u>. Later a general survey study of language as a human institution, of language <u>per se</u>, of the different languages, and of the people who use them was added; the aim of this material was to orient the pupil in a great section of human abhievement, and reveal the nature of language as such and the impor-

tance of language study; the material was of pure general type, and the title was rightly general language. The attempt to combine these disparate and incompatible elements in a general-language unit explains the present confusion of content and the vicissitudes of general-language units during the past five years; the two types of content do not fit together, and the aims of neither type are realized. In general business training similar confusion exists but with different causative factors. There are three kinds of content available here: (1) a general survey of commerce as a social institution, (2) a try-out in sample activities of commercial work (e.g., typing). and (3) try-out in the common business practices of every-day life (e.g., making deposits, writing notes, making budgets). According to Table VI, about 40% of the exploratory units are of the pure try-out type, about 20% of the pure general type. The special exploratory unit in this course is also one of those having special difficulties in the past five years. (Table XXV).

2. The failure to have exploratory units required. Not only is there indecision as to the content and use of exploratory units, but even when the units are used, there is no settled policy as to whether these units should be required or elective. In Table XXXIII it appears that in only 61% of the cases are they required; since these units exist in only 56% of the possible situations, this means that only about 34% of the courses have in them exploratory units in the real

sense that all pupils do use them as a means of finding and placing themselves. This is really a serious flaw in the whole structure of exploration. How does one really elect before he has explored? How can pupils be explored by electives they may not elect? The whole situation is grotesquely illogical. That it has not been pronounced so in practice long ago is only another evidence of the lack of vitality in the whole field of exploratory units.

Exploratory units and the discovery of individual difference

The handling of individual differences is a usually acknowledged function of the junior high school. Many writers on the junior high school seem so appalled or fascinated by the multitudinous array of differences which theoretically exist that they do not sufficiently point out the obvious consequence that the greater the number of potential differences, the greater is the need to discover as many of them as possible. To say it another way, it is easy to fall into the habit of thinking (in the junior-high-school field) that, because the individual differences as they show up are so numerous, there are no other differences unrevealed, or that the problem of matching what individual differences obtrude of themselves is difficult enough without unearthing any others. Too often it seems that the deep conviction that individual differences do exist leads to the illogical assumption that they will present themselves, named, tabulated, and catalogued, so that the appropriate curriculum differentiation may be administered--the proper exploratory

electives chosen, the proper ones avoided. It ought to be obvious, however, that the handling of individual differences presupposes their discovery, and that appropriate techniques be employed: "Manifestly also this function (exploration) must be performed before the differences may be discerningly recognized." (47:53). Therefore, exploratory units must be required of all pupils.

3. General and special education. Despite the fact that the consensus of theorists and principals was that junior-high-school education should be general rather than special, and despite the fact that both agreed that the type of exploratory material should vary with the subject-field, the trend in practice is distinctively weighted in favor of the try-out material. Try-out material is by its very nature distinctly specialized. Thus the prevailing trend runs counter both to the fundamental theory of the junior high school and to the basic theory behind special exploratory units. It is significant that at least two of the three special units that are having trouble in keeping in the curriculum are those that are being constructed mainly of try-out material (general language and general business training.)

4. General education not considered exploratory. Despite the theorists' conception of general units as exploratory and despite the fact that the word "general" is a part of the accepted name of practically all the exploratory units, the really general type units are passing from the picture as special

means of exploration. In Table XXXIV, it is noted that "general" is significantly not defined as "exploratory;" this fact plus the evidence of preference for try-out material already referred to is removing from the curriculum what the theorists regard as at least one important type of exploratory material. If practice ceases to look upon general-type units as exploratory means par excellence, then certainly they will cease having much value in exploration: as we shall show later, method and conscious aim have as much or more to do with exploration than content.

These four serious defects in the thinking and practice concerned with exploration units lie at the bottom of the present unsatisfactory state of such units in the junior high schools. Coupled with these specific defects in the handling of exploratory units themselves, should be the fact, already mentioned, that there is little evidence of use of other means of exploration. There is little evidence also of any experimental work to test the validity of the aims of exploratory units; only three of 74 principals had made any attempt to verify the claims of their exploratory units, and none had the results available for publication.

Problems Growing Out of the Findings of the Investigation.

The junior high school has been and still is in an experimental stage; however, the experiment has not been controlled in a successfully directive way. As has been shown, theory has

not achieved control in a real sense; it has been accepted, but not put to work consistently, and when put to work its results have not been checked. Besides this partial failure of external control, there has been even greater failure in the matter of internal control. In all the literature, only one really scientific attempt to measure the results of exploration was found: that by Kaulfers (45:275-83), whose investigation was unfavorable to the unit measured. Even Bruner's extensive progra at Okmulgee depended for measurement of results on: rate of increase of enrollment, teachers' opinion, and public approval. As noted above, the principals in the field have done practically nothing in an experimental way. Being in an experimental state is, of course, no disgrace, but allowing the experimenting to follow a haphazard course and disregarding such controlling factors as there are can hardly profit the junior-high-school idea. In the beginning of this discussion, it was assumed that enough experimentation had been done in various phases of junior high school work to warrant a new synthesis of data preparatory to a fresh start and a new orientation; this assumption was not entirely borne out by the results of the investigation. Enough challenging points of philosophy and procedure had been presented in sufficiently able manner to the junior high schools by the theorists, and enough time had elapsed for a testing of the theory; however, the testing has not been done, and a real synthesis of the data on the basis of the theoretical assumption can not be made. Everything has been tried and still is being

tried, but no theory has been challenged, no new viewpoints have been advanced, the divergences of practice from theory have been in degree and not in kind and there is no evidence that the divergences have been successful. Instead of summarizing and reporting, therefore, the first step in a controlled experiment in junior-high-school education, this investigation is forced to report that the first stage has not been completed, and that the confusion that exists is not the result of beaver-like exertions, but of failure to organize, test, and control what efforts are made.

