

CRITERIA FOR EVALUATING
AN
INDUSTRIAL ARTS DEPARTMENT

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By

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CHAPTER I
INTERPRETATION OF THE PROBLEM

Every few years new and seemingly radical ideas are introduced into the educational system. There are debates, as to their values as a part of the educational system, and after a more or less fair trial they are either accepted or rejected. That trial may be anything from a few minutes' study to several years of experimentation. How simple it would be if there were accurate scales which could be used to measure adequately every educational venture so that administrators might know its exact value to the school when it is first introduced.

Need for Evaluative Criteria. Since no such measuring device is available it behooves the educators to select by some other method those things that are to be included in the curriculum.

Entirely new departments are sometimes added to a school system with no way of knowing beforehand what they will add to the curriculum. There are many obsolete policies and practices still in force in many schools that have long ago been discarded by the more progressive systems. Only by a valid system of evaluation can these desirable things be added and undesirable things be rejected. Mesner in discussing this problems says (20, page 49):

Clearly the need is for a more comprehensive program of evaluation which seeks objective evidence that the broader purposes of a changing educational program justify lay acceptance.

. . . . evaluation may be defined as the process of determining to what extent the accepted purposes of any activity are being progressively achieved.

And according to the Cooperative Study Committee Report, (11, page 12) evaluations should be carried out for three particular reasons, (1) accreditation, (2) stimulation, and (3) improvement.

* A school may evaluate itself for stimulation purposes, but if the results are to be used for accreditation they should be checked by a visiting committee. Such a committee will tend to give more valid evaluations without prejudice, and will usually be composed of people who are better qualified to judge the school than are its own teachers. Regardless of who does the evaluating the school faculty should find it stimulating to use the results as a basis for seeking improvement.

In How to Evaluate Secondary Schools, (13, page 53) the Cooperative Study Committee said of evaluation:

Evaluation should be definitely considered as an initial step, not the final one, in a systematic program of continuous improvement. Some of the portions of it may well be taken up with members of the school board or with the local parents-teachers association. Some portions may be presented to the community . . . Evaluation should be an educational experience and should have an educational purpose; it is not an end within itself. A program of improvement should result.

Self-evaluation will cause introspection, which is essential for a school to become aware of its own weaknesses.

The reasons for evaluation for accreditation, as accepted by the North Central Association (17, p. 37) are:

1. To describe the characteristics of institutions worthy of public recognition as institutions of higher learning.
2. To guide prospective students in the choice of an institution of higher learning that will meet their needs.
3. To serve individual members as a guide in interinstitutional relationships, such as transfer of students, the conduct of intercollegiate student activities, the placement of college graduates, and the selection of college faculty.
4. To stimulate through its accrediting practices the improvement of higher education in the territory of the North Central Association.

If these aims are achieved as results of evaluation, the methods of evaluation should be highly developed and carried out with great care. There should be evaluative materials available at all times for the use of any school that desires it, or for any agency that would have need of it for evaluation for accreditation purposes. Not only should there be material for the evaluation of the school, but for any department of the school as well.

The Problem Stated. So far as the writer could find there has been no attempt to develop any sort of evaluative material for the industrial arts department, and it was

upon the recognition of the need that exists for such material that it was decided to attempt this thesis on Criteria for Evaluating an Industrial Arts Department. There is no reason why industrial arts should be chosen rather than other courses except that the writer is deeply interested in the progress made in the methods of teaching industrial arts.

There are many industrial arts departments in which splendid work is being done, but there are some in which the same things are being taught and in about the same manner as was done when "manual training" was first introduced following the advocacy of Calvin Woodward in 1890. Industrial arts must change as industry progresses. New inventions, new methods of doing work, a different type of social life that finds the worker with more leisure time, all demand that industrial arts, as a school subject, develop along with them. Edward M. Roden (23, page 240) in writing on this subject said:

It is evident that industrial arts cannot be a static subject as long as our civilization is dynamic. A fixed program is prohibited by this condition and also by the varying natures of the pupils. This demands a continual evaluation of the program by all concerned but in particular by those who formulate educational policies to be turned into action.

Evaluation, however, does not necessarily mean that everything will be changed. It would be a useless waste to make changes in the curriculum just for the sake of

making them. There must be some reason attached to each addition or subtraction, and if that reason is determined through a well-developed program of evaluation, by weighing and sorting, there is every reason to believe that a progressive curriculum will be the result. There should be some way of evaluating each departmental curriculum in order to retain that which is desirable and to discard that which is found undesirable.