It is an extremely interesting fact that the one challenge of the whole existing structure of exploration came not from the workers in the junior high schools, but from a group of theorists.

The general recommendation, therefore, that clearly grows out of this investigation is to point out the crying necessity for the initiation of a great many experimental check-ups of the outcomes of exploratory units, and of exploratory methods in general so as to present a basis of evidence on which the existing theory of exploration can be criticised and revised to the end that another investigation can do what this one wanted to do. There are several specific points, revealed by the investigation, which need careful consideration.

1. The basic assumption. The fundamental assumption underlying exploratory units should be critically examined. That

assumption is, of course, that these units should be so constructed as to perform the exploratory function and at the same time be worth while in themselves--that is, contribute to the accepted educational objectives. One might at first blush assert that there is no other assumption possible; there is an alternative, however, and it was voiced emphatically by a minority group of the theorists in reply to questionnaire S. The alternative is that if one really constructs a unit that meets adequately the accepted educational objectives, such a unit will be exploratory of necessity, and exploratory in the only tenable sense educationally.

There is much to commend an examination of these two alternatives by curriculum experts. The second method enforces distinct unity, should have minimum difficulty in meeting the objectives, would have vital (therefore, try-out) content and yet, organized on the "mastery" basis, would have a general, orientation value of the most effective kind. The first and present method must serve two masters (the educational objectives and the exploratory function), seems to lack unity of aim and content, moves on the assumption that content worth while in itself is not ipso facto exploratory and that exploratory material is not, unless given assistance, per se worth while. The choice of the present assumption may account for the chaos in the matter of content, for the remarkable unpopularity of the exploratory units, for the complaint of the principals about unsatisfactory content, and for the conspicuous insist-

ence of the specialists that the units must be justifiable on other grounds than exploration.

2. What are the aims of exploratory units? Aside from the fact that exploratory units must be justifiable from the standpoint of educational objectives, both theory and practice are agreed upon two exploratory aims:

a. To discover the capacities and interests of the pupils
   (1) To themselves
   (2) To their teachers and counsellors

b. To reveal the character and opportunities in future activities
   (1) In school
   (2) In life outside and beyond school

So far so good; but a careful examination of some of the data shows that in practice, in given situations and units, these two ingredients are not always found together. In Table III "discovery of capacities" was mentioned in 31% of the cases, "revelation of future opportunities in school" in 19%; in Tables X to XVII, we saw that the frequency of mention of the ffrst aim decreased and the frequency of the second increased as we passed along the scale from try-out units to general units. With general agreement on only two aims there ought to be little confusion on the actual appearance of the aims in the handling of the units and in the opinion of the workers. To cite one more specific instance: In Table XIV, ten teachers of general mathematics did not include the first aim in their list at all!

This condition raises several questions that need to be answered:

a. Are these two aims to be sought in every exploratory unit?

b. Are they to be sought with equal emphasis--in general and in specific units?

c. Are these aims mutually incompatible--that is, must they be sought independently of each other and with different kinds of content and teaching methods? Or can they be sought together if the teacher has them both in mind? Does the natural content of some subject-fields lend itself to the attainment of one aim, but not the other? If so, is it necessary in order to attain both aims to pad some or all units with a certain amount of artificial material? What effect does such padding have on the general efficiency of the unit? How effective is such padded quasi-extraneous material in exploration itself?

The discussion of such units as general language, general mathematics, and general business training by the theorists, and the data on the varying content and tribulations of such units in practice fairly bristle with such questions as these.

3. General vs. try-out material. This controversy is closely akin to the problems just raised. The theorists draw a clear-cut distinction between these two types of material, and advise the use of both for exploratory purposes. In practice, the types seem to be distinguished, but there is evidence that general material is not as commonly accepted as exploratory

as is try-out material. Some specific points here:

a. General material seems to generate the second aim of exploration better than the first; the reverse is true of try-out material. Is this a necessary result? In case one wants to attain both aims, must there be equal parts of each material used, as Briggs advises in the case of general language? Does such a combination make for unity in content? Should the two compose a physical mixture (like Briggs' general language) or a chemical compound like the modern general-science unit?

The two units in which the general and try-out material are held to be about equally valid (general language and general mathematics) are not particularly happy combinations; the two that nearest approach pure types (general shop and general science) seem to be very successful. The question seems to resolve itself then into this: should one use only pure types or at least units in which one type is distinctly dominant?

However, it is evident from the data of the investigation that there is at present available no evidence as to the relative efficiency of the two types of exploratory material, as to the kinds and combinations desirable, much less as to the specific problems of the particular kind of material most effective in each of the several courses. This in face of the opinion of both specialists (p.65) and principals (p.79) that the type of material should vary with the subject.

But is it not possible that just <u>one</u> type would meet the situation as a whole better? Accepting the assumption, so over-

whelmingly admitted by the specialists and the principals, that junior-high-school education should be general in nature, is not the general type of material the logical kind to use? The only argument for the negative is that general material can not provide all the exploratory values desired. One must not miss the significance of the fact that it is the influence of the exploratory function alone that accounts for the presence of try-out material at all in the junior high school curriculum. To say it another way, try-out material, by its very nature, conflicts with the basic assumption of the junior high school curriculum makers, and must justify this contradiction by its value as exploratory material. To justify itself thus, it must make out a positive case as an efficient exploratory means, and also prove that general material can not cover the field of exploration satisfactorily by itself, or at least by being the dominant factor in all units. Theory, as we have seen, tends to support at least the proposal that the general type should dominate the content; practice seems to belie this, if we close our eyes to the obvious fact that things are not going well in practice.

Can a positive case be made out for at least a tentative experimental assumption that the situation would be better if only the general type of content were used, or at least that it dominate the curriculum? It seems possible to make out such a case and for these reasons:

a. It agrees with the basic theory of junior-high-school education.

b. It certainly will by its very nature be a better means to reveal the nature of a subject field as a whole than samples or bits of a field that must be chosen only from the introductory stages of advanced fields. In language, for example, samples are of necessity chosen from the beginning lessons of foreign-language study that excite interest by their novelty and deceive the pupil by a simplicity that is not even a fair sample of the steady grind that comes later (20:206-10); there is no sufficient basis in such a unit to discover what language study as a whole holds out for the pupil, or what language is as a human achievement that should challenge interest and invite a life devotion. Does sampling in practical arts--making tin cups, cedar chests, or even building a house--provide an orientation in the great field of industry so that a pupil can say: "I have tried myself out in industry and I know that carpentry is my niche?" In reality has he not merely made his choice out of a few manual activities, not illuminated but actually blinded by immediate shallow interest to the real nature of the life he is to enter? Only a general-type unit can give one an intelligible view of language as such or of industry and industrial life as such.

c. It is more difficult, but not impossible to make out a similar case for general content in meeting the first aim of exploration; to discover capacities and interests. As far as interests are concerned, the case was made in the preceding paragraph; real, abiding interest worthy of a place in the tex-

ture of one's life can not be formed by making contact with a few simple samples of a large field of endeavor; the interest will be shallow at best, misleading at worst. And once a genuine interest is aroused after a full overview of the field, capacity (as is proved by the low correlation between intelligence and school success) becomes the minor factor of the two.

But capacities ought to be explored. Can they be explored in general-type units? An experiment in general science (such as placing a lighted candle in a covered jar) will test a pupil's capacity to manipulate apparatus or to do chemistry just as well if it is designed to illustrate the experimental method or the value of science in general, as if it were limited to a bare sample of an experiment or of a chemical experiment.

Objection may be raised here that a typical try-out unit, general shop, heads the list in frequency of occurrence in the schools, and in rating for efficiency. The answer is that the general-shop unit was not a specially constructed unit in the real sense; all of its content and method were already in existence in the regular practical-arts shops. Since its method and content is identical with future practical arts work, its exploratory value for such work is naturally great. However, the fact remains that such a unit does not give, any better than a regular shop unit, an intelligent survey of industry as a desirable life-work situation.

d. The use of general-type units will obviate the objection of expense--the largest impediment in the extension of

exploratory units. A try-out unit, unless it is merely a trying-out in a regular unit, necessitates an extra unit in the curriculum. A general unit does not. General science, containing worth-while material in the field of science displaces the special units without any loss of science content. Judd, commenting on such a general-language unit, says that it is better than the content of regular foreign-language courses (43:67). Such a unit need not be added to the foreign-language course--it will merely displace one of the regular units with no loss of language content.

e. It is obvious from the preceding discussion that the general-type units can meet more easily and naturally the requirement that the content be justifiable per se.

f. General units, as well as general education, are the natural answer to complexity and specialization in advanced work and life adaptations. As school courses multiplied and life outside became more complex, the schools tried to prepare for the situation by matching the complexity and specialization beyond. But schools could not keep pace; anyhow, the best preparation for a complex and changing civilization is a general education that enables one to comprehend the world--at least a field in it--as a whole. The transfer of training from pure courses is much greater than that from applied courses.

g. Since the use of general units would not increase the total number of units offered in a given school, the anomaly of offering exploratory units that do not explore all the pupils

would be obviated; there would be only one exploratory unit for each subject-field. All could be taken in the seventh grade or in the seventh and eighth grade.

h. General units are in reality in accord with that critical minority that decry special exploratory units. They will in fact be merely excellent educational material, meeting all the criteria of the philosophical objectives. We may quote Kilpatrick in evidence that such general material as has been described tallies with the aim of progressive education: "Progressive education, if it is worthy of the name, founds itself on total learning effects, not on part only. It, therefore, stresses life and experience, learning under careful teacher guidance. Only thus can we hope to call into play all sides of personality. Only as the whole child is given all-around experience can we hope to build the richer and finer personalities that we all wish. This is the program of a progressive education." (46:386).

4. This discussion will close with a mere reference to a point outside the scope of the investigation, but important to exploratory efficiency: the great necessity for a comprehensive guidance program and a combination of exploration and guidance into one function as suggested above by Koos (Chapter II). Once we reach this conception, we can proceed to envision the back-and-forth, mutually inter-acting process in which the exploratory activities provide cues and bases and corrections for the guidance program, while the latter in turn,

revised and re-orientated by this fresh accretion of knowledge, directs and sets new challenges for the exploratory activities. To illustrate: the guidance machinery sets pupil A a certain tentative course of exploratory activities in industrial arts; the pupil proves to have a surplus of thumbs both physically and mentally as far as manipulation of things is concerned, but he succeeds admirably in his English constant meanwhile: this experimental data enriches and redirects the guidance control of the pupil, and a new and wiser program of experiences is mapped out for him--perhaps even a reorganization of the school experiences themselves is suggested; and all the while the guidance control is the means by which the pupil becomes cognizant of what is going on, of what is happening to him, and of what it means in terms of what he is, what he can do, and where and how he can learn to do it better. And so the process continues in cumulative fashion; the pupil is experiencing, in Dewey's interpretation of the term, under the most favorable and intelligent conditions society can provide.