Delimitations. In the search that was made for material that might already be available little was found that pertains directly to any given department. However, as the work of research proceeded and material was accumulated it was found that the problem was about to become too unwieldy, and limits had to be set up as to just what would be included in the study. Because of the recent work done by the Cooperative Study of Secondary School Standards toward evaluating the school system as a whole, no effort will be made to duplicate that work. The study will be applied to the industrial arts department only. Checking lists will be developed for the following phases of the department:

- Philosophy of the department
- Attitude of administration toward department
- Industrial arts library of reference materials
- The instructor
- Instructional conditions
- Safety precautions

Housekeeping
Tool and machine arrangement and condition
Physical condition of shop

It is felt that these are the main features contributing to the success of the industrial arts department, and if unsatisfactory conditions exist they will show up in one or more of these checking lists.

Definitions of Terms. The following definitions of words and terms are given to clarify their use in this thesis. Unless otherwise stated the definitions are proposed by the writer:

"Criteria" is the plural form of criterion.

It refers to the theoretical standards proposed as a basis for evaluating those departments included in this work.

"Evaluation" is the judging, measuring, or weighing of principles, attitudes or conditions. It is the determination of the degree of desirability or undesirability of conditions as found in existence or expressed.

"Industrial arts" as a subject studied in school, may be defined as "a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes." (24, page 2)

"Secondary Education" as used in this thesis is meant to include those courses offered from the seventh to the twelfth grades, inclusive.

"Demonstration", or as it is sometimes called, the "imitative process". It will, according to Siepert, (25, page 103)

Show the pupil how to do something by doing it in his presence. Explain to him every step in the process which he does not already know. Tell him why every step should be taken in a certain way. Explain any theory involved; answer his questions. Then tell him to do it himself.

"Curriculum" refers to the plan of courses, both required and elective. Each department may have its courses, but they are all combined to form the curriculum.

"Industrial Arts Department" refers to that department where courses in industrial arts are taught. It is a unit of the school which, if broad enough, may offer courses leading to a diploma, or as is true in many small schools, its courses may be taken as electives from other departments.

Other Evaluative Studies. As far as the writer can find there has been no other attempt to set up a program evaluating the industrial arts department. Evaluation is

a new field that is rapidly gaining in popularity because of the possibilities it offers for finding and correcting faults in the schools.

There have, however, been two groups at work on evaluative programs in the field of general education, and the writer feels that a study of them in this thesis will be valuable. The Regents' Inquiry instituted by the Regents of the University of the State of New York and the Cooperative Study of Secondary School Standards sponsored by the six regional accrediting agencies have included significant techniques for evaluating programs of general education and in a future chapter those works are discussed.

Summary. There seems to be a very great need for evaluative criteria for use in estimating the contributions of the several departments of the educational system. Schools are not progressing as rapidly as industry changes, therefore those who come out of the schools are not adequately prepared to face the world they meet.

The aim of this thesis is to develop criteria that can be used to evaluate an industrial arts department. It is to be designed to test the department from ten different points of view, so that by the use of the results a very good picture will be available of how the department is operating compared to the desirable levels.

It is hoped, by a study of education as it functions in a democracy, to bring out more clearly a definite need for checking up on the educational system to see if there can be found ways of making it function more desirably in the American society. In the following chapter an effort is made to show how an evaluative program might be used in making the educational program more nearly coincide with the American ideals.

CHAPTER II

THE FUNCTION OF EDUCATION IN A DEMOCRACY

In the public schools of America the children of the masses are educated to take their places in a society that is in a state of confusion concerning the solution of its many perplexing social problems. It is the function of the American plan of education to prepare that heterogeneous group for advantageous living. Educators have encountered great difficulty in trying to define the functions of education that will fit such a group. Cumberley, in his Introduction to Public Education, (16, page 123) recognizes that fact when he states that:

Education must have a double function: It must make good the continual losses which a nation suffers, and it must enable it to move forward continually.

And Klapper, in his Principles of Educational Practices, (19, page 4) writes: "Education is the greatest function and the final safeguard of society and its organized form." The functions of education are to prepare the boys and girls for good citizenship, productive work, and to enjoy life at its fullest. The Commission on the Secondary School Curriculum of the Progressive Education Association defines the purposes of education in their report, Science in General Education (8, page 23) as:

The purpose of general education is to provide rich and meaningful experiences in the basic aspects of living so directed as to promote the fullest possible realization of personal potentialities, and the most effective participation in a democratic society.