It must be admitted here frankly that this concept of the guidance-exploration function can hardly, if at all, be distinguished from the concept of the junior-high-school educative process itself. Koos, in speaking of the guidance function separately, takes exception to such an extension of that function as makes "'guidance' essentially another synonym for or a definition of 'education.'" Guidance in this sense, he says, 'is no more distinctive of the junior high school than of the kinder-

garten or of the college," and makes one lose "sight of the extremely important special purpose of guidance (or distribution) in the more restricted sense of discovering individual differences, and of 'distributing' these differences among activities and opportunities that are appropriate." (47:55). Would he object similarly to this extension of the unified guidance-exploration process? Probably not, because it is the exploratory function as above defined that does distinguish the process from that in any other unit of the school system, and he contends that the chief difference between the junior high school and the senior high school is just the fact that the latter stresses specialization (47:122). Anyhow, it does seem to be a logical extension of the function, and when ideas are not thought through to their logical conclusions, illogical applications of the idea are sure to follow. There was proof of this contention when in chapter IV the examination of practices in the junior high school was made.

To sum up this part of the discussion, we can say that guidance in its broad significance is not peculiar to any one unit of the school system, and that it may, in that sense, be practically synonymous with education in its dynamic and directive phase; the distinction among the units comes with the directions that guidance takes in the units: in the elementary school it is integration (39:chapters III, IX; 7:21-3), in the junior high school it is exploration, in the senior high school it is specialization (47:122). Such a concept gives a clear

definition of guidance and gives it its proper importance in education; it also gives a clear definition of the functions peculiar to the three units of the system. Best of all, in its synthesizing of the directive phase (guidance) and of the experimental phase (exploration) of experience, it is in line with the best concept of progress which puts philosophy and science to work together, one as the directing force, the other as the experimental force, and which sees experience as a compound of reflecting force and trial and error. "When 'outer' and 'inner' activity come together in a single experimental operation, used as the only adequate method of discovery and proof, effective criticism, consistent and ordered valuation, emerged. Thought aligned itself with other arts that shape objects by informing things with meanings." (29:428;cf.also pp. 10-14, 25-8). The guidance-exploration concept, by combining both the directive process and the experimental process, clarifies both the terms "guidance" and "exploration," and sets the stage for a natural and inevitable checking on the means and methods of exploration and exploratory units. If guidance demands knowledge of the individual make-up of the pupil, exploration must be made through all the courses of study to uncover the traits, interests, and abilities of the pupil; that leads logically to the organization of units that will explore the resources of the pupil; finally, such individual differences as are revealed by these units are put together with data from other exploratory devices, and put to work in directing the

pupil anew. Furthermore, the directing force will follow up the progress of the pupil to see whether the exploration revealed accurately the capacities and interests of the pupil as a basis for evaluating and criticising the exploratory units--certainly a logically necessary step. One of the astonishing facts, revealed by reading the literature and by observing the practice, is the almost total lack of experimental checking to see whether exploratory units really perform their most obvious function.

Summary of Conclusions

1. The theory of exploratory units has been clearly and, for the most part, definitely set forth, but the junior high schools have put the theory into practice in a very meager fashion.

2. There is no agreement either on the units to be offered or on the content of the units when offered.

3. The principals are not even convinced of the efficiency of such part of the exploratory program as they have chosen to put into practice. However, there is no evidence of a better program, or even of careful checking of the present one.

4. Four features in the program of exploratory units need special study if exploratory units are to remain as a part of the junior high school curriculum:

a. The possibility of making exploratory units exploratory in the real sense by having them required of all pupils. The means suggested above is to have fewer exploratory

units of general material.

b. The question of the relative value of general and try-out material in individual units and in the junior high school curriculum as a whole. Such a study would be based on a consideration of the philosophy of the junior high school, on principles of curriculum making, and on experimental checking of the outcomes of exploratory units in practice.

c. The problem of whether special exploratory units should be set up in every subject-field and the consequent organization of suitable material for such units as are decided upon.

d. In case special exploratory units are not feasible for all subject-fields, reorganization of existing units is needed to meet the demands for exploration.

5. The present unsatisfactory state of practice and the significant objection of a minority group of present-day specialists suggest that the entire theory of exploration as a special function of the junior high school needs reconsideration. The present hap-hazard status of exploratory units in practice is partly the result of the failure to integrate the concept of exploration with the general philosophy of the junior high school; the larger concept, guidance-exploration, has been suggested as a preliminary step in such integration. Such a revamping of the theory of exploration would follow the experimental checking of present practice.

AN INVESTIGATION OF THE STATUS OF EXPLORATORY COURSES IN JUNIOR HIGH SCHOOLS
QUESTIONNAIRE S

1. Do you consider general or special training more important in junior high school? (For example, in science, GENERAL training refers to study of science as science as a type of human achievement, as a way to understanding our world: SPECIAL training refers to study of separate sciences such as biology.)

2. List below what you consider to be the purposes of exploratory courses in order of importance beginning with the most important.

3. We may say that there are four possible types of exploratory courses:
   A. Try-out courses, in which the pupil works with actual samples of future work or subjects.
   B. General, over-view courses in which the pupil learns about a field in a general informational way without actually performing any operations in the field.
   C. Combination of A and B, A predominating.
   D. Combination of A and B, B predominating.
   a. Do you agree with the above statement?

   b. Would you say that the type used should depend on the subject matter or that one type is preferable in all subjects?

   c. In case you believe that the type used should depend on the subject, list after each type subjects for which it is best suited.
   Type A .....
   Type B .....
   Type C .....
   Type D .....

4. List below difficulties as you see them in organizing exploratory courses as such.

5. Write below reference to any unpublished theses or other materials bearing on this investigation that I may not uncover in my searching.

Signed .....

AN INVESTIGATION OF THE STATUS OF EXPLORATORY COURSES IN JUNIOR HIGH SCHOOLS
QUESTIONNAIRE P-1

....., Principal. Name of school .....
Address of school .....
Type of organization (6-3-3, etc.) .....
Enrolment .....

1. Do you consider general or special training more important in junior high school? (For example, in science, GENERAL training refers to study of science as science, as a type of human achievement, as a way of understanding our world; SPECIAL training refers to study of separate sciences such as biology.) .....
2. List below what you consider to be the purposes or functions of exploratory courses in order of importance beginning with the most important.
   a. .....
   b. .....
   c. .....
   d. .....
   e. .....

TABLE A

COURSE OF STUDY	1	2	3	4
Art				
Commercial				
English Composition				
English Literature				
Foreign Language				
Mathematics				
Music				
Practical Arts (Boys)				
Practical Arts (Girls)				
Science				
Social Science				
Vocations				
.....				
.....				

3. In Column 1 in Table A above, rank the courses (beginning with highest as 1) according as the exploratory function stands out explicitly in your school. (Course of study here means the ENTIRE field or department, not merely special semester or year units — in other words you are comparing all three years of English with the total offering in Science and so on.)
4. There are four possible kinds of content designed for exploratory purposes:
   A. Try-out materials, in which the pupil works with actual samples of future work or subjects.
   B. General, over-view, informational courses, in which the pupil learns ABOUT a field in a general way without actually performing any operations in the field.
   C. Combination of A and B, A predominating.
   D. Combination of A and B, B predominating.

   In column 2 in table A, write A, B, C, or D after each course to designate the type that best describes how the exploratory function of each course is carried out in your school.
5. In column 3 in Table A, use the same letters (as in No. 4) to indicate the type you consider BEST SUITED to bring out the exploratory values desirable. In marking this you are, of course, indirectly giving your opinion as to whether there is one best type of exploratory course suited for all fields, or whether the type should vary with the subject.
6. Do you believe that exploration is best achieved:
   X. By specially set-up exploratory units within a course .....
   Y. By reorganization of content and method in the regular units
   Z. By combination of X and Y

   Answer this by putting X, Y, or Z after each course in column 4 of table A

TABLE B

COURSE OF STUDY	1	2	3	4	5
Art					
Commercial					
English Composition					
English Literature					
Foreign Language					
Mathematics					
Music					
Practical Arts (boys)					
Practical Arts (girls)					
Science					
Social Science					
Vocations					

7. In Table B, column 1, check (X) each department in which you offer a course SPECIALLY SET UP for exploratory purposes; e. g., such a course as GENERAL LANGUAGE or GENERAL SHOP.

8. In column 2 in Table B, write R if the SPECIAL EXPLORATORY UNIT is required (a constant), write E if it is elective.

9. In column 3, Table B, write NAME of special exploratory unit and semester when offered.

10. In column 4 in Table B, rate the exploratory units (checked in column 1) on basis of their relative efficiency in exploratory work, rating the most successful 1 and so on.

11. In column 5 in Table B, give author and publisher of text book used in unit mentioned in No. 7.

12. In case you offer no such special exploratory unit in certain courses of study (departments), indicate briefly below the reason for the omission in each case.

13. a. List below cases in your school of change from general courses to specialized courses within past five years. (e.g., from general mathematics to algebra, general science to biology, general shop to special shop.)

Changes	Reasons

b. List below special exploratory courses that have been dropped (without replacement) from the school; e.g., general language.

Changes	Reasons

14. List below any changes within five years from "old-line" traditional courses to general courses. (e.g. from algebra to general mathematics, etc.) Append briefly the reason.

Changes	Reasons

TABLE C

COURSE OF STUDY	1	2
Art		
Commercial		
English		
Foreign Language		
Practical Arts (Boys)		
Practical Arts (Girls)		
Mathematics		
Music		
Science		
Social Science		
Vocations		

15. In table C, column 1, put the appropriate letter or letters to indicate which of the following means of exploration are used in each case.
    - A. Achievement tests
    - G. A general guidance or personnel program independent of the subject-matter courses
    - I. Intelligence tests
    - O. Teacher's opinion
    - P. Prognosis tests
    - S. School marks in subject
    - T. Actual try-out in the regular courses
    - X. Special exploratory courses

16. In Table C, column 2, put the letter that indicates which one of the means of exploration has proved most effective in each case.

17. Now in the list of activities in No. 15 above rank each one for general effectiveness in exploratory work putting 1 before the most effective, and so on. This differs from No. 16 in that in No. 16 you rated the activities on effectiveness in special fields, while now you are rating them on effectiveness in general, in the school program as a whole.

18. In each field below check (X) the items that best describe the nature of the work in such SPECIAL exploratory courses as you offer. You may ma k more than one to show combination; in such case mark dominant type X^1, next X^2, and so on. In case you offer no special exploratory course as such in a field, mark the items that best describe your regular courses. In such cases draw a circle around the X.
    a. Art
        - ..... Appreciation as a consumer
        - ..... Participating activities (drawing, modeling, etc.)
        - ..... Study of art theory or history
        - ..... Unit designed for those who have no talent or previous art training
        - ..... or (describe your course otherwise)
    b. Commercial
        - ..... Study of actual business procedures and forms
        - ..... Study of general field and contributions of commerce
        - ..... Sampling of actual commercial activities (typewriting, bookkeeping, etc.)
        - ..... or (describe your course otherwise)
    c. English Composition
        - ..... Formal study of principles and application of them in writing
        - ..... Creative writing, try-out in drama, newswriting, etc.
        - ..... or (describe your course otherwise)
    d. English Literature
        - ..... Study of literature primarily for content (the plot)
        - ..... Study of literature primarily for appreciation (literary form, style)
        - ..... Study of "classics" as models to set standard of taste
        - ..... Study of non-classics, starting at the level of actual appreciation
        - ..... Browsing widely, tasting this and that
        - ..... or (describe your course otherwise)

e. Foreign Language
..... Study of language as a social institution: its nature, origin, development, etc.
..... Study of samples of several foreign languages
..... Study based on one foreign language (Latin for example) with incidental study of other languages, of derivation, etc.
..... Regular study of a foreign language in which pupil's achievement for one semester is used as basis for guidance.
..... or (describe your course otherwise)