And unless education does bring about these desirable changes it will not have fulfilled its function.

Education Defined. The functions of education have been stated, but before further progress is made in this study it would be well to arrive at some satisfactory conclusion as to just what education is. What is education? Bagley, in his Educative Process, (1, page 22) defines education as:

That process by means of which the individual acquires experiences that will function in rendering more efficient his future actions.

Herbert Spencer (24, page 35) said that "Education is preparation for complete living." And Comenius, (21, page 90) gave his definition as: "Education is the development of the whole man," and he is thinking of the growth of the person from infancy.

The Educational Policies Commission (18, page 6) of the National Educational Association raises a question:

We are told that the schools ought to develop good citizens, possessing ethical character, who make worthy use of their leisure time. But what is good, ethical, or worthy?

Schools everywhere are trying to develop good citizens in the sense that they stand high in the estimation of

the people of that community. The schools endeavor to have those students develop reputations as earnest workers, studious and honest in all their undertakings. It is desirable that they be able, after leaving school, to do some building in the community, some leading where younger or less fortunate ones cannot lead. The schools endeavor to produce desirable members of the civic organizations and churches. When all this has been done they, as citizens, should be capable of functioning more efficiently in their community.

Aims of Education in America. The following quotation comes from The Purposes of Education in American Democracy, (18, page 2) and is used to illustrate the two possible trends of thought:

A society which exalts force and violence will have one set of educational aims. A society which values reason, tranquility, and the paths of peace will have another and very different set.

And what are those educational aims, or functions? Are they "discovered" as a prospector would strike a gold mine? They are not. They grow; they evolve and they "reflect and interact with the purposes which permeate the life of the people." (18, page 1) One of the most universally used bases for determining educational objectives are those which deal with ethical or moral obligations. Another

nearly always included is "worthy home membership". This comes from the American ideal that the home is the center of all family life without which there can be no happy democratic life.

Before the objectives of education can be stated it must be decided which of the several policies will be followed. If it is to be a democracy, then, according to the Educational Policies Commission (18, page 7) of the National Educational Association, it must have:

. . . . a broad humanitarianism, an interest in the other fellow, a feeling of kinship to other people more or less fortunate than oneself Finally, democracy sets high value upon the attainment of human happiness. . . .

If the democratic society is to preserve these ideals, then its educational system must be built around objectives which are part of it. The Cooperative Study of Secondary School Standards, in its survey of two hundred widely separated schools, sought to find what a representative group of objectives as expressed by those schools would be. From a list of several hundred suggested objectives the school heads chose the following ones as most widely used (11, page 6):

1. Education should prepare chiefly for social-civic activities.
2. Education primarily is self-evident.

3. As its leading goals education should seek to develop personal character, social efficiency, physical health and self-discipline.
4. Education should emphasize both cultural and practical education.
5. Truth as it concerns the secondary-school program in its relation to the pupil is relative, and has not been entirely determined.
6. The pupil should be taught how to think, rather than what to think.
7. Each pupil is an individual differing from all other pupils, physically, mentally and in attitudes and ideals.
8. Education is a developmental process, it is attained only through activity and initiative on the part of the learner.
9. Education is not best promoted through a program of indoctrination; the learner is active and responsive.
10. Our society is and should be democratic.
11. The school should not seek to make pupils more alike; it should not seek uniformity of product, but individuality.
12. The school should have a curriculum which provides primarily for the development of the individuality of each pupil.
13. Interests of the pupils are an important consideration in determining the curriculum; the pupil should have some part in determining the content and activities involved in the curriculum.
14. The content of the curriculum should be largely general--informational and cultural.
15. The school should emphasize appreciations, attitudes and ideals as the most desirable outcomes.

16. Secondary education should be considered an integral part of the entire educational organization from the kindergarten through the university, and should be planned accordingly.
17. All persons of school age should be required to complete at least twelve years of schooling.
18. The cost of education should be born by the local community, the state and the nation.

The above objectives represent a cross-section of general education. The object of this study is not to evaluate the program of general education, but to attempt an evaluation of industrial arts as it contributes to general education. However, it is interesting to analyze the objectives of industrial arts and of general education. It is found that many of the objectives of industrial arts contribute directly to the achieving of general education objectives, and in so doing industrial arts actually becomes a part of general education.