f. Mathematics
..... Unified mathematics based on practical life situations
..... Unified mathematics based on demands of future school units
..... Special mathematics (arithmetic, algebra)
..... or (describe your course otherwise)

g. Music
..... Appreciation as a consumer
..... Participating activities
..... Study of music theory
..... Unit for those who have no talent or previous training
..... or (describe your course otherwise)

h. Practical Arts (boys)
..... Pre-vocational units
..... Experience in different shops
..... Work on projects in a general shop
..... Short-unit (less than a semester) rotation in several shops
..... Study of industries and industrial life.
..... or (describe your course otherwise)

i. Practical Arts (girls)
..... Differentiated units in sewing and cooking and the like, largely laboratory.
..... Home projects
..... Running a model home (in the school)
..... Informational study of homemaking (largely theoretical)
..... or, describe your course otherwise)

j. Science
..... Study of samples from various sciences
..... Study of science as a field of human endeavor
..... Study of environment as basis for bringing in scientific procedures and information
..... Study of special sciences entirely
..... Study of special sciences following an introductory course
..... or (describe your course otherwise)

k. Social Science
..... Specialized units (history, civics, etc.)
..... Unified course
..... or (describe your course otherwise)

l. Vocations
..... Studied as a special unit based on descriptions of vocations
..... Studied as a special unit based on divisions of world's work
..... Studied incidentally in connection with other units
..... Studied through an extra-class guidance or advisory period
..... Studied incidentally as by-product of election of courses and curricula
..... or (describe your procedure otherwise)

19. List below difficulties as you have met them (a) in organizing your special exploratory courses, or (b) in satisfying in general the demand of the exploratory function in your curriculum making.

a. .....

.....

.....

b. .....

.....

.....

c. If a pupil fails a unit because of demonstrated unfitness for that type of work, does he lose the credit?

20. Have you done any research work or experimentation in the field of exploration? If so, will you indicate below the nature and results of the experiment. If the experiment has been published, give the reference.

21. Enclose copy of your program of studies, or, if you have none available, a copy of your daily schedule of classes.

22. Do you care to see a summary of the results of this investigation?

Have your general language teacher, or, if you have no general language unit, your general science teacher list below the aims of the unit.

Aims of .....

.....

Teacher

Have your general shop teacher, or, if you have no general shop unit, your general mathematics teacher list below the aims of the unit.

Aims of .....

.....

Teacher

QUESTIONNAIRE P-2

Your name .....Name of your school.....

Type of school (6-3-3, etc.).....Enrollment.....

1. List below the purposes of exploratory courses in your school beginning with the most important.

2. Do you believe in general that exploration is best achieved by:

   X. Specially set-set up exploratory units within a course

   Y. Reorganization of content and method in the regular units

   Z. Trial of pupil in regular courses

3. Put before each subject field listed below, X, Y, or Z to indicate which method, mentioned in #2 above, best describes the method of exploration used in your school

Art and music	Practical arts (boys)
Commercial	" " (girls)
English literature	Science
Foreign language	Social Science
Mathematics	Vocations

4. (a) There are four possible kinds of content designed for exploratory purposes:

   A. Try-out materials, actual samples of the subject or work

   B. General, over-view, informational courses <u>about</u> a field

C. Combination of A and B, A predominating

D. Combination of A and B, B predominating

Put A, B, C, or D before the subject fields in #3 above to indicate the general type of content in your school.

(b) Check which type in 4 (a) is, in your opinion, the best for general exploration purposes--or rank the four types.

5. (a) In list below, underscore the subjects offered in your school

General Art Courses	General shop
General language	Rotation shop courses
General mathematics	Vocations
General music courses	Unified or composite social
General science	studies

(b) Before the courses you offer, put A (try-out), B (overview), C (A B), or D (B A), (as defined in 4a) to indicate the type of exploratory material used.

(c) Rank the courses you offer to show the relative success with which each fulfills the exploratory function.

(d) Put R before the courses required of all pupils.

6. (a) List below cases in your school of change from general courses to specialized courses within past five years. (e.g., from general mathematics to algebra, general science to biology, general shop to special shop.)

Changes	Reasons
_____	_____
_____	_____
_____	_____

(b) List below special exploratory courses that have been dropped (without replacement) from the school; e.g., general language.

Changes	Reasons

(c) List below any changes within five years from "old-line" traditional courses to general courses, (e.g. from algebra to general mathematics, etc.) Append briefly the reason.

Changes	Reasons

7. (a) Rank the following means of exploration for effectiveness

Achievement tests

A general guidance or personnel program

Intelligence tests

Teacher's opinion

Prognosis tests

School marks in subject

Actual try-out in the regular courses

Special exploratory courses

(b) Write after each means above a subject or two in which the means has been tried successfully in your school

8. Write below difficulties you have encountered in meeting the requirements for exploration in your school.

9. Write after any of the terms below the numbers of other terms that you consider synonymous.

1. General	4. Unified	7. Composite
2. Try-out	5. Finding	
3. Exploratory	6. Broadening	

BIBLIOGRAPHY

1. Barber, F. D., "Present Status and Real Meaning of General Science," School Review, XXIII (January, 1915), 9-24.

2. Barnes, Walter, "Suggestions for the English Course in Junior High Schools," School Review, XXVII (September, 1919), 523-32.

3. Bennett, G. Vernon. The Junior High School, Baltimore: Warwick and York, 1926. pp. 225.

4. Bihford, Virgil F., "The General-Shop Idea Applied to Junior High Schools," Industrial Education Magazine, XXVII (August, 1925), 45-6.

5. Bonser, Frederick G., "Democratizing Education by the Six-Three-Three Plan," Educational Administration and Supervision, I (November, 1915), 567-76.

6. Briggs, Thomas H. "The Special Functions of Secondary Education," Seventh Yearbook of Department of Superintendence. Washington: The Department of Superintendence, 1929. pp. 196-207.