How Industrial Arts Contributes to the Purposes of General Education. Albert F. Siefert, Dean of Education in Bradley Polytechnic Institute, in writing for the Phi Delta Kappan (25, page 235) says that industrial arts is a part of general education because:

1. It provides opportunity or personal experiences and learning by doing.
2. More than almost any other subject, the individual pupil rather than a class is the unit of teacher consideration.

3. It provides opportunity for practical consumer education.
4. It assists in making provision for the leisure time of the present industrial era.
5. It affords the background for exploratory, and try-out experiences helpful in occupational guidance.

Industrial arts contributes towards the objectives of general education, as defined in the Seven Cardinal Principles, (7, page 2) as a comparison will show.

1. Health and safety: A program of safety education carried out in all industrial arts classes.
2. Worthy home membership: Certainly in teaching students cooperation and respect for each other and the rights of others there is a tendency for them to carry this attitude over into the home, to say nothing of the handyman activities which are taught that tend to make life more pleasant at home.
3. Vocational: "As a result of the exploratory experiences every student should be able to decide, on a basis of first-hand information, definitely that he is or is not interested in certain of the trades represented in the program, or that he is not interested in any of them." (W. E. Clark, 6, page 261)

4. Leisure time: The development of hobbies from experiences in the industrial arts department are a direct path towards worthwhile use of leisure time.
5. Citizenship is developed through democratic and cooperative attitude of the department.
6. Character is developed through the teachings of proper respect for the property and time of others, an appreciation of values, and examples set by both teacher and students.
7. Mastery of skills, tools, and techniques comes through drill in their use. Class discussions, demonstrations, displays and actual practice are the best methods of teaching the mastery of the skills.

It is doubtful if any other department can contribute so much towards "proper use of leisure time," "worthy home membership," or "vocational attitudes" as can industrial arts. And Selvidge (2, page 29) says:

In attaining many of the other objectives of general education experiences in industrial arts are more effective than the experiences offered in academic subjects.

But possibly a study of the objectives as expressed by industrial arts leaders will make the question still more clear.

Objectives of Industrial Arts. In order to determine how closely the objectives of industrial arts are related to those of general education a comparative study will be made of both. The seven cardinal principles of general education as expressed by the Commission on the Reorganization of Secondary Schools (7, page 2) are:

1. Sound health--knowledge and habits.
2. Command of fundamental processes.
3. Worthy home membership.
4. Education for vocation.
5. Education for good citizenship.
6. Worthy use of leisure time.
7. Ethical character.

And closely relating to this group Dr. Warner (23, pages 5-45) gives the following objectives of industrial arts education:

1. Social habits and insights.
2. Exploration.
3. General guidance.
4. Household mechanics.
5. Avocations, hobbies.
6. Consumers' knowledge.
7. A degree of skill.
8. Correlation and integration.
9. Vocational purposes.

Struck, Freise and Mays, (27, page 2) agree with Dr. Warner that his objectives represent the things to be achieved in industrial arts courses.

Along this same line of reasoning, but a little more in detail, Selvidge (2, page 33) has proposed the following definite objectives of the industrial arts teacher:

1. To develop in each pupil an active interest in industry and in industrial life, including the methods of production and distribution.
2. To develop in each pupil the ability to select wisely, care for, and use properly the things he buys or uses.
3. To develop in each pupil an appreciation of good workmanship and good design.
4. To develop in each pupil an attitude of pride or interest in his ability to do useful things.
5. To develop in each pupil a feeling of self-reliance and confidence in his ability to deal with people and to care for himself in unusual or unfamiliar situation.
6. To develop in each pupil the habit of an orderly method of procedure in the performance of any task.
7. To develop in each pupil the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not.
8. To develop in each pupil the habit of careful, thoughtful work without loitering or wasting time.
9. To develop in each pupil an attitude or readiness to assist others when they need help and join in group undertakings.
10. To develop in each pupil a thoughtful attitude in the matter of making things easy and pleasant for others.
11. To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of the conventions in drawings and working diagrams, and the ability to express ideas by means of a drawing.
12. To develop in each pupil elementary skills in the use of the more common tools and machines in modifying and handling materials, and an understanding of some of the more common construction problems.

It will be noticed that in this group only two deal primarily with the development of skills. The others deal with characteristics of character, personality, and general education.

Summary. Education must make good the losses suffered by a nation while at the same time enable it to move forward. The functions of education are aimed to build and rebuild continuously. It is designed to prepare children to enter a vastly different world than their fathers entered. The aims of education in America are to develop young citizens, and in order to determine just what things to aspire to in education the Commission for the Reorganization of Secondary Schools set up the standards known as the Seven Cardinal Principles.

Warner, Struck, Friese, Mayes, Selvidge, and others have endeavored to establish objectives in industrial arts education defining the aims of that department as compared with the Seven Cardinal Principles, and it is believed by the writer that Warner has most nearly arrived at that point with his nine objectives.

In the next chapter a study is made of the agencies that have attempted to evaluate the schools for accreditation and other purposes. These agencies study carefully

the objectives expressed by the schools, and attempt to evaluate them in terms of their expressed philosophy and objectives, as well as their phases.

CHAPTER III
ACCREDITING AGENCIES

Accrediting associations, as they are today, place restrictions on some of the work that secondary schools may do if they are to retain their membership in those organizations. It has been found very profitable for the secondary schools to retain that membership as one way of eliminating the difficulties that may be encountered by their graduates entering college. Little thought, however, was given to subject evaluation, and most educators held the notion that cultural values could not be evaluated. Cubberley, in his Public School Administration gives Thorndike credit for leading the movement away from this idea when he said: (15, page 513)

I am suspicious of educational achievements which are so subtle and refined and spiritual that they cannot be measured.

which, in a measure, expresses most educational thought today.

The early problem of evaluation was strictly for accrediting purposes, and little thought was paid to it by any but the college boards, who began devising means of their own for meeting it.

The Preparatory Schools. The early colleges and universities were faced with the difficult task of finding

suitable students for their courses. They found that many who were accepted were not qualified to do college work. This was the beginning of the problem of sifting out that element who were not qualified, or the undesirable element and retaining those who were capable of doing the advanced work.

For some time each college met this problem in its own way by giving each candidate an entrance examination. Then, in order to qualify some who would make desirable students, but who were inadequately prepared, a preparatory school was established by the college. When the student graduated from this school he was automatically eligible for college entrance. These preparatory schools proved very useful and were for a time considered the solution to the entrance requirement problem, but toward the close of the nineteenth century public secondary schools became so numerous and were graduating so many of their own students that it was found all those preparing for, and wanting to go to college, could not attend the college-controlled preparatory school. With each public school establishing a curriculum to meet the needs of its own pupils and community a new problem arose, that of selecting desirable students who were graduates of the public secondary schools without their having attended the college preparatory school.

Entrance on Certificate. As the number of pupils desiring to go to college increased the problem of college admission grew until in 1871 the University of Michigan developed a system of sending out inspectors to the schools who asked that their graduates be admitted directly to the university. These inspectors would examine the school plants, the teachers, their qualifications and techniques. If the examination proved satisfactory, the graduates of that school were admitted to the University of Michigan upon presenting their certificate of graduation. Other colleges scoffed at the idea at first, but after a while they, too, began sending out inspection committees to such an extent that by 1897 forty-two states supported institutions and at least one hundred fifty private colleges and universities had adopted the system of admission by certificate from the inspected and approved schools.

Entrance by Examination. Some colleges who had administered their own entrance examinations were loath to give up that plan for another one. However, the number of applicants kept increasing until the problem demanded solution. In 1899, the Middle States Association of Colleges and Secondary Schools adopted a resolution to establish a joint college examining committee. The following year the member colleges and secondary schools were asked to make the passing of the entrance board examination the

only basis for college entrance. Thus, uniform entrance examinations were assured. By requiring the high schools to train their students to meet these requirements, and pass their examination, the associations began forcing the secondary schools to teach subjects of their dictation. "Formal discipline" and the training of "certain faculties of the mind" were arguments given in favor of the entrance examinations. Other arguments favoring the examinations, as given by the Cooperative Study of Secondary Schools in their Evaluation of Secondary Schools, (10, page 4) are:

1. They are instrumental in improving instruction in the secondary schools.
2. They promote desirable uniformity in both college and secondary school offerings.
3. They challenge the pupil to do his best and, if successful, to develop self-confidence.
4. Provision for selection of subjects by the candidate makes examinations a fair and adequate test of their ability.
5. Examinations identify the strong student better than does the certificate system, and thus assures the selection of better college students.
6. Examinations as conducted by the regional examining boards are economical for both candidates and colleges.
7. They encourage cooperation between secondary schools and colleges.