7. _____. The Junior High School. Boston: Houghton Mifflin Co., 1920. pp. xx + 350.

8. _____, "What is a Junior High School?" Educational Administration and Supervision, II (September, 1919), 283-301.

9. _____, "The Functions of the Junior High School," The Classroom Teacher, Volume X. Chicago: The Classroom Teacher, Inc., 1927. pp. 28-59.

10. Bruner, H. B. The Junior High School at Work. Teachers College Contributions to Education, No. 179, New York: Teachers College Press, 1925. pp. vii + 111.

11. Bureau of Education Bulletin, No. 55, Business Education in Secondary Schools. Washington: Government Printing Office, 1919.

12. _____, No. 26, Reorganization of Science in Secondary Schools. Washington: Government Printing Office, 1920.

13. _____, No. 19, Statistics of Public High Schools. Washington: Government Printing Office, 1920.

14. _____, No. 22, Secondary Education. Washington: Government Printing Office, 1929.

15. _____, No. 8, The Reorganization of the Public School System. Washington: Government Printing Office, 1916.

16. _____, No. 32, Reorganization of Mathematics in Secondary Education, Report of National Committee on Mathematical Requirements. Washington: Government Printing Office, 1921.

17. Caldwell, Otis W., "The Aims of Science in Grades Seven, Eight and Nine," The Classroom Teacher, Volume X. Chicago: The Classroom Teacher, Inc., 1927. pp. 617-58.

18. _____ and Curtis, F. D. Introduction to Science. New York: Ginn and Co., 1930. pp. xvi + 668 + xxxviii.

19. Cline, E. C., "A New Orientation for Secondary Curriculum Making," High School Teacher, VII (January, 1931), 3-5, 28.

20. _____, "General Language," School Review, XXXVI (September, 1928), 510-4.

21. _____, "Some Problems Relating to Exploratory Courses," School Review, XXXVIII (March, 1930), 206-10.

22. Cox, P. W. L. The Junior High School and Its Curriculum. New York: Chas. Scribners and Sons, 1929, pp. xxii + 474.

23. _____, "The Solvay Junior High School," Educational Administration and Supervision, I (December, 1915), 619-22.

24. _____, "The Readjustment of the Solvay Schools," Educational Administration and Supervision, II (December, 1916), 605-24.

25. Coxe, Warren W., "When Is a School A Junior High School?" Junior-Senior High School Clearing House, V (October, 1930), 72-9.

26. Curtis, F. D. Investigations into the Teaching of Science. P. Blakeston's Sons and Co., 1926. xvii + 341.

27. Davis, Calvin O. Junior High School Education. Yonkers: World Book Co., 1924. pp. xi + 451.

28. Dewey, John. Human Nature and Conduct. New York: Henry Holt and Co., 1922. pp. vii + 336.

29. _____. Experience and Nature. Chicago: Open Court Publishing Co., 1925. pp. xi + 443.

30. Dickson, Virgil E. and Terman Lewis M., "Provisions for Individual Differences in Junior High School," The Classroom Teacher. Chicago: The Classroom Teacher, Inc., 1927. pp. 103-8.

31. Douglass, Aubrey A. Secondary Education. Boston: Houghton Mifflin Co., 1927. pp. xxxv + 649.

32. Edgerton, A. H., "Industrial or Manual Arts," The Classroom Teacher, Volume XII. Chicago: The Classroom Teacher, Inc., 1927. pp. 3-128.

33. _____ and Herr, L. A., "Present Status of Guidance Activities in Public Schools." Twenty Third Yearbook of the National Society for the Study of Education, Part II. Bloomington, Illinois: Public School Publishing Co., 1924. pp. 3-27.

34. Fifth Yearbook of the Department of Superintendence. The Junior High School Curriculum. Washington: The Department of Superintendence, 1927.

35. Glass, James M., "The Junior High School Program," Circular, Department of Public Instruction. Pennsylvania, 1922.

36. _____. "The Junior High School," The New Republic, XXXVI, Part II (November 7, 1923), 19-22.

37. Heironimus, H. C., "The Teacher-Adviser in Junior High School," Educational Administration and Supervision, III (February, 1917). 91-4.

38. Hines, Harlan C. Junior High School Curricula. New York: Macmillan Co., 1924. pp. xii + 188.

39. Inglis, Alexander. Principles of Secondary Education. Boston: Houghton Mifflin Co., 1918. pp. xvi + 741.

40. Johnston, Chas. H., "General Science in Junior High School," Educational Administration and Supervision, I (December, 1915), 683-5.

41. _____, "The Junior High School," Educational Administration and Supervision, II (September, 1916), 413-24.

42. Jones, Arthur J., "The Junior High School: Its Place in the Reorganization of Secondary Education," School Review, XXVI (February, 1918), 110-23.

43. Judd, Chas. H., Book Review of General-language Text, Elementary School Journal, XXXI (September, 1930), 67.

44. _____ and Bagley, William C., "Enlarging the American Elementary School," School Review, XXVI (May, 1918), 313-33.

45. Kaulfers, Walter, "Observations on the Question of General Language," School Review, XXXVI (April, 1928), 275-83.

46. Kilpatrick, William H., "What Do We Mean by Progressive Education?" Progressive Education, VII (December, 1930), 383-6.

47. Koos, Leonard V. The Junior High School. New York: Ginn and Co., 1927. pp. xiv + 506.

48. Latimer, D. Z., "Exploratory Opportunities of the Junior High School," Industrial Arts Magazine, XII (May, 1923), 171-4.

49. Lewis, Melvin and Sorensen, Alfred, "Business Training in Junior High School," The Classroom Teacher, Volume X. Chicago: The Classroom Teacher, Inc., 1927. pp. 567-86.

50. Lyman, Rollo H., "Ben Blewett Junior High School," School Review, XXVIII (February, 1920), 97-111.

51. _____ and Cox, P. W. L. Junior High School Practices. New York: Laidlaw Bros., 1925. pp. 215.