Not all educators, however, favored the examination system, and many loudly voiced their disapproval. From

the same reference, page 6, there are also given several arguments against the use of examinations, as:

1. They tend to lower the intellectual standards by encouraging cramming.
2. They tend to lower the moral tone of the candidates by encouraging cheating.
3. They tend to overemphasize traditional courses and thus cause the secondary school to neglect the many who do not plan to enter college.
4. The time span of the examination is too short and their scope too narrow to test candidates accurately.
5. Strangeness of time and place of examinations prevent many candidates from doing their best.
6. Examinations neither test nor reveal many character traits essential for college success.
7. The expense of attendance at examinations is too great for a large number of the candidates.

The Six Regional Accrediting Agencies. It was a natural thing for the regional accrediting associations to grow out of such a system. In 1887 the Middle States Association of Colleges and Secondary Schools was organized into an accrediting agency. This lead was soon followed by different sections of the country until by 1930 every section of the United States had been organized into the territory covered by one of the associations. A list of the six accrediting associations as they are today, shows how the movement spread. Their names together with the year they assumed accrediting responsibilities are given in the following list:

- 1897, Middle States Association of Colleges and Secondary Schools.
- 1895, North Central Association of Colleges and Secondary Schools.
- 1895, Southern Association of Colleges and Secondary Schools.
- 1918, Northwest Association of Secondary and Higher Schools.
- 1921, New England Association of Colleges and Secondary Schools.
- 1930, Western Association of Colleges and Secondary Schools.

It was the duty of each of these organizations to formulate standards to be met by the high schools whose students planned to enter college. Each association established its accrediting commission which visited high schools making inspections to see that all requirements were being met.

Many changes and modifications have been made in the standards as first established by the associations. The more recently organized ones have found less change necessary as they profited to some extent by the mistakes of the pioneers in the work. Open criticisms by non-members as well as members, have proved very beneficial to the

associations and many modifications and adjustments have been made to meet these criticisms.

The North Central Association of Colleges and Secondary Schools, as an example, established their organization for accrediting purposes in 1895, and by 1925 had accepted into its membership schools from twenty states. The object of the association is: (17, page 5)

. . . . to establish closer relations between the secondary schools and institutions of higher learning within the North Central States and such other territory as the Association may recognize.

And recently there has appeared in the Proceedings of the Annual Association Meeting the following paragraph:

The aim of the North Central Association of Colleges and Secondary Schools is, first, to bring about a better acquaintance, a keener sympathy and a heartier cooperation between colleges and secondary schools of this territory; second, to consider common educational problems and to devise the best ways and means of solving them; third, to promote the physical, intellectual and moral well-being of students by urging proper sanitary conditions of school buildings, adequate library and laboratory facilities, and higher standards of scholarship and remuneration of teachers.

The association bases its evaluation of the school on the following standards: (17, page 7)

1. The building.
2. Library and laboratories.
3. School records.
4. Requirements for graduation.
5. Instruction and spirit.

6. Teacher salaries.
7. Preparation of teachers.
8. The teaching load.
9. The pupil load.
10. The program of studies.

Schools failing to meet the standards required may be dropped from the Association and their students may not be entered in any college that holds membership in any one of the six regional associations without taking an entrance examination, which is not required for member school graduates. From a dropped school students may not be transferred to a member school and receive full credit for their work. Athletes may not transfer from one member school to another and compete without meeting eligibility requirements proposed by the Association, nor can they come from a non-member school and compete without meeting those requirements. All of which illustrates, in some measure, the work done by the accrediting associations, of which the North Central Association is used merely as an example.

Special Problems That Confronted the Agencies. Private and denominational schools offered special cases for the accrediting associations to study. Certificating in many of them is not as strict as in the public schools. Another problem developed because the influence of accrediting associations began to extend outside the boundaries of the United States into several possessions and foreign lands,

and schools in those places began seeking membership. The first extra-territorial school admitted to membership was Juneau, Alaska, in 1927. By 1939 the different associations were accrediting schools in Mexico, Hawaii, Puerto Rico, Argentine, Switzerland and the Dutch West Indies.

Summary: The accrediting associations have worked effectively for the colleges and have undoubtedly been responsible for important and constructive changes in the secondary school curricula, but because of present day trends in education there is a demand for some method of evaluating the entire system for other reasons than accreditation. It was because of these demands that such studies as the Regents' Inquiry and The Cooperative Study of Secondary School Standards have been carried out. The next chapter is concerned with a review of these two studies and searches them for materials and techniques that might be used in the evaluation of the industrial arts department.