52. Proctor, William M. Educational and Vocational Guidance. Boston: Houghton Mifflin Co., 1925. pp. xv + 352.

53. Reese, L. W., "A Study of the Junior High Schools of Ohio," Bulletin No. 25, Department of Secondary School Principals, XXV (March, 1929), 180-210.

54. Reeve, W. D., "Mathematics in Junior High School," The Classroom Teacher, Volume X. Chicago: The Classroom Teacher, Inc., 1927. pp. 473-83.

55. Report of the Committee on Standards for Use in the Reorganization of Secondary School Curricula, The North Central Association Quarterly, II (March, 1928), 389-95.

56. School Review, XXVI (January, 1918), 67-8. Review of General-science Text.

57. Seventh Yearbook of Department of Superintendence, 1929. Washington: Department of Superintendence, 1929.

58. Smith, William A. The Junior High School. New York: The Macmillan Co., 1925. pp. xiv + 478.

59. Snedden, David. Problems of Secondary Education. Boston: Houghton Mifflin Co., 1917. pp. XIV + 333.

60. Touton, Frank C. and Struthers, Alice B. Junior High School Procedure. New York: Ginn and Co., 1926. pp. xvii + 595.

61. Van Denberg, Joseph K. The Junior High School Idea. New York: Henry Holt and Co., 1922. pp. 423.

62. Weet, Herbert S., "Rochester's Junior High Schools," Educational Administration and Supervision, II (September, 1916), 435-7.

Junior High Schools Whose Principals Responded to Questionnaire P-1 or P-2

Arkansas (3)

- Benton
- Little Rock (East Side)
- Pine Bluff

Colorado (6)

- Boulder
- Canon City
- Colorado Springs
- Denver
  - Byers
  - Garden Place
  - Grant

Illinois (8)

- Chicago
  - Hirsch
  - Parker
  - Westcott
- Decatur
- East St. Louis
- Quincy
- Rockford
- Rock Island

Indiana (15)

- Elkhart

Indiana (Cont.)

Roosevelt

Central

Logansport

Marion

Michigan City

Muncie

Blaine

McKinley

Wilson

Richmond

Dennis

Hibberd

Test

South Bend

Riley

Washington

Terre Haute

McLean

Wilson

Iowa (10)

Ames

Davenport

Young

Ludlow

Des Moines

Callanan

Iowa (Cont.)

Woodrow Wilson

Dubuque

Keokuk

Sioux City

West

Woodrow Wilson

Waterloo

Kansas (13)

Coffeyville

Emporia

Fredonia

Hutchinson

Kansas City

Parsons

Topeka

Boswell

Curtis

Lincoln

Wichita

Central

Horace Mann

James Allison

Roosevelt

Michigan (21)

Ann Arbor

Michigan (Cont.)

- Coldwater
- Detroit
  - Durfee
  - Foch
  - Hutchins
- Flint
  - Emerson
  - South
  - Whittier
- Grand Rapids
  - Burton
  - Harrison Park
  - Fairview
- Kalamazoo
  - Roosevelt
  - Washington
- Lansing
  - French
  - West
- Niles
- Pontiac
- Saginaw
  - Central
  - North
  - Webber
- South Haven

Minnesota (6)

Duluth

Eveleth

Minneapolis

Franklin

Jordan

Lincoln

St. Paul

Missouri (11)

Hannibal

Jefferson City

Joplin

Nevada

St. Louis

Blewett

Franklin

Springfield

Jarrett

Pipkin

Reed

University City

Webster Groves

Nebraska (4)

Grand Island

Kearney

Lincoln

Nebraska (Cont.)

Twenty-sixth and O Streets

Whittier

North Dakota (2)

Fargo

Williston

Ohio (27)

Canton

Cleveland Heights

Columbus

Crestview

Everett

Indianola

Mound

Pilgrim

McKinley

Dayton

Wilbur Wright

Belmont

Lakewood

Logan

Lorain

Mansfield

Massillon

Longfellow

Lorin Andrews

Ohio (Cont.)

- New Philadelphia
- Piqua
  - Bennett
  - Wilder
- Springfield
  - Central
  - Schaefer
- Tiffin
- Upper Sandusky
- Warren
- Youngstown
  - Princeton
  - U. S. Grant
- Zanesville

Oklahoma (10)

- Ardmore
- Durant
- Enid
- Lawton
- Oklahoma City
  - Harding
  - Roosevelt
  - Webster
- Tulsa
  - Eugene Field

Oklahoma (Cont'l)

Grover Cleveland

Roosevelt

South Dakota (5)

Aberdeen

Roosevelt

Simmons

Mitchell

Sioux Falls

Watertown

West Virginia (7)

Beckley

Bluefield

Charleston

Lincoln

Roosevelt

Jefferson

Clarksburg

Matoaka

Wisconsin (12)

Appleton

McKinley

Roosevelt

Wilson

Beloit

Lincoln

Wisconsin (Cont.)

Roosevelt

Chippewa Falls

Fond du Lac

Kenosha

Central

Washington

Racine

Superior

Wauwatosa

Wyoming (1)

Kemmerer

The above list of schools includes all those whose principals took the pains to give usable and complete answers to the questionnaires; this selection was made in order to increase the reliability of the response. It will be noted from Table I that there is not only a 50% return in general, but that this percent obtains with considerable consistency in all the twenty states. The schools covered in the study belong to a rather homogeneous group, including as they do only schools in 6-3-3 systems whose senior high schools belong to the North Central Association; moreover, the schools questioned are the total population in the area covered by the study. A 50% return from carefully selected schools, spread evenly over the twenty states, seems to provide adequate basis for fair conclusions as to practice, especially since the conclusions are unfavorable despite the probability that the respondents are heads of the better schools.

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