CHAPTER IV
EVALUATIVE STUDIES

The establishment of accrediting agencies has done much toward building the secondary school curriculum, but educational leaders are protesting that the present system is still not fully meeting the needs of the youth of modern times. The task today is much more difficult than it was a generation ago. Young people coming out of schools are not finding jobs as easily as did their parents and grandparents. These youngsters are not fitted for the job world of today, and even less are they fitted for the complex social and economic problems of grown-up life.

THE REGENT'S INQUIRY

In an effort to find out just what is wrong with the present system, and what can be done about it, the Board of Regents of the University of the State of New York instituted a study which was called the Regents' Inquiry into the Character and Cost of Public Education in the State. The committee staff was made up of professional educators who went about their work in a business-like manner. They started their work primarily in the sixth grade, as that is the earliest year when students begin to drop out of school to go to work.

They gave intelligence tests and a battery of achievement tests in general education with emphasis on no particular course or department. In the high school the tests given required about five hours for completion, and it is quite doubtful to this writer whether the staff had much valid information to go on after the tests were completed. The tests, however, were designed to test the curriculum and activities of the students rather than individual classes or their content. There was some effort made to follow the students who left school and did not enter college, but the difficulties encountered practically nullified the results. They were trying to find out why the students were not entering industry as had their fathers, or what could be done about it. After two years of extensive study of the youth in and out of school, the staff of the inquiry concluded there were six fundamental weaknesses of the program: (26, page 4)

1. The school work for boys and girls has not been redesigned sufficiently to fit them for the new and changing work opportunities which they must face.
2. The schools have not yet adjusted their program to carry the new load created by the coming into the schools, particularly the high schools, of all the children of all the people, and their many new and different problems.
3. The school program does not sufficiently recognize the increased difficulties of becoming and being a good citizen.

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4. The educational system has not caught up with the flood of new scientific knowledge about the natural and social world which has been made part of life in recent years.
5. Education has not been replanned to meet the new conditions of modern life and the new ways of living.
6. The citizens and school leaders of the state do not have a specific, agreed-upon goal.

Behind each of these conclusions lies the fact that the schools have not changed as fast as have conditions of the world. The schools have not been able to absorb the hordes of students who are now of school age and develop as rapidly with changes as has the social life and industry.

The Regents' study points out that the schools of that state are not really designed to meet the needs of all kinds of youth that are now entering them. Originally they were planned to prepare their graduates for college entrance. The final recommendation was that the state should establish a system of education to be based on the needs of the majority without neglecting the minority who will go to college.

Recommendations of the Committee. The inquiry staff agreed that nothing short of a new educational program could bring the schools in line with the needs of the present day. They do not insist that all schools shall abandon the work they are doing now and embark on a new and uncharted course, but have based their advice on tried and proven

policies, in one form or another by experimenting in schools of the state, and have made recommendations which are in general as follows: (26, pages 20-30)

1. Add to the college preparatory course a program designed to fit young men and women for useful citizenship, to make them capable of supporting themselves and enjoying a full measure of individual growth and development.
2. Revise the course of studies by reducing the number of separate courses. Repeal the laws which require schools to provide certain courses, leaving the schools free to pay more attention to general growth and development.
3. Choose teachers by competitive tests, taking into consideration the candidate's character, cultural influence, teaching ability or promise, and broad education, as well as his or her technical training, scholarship and health.
4. Change the districts to fit modern conditions, eliminating the one-room school, and unnecessary small classes.
5. Continued state aid, with a revision of the method of distribution.
6. Eliminate the Regent's examination, improvements in the State Board of Education, and modernize budgetary practices in all the schools.

Other recommendations were to extend the secondary school one or two years more to strengthen guidance services, and to provide scholarships for deserving students. These changes, or recommendations, are not meant for all the schools of the nation. But they serve, at least, as an indication that there will have to be basic changes if education in the American democracy is to be conducted so as to meet the needs of the youth of today and tomorrow.

Publications of the Regents' Inquiry. In carrying out their work, completing their reports and making summaries of the full inquiry, the staff produced the following volumes, which include in detail full reports of their investigations.

Regents' Inquiry into the Cost and Character of Education in the State, Education for American Life, McGraw-Hill, New York, 1938, 167 pages.

Eckert and Marshall, When Youth Leaves School, McGraw-Hill, New York, 1939, 300 pages.

Grace, Alonzo G. and Moe, G. A., State Aid and School Costs, McGraw-Hill, New York, 1939, 350 pages.

Judd, Charles H., Preparation of School Personnel, McGraw-Hill, New York, 1938, 250 pages.

Lain, Elizabeth, Motion Pictures and Radio, McGraw-Hill, New York, 1938, 165 pages.

Maller, Julius B., School and Community. McGraw-Hill, New York, 1939, 360 pages.

- Norton, Thomas L., Education for Work, McGraw-Hill, New York, 1939, 260 pages.
- Reeves, F. W., Fansley, T., and Houle, C. O., Adult Education, McGraw-Hill, New York, 1933, 171 pages.
- Spaulding, Francis T., High School and Life, McGraw-Hill, New York, 1938, 377 pages.
- Wilson, Howard E., Education for Citizenship. McGraw-Hill, New York, 1938, 274 pages.
- Wilson, C. E. A., The School Health Program, McGraw-Hill, New York, 1938, 120 pages.

A large number of pamphlets made up of reprints of articles from these publications have been printed and distributed by the Public Affairs Committee of New York. Several have been printed as articles in educational journals and magazines.

While the Regents' Inquiry was confined to an investigation of the character and cost of education in the schools of New York State another study was being made that included schools over the entire United States. The Cooperative Study of Secondary School Standards was seeking to develop valid criteria for the evaluation of the nation's schools in an effort to make improvements in individual schools.

THE COOPERATIVE STUDY OF SECONDARY SCHOOL STANDARDS.

In 1933 committees from four of the six regional accrediting associations met in Washington, D. C., and formally organized the Cooperative Study of Secondary

School Standards. This study had been proposed as early as 1931, when a resolution was passed authorizing the appointment of a commission to study secondary school and college relations (10, page 13). The idea was deferred at that time because of economic pressure, and until the records of a study being made by the North Central Association relating to "Standards of Instructions of Higher Education" were made available. Those records became available in 1933, and at that time twenty state chairmen were appointed for the study of standards for accrediting secondary schools. From that twenty a committee of five was chosen as an executive committee and \$25,000 was made available from the General Education Board, supplemented by contributions from each of the associations equivalent to one dollar per member school enrolled. A subsequent grant from the General Education Board raised the total fund to approximately \$200,000. A considerable amount was also received from the sale of publications. (10, page 37)

Work of the Cooperative Committee. After the full organization was completed the work of the committee for the next six years was about as follows:

- 1935-36, Preparation of materials
- 1936-37, Experimentation
- 1937-38, The Analysis
- 1938-39, Refinement
- 1939-40, Interpretation of the Work

During the study eight progress reports were mimeographed and sent out to approximately 1,000 people who had agreed to assist in the work. Monthly reports of the workers were forwarded to the general committee so that they might keep in touch with the work that was being done. From these reports by the committee members approximately 100 articles were written and published, many were made available in reprint form, and were distributed to all the people working with the committee.

In 1937-1938 copies of each of the sixteen reprints determined most suitable for general distribution were sent out to the heads of all colleges and secondary schools cooperating in the study. There were about 7,000 of these schools, and there were more than 125,000 copies of the reprints distributed.

Publications of the Committee. As part of the work of the committee six books were produced giving every detail of the work and summaries of it. These books are:

- Cooperative Study of Secondary School Standards,
How to Evaluate a Secondary School, George
Banta Publishing Company, Menasha, Wisconsin,
1939, 163 pages.
- Cooperative Study of Secondary School Standards,
Educational Temperatures, 1940 Edition, 52 pages.
- Cooperative Study of Secondary School Standards,
Evaluative Criteria, George Banta Publishing Company,
Menasha, Wisconsin, 1939, 175 pages.

Cooperative Study of Secondary School Standards,
Evaluation of Secondary Schools, George Banta
Publishing Company, Menasha, Wisconsin, 1939,
560 pages.

Cooperative Study of Secondary School Standards,
Evaluation of Secondary Schools: Supplemental
Reprints, George Banta, Publishing Company,
Menasha, Wisconsin, 1939, 320 pages.

Cooperative Study of Secondary School Standards,
Evaluation of a Secondary-School Library,
George Banta Publishing Company, Menasha,
Wisconsin, 1939, 50 pages.

The first three of these publications list all materials to be used and provide instructions to be followed in administering them. The last three are explanations, summaries, and reports given during the time the study was in progress. On pages 397 to 411 of Evaluation of Secondary Schools is listed all the schools taking part in the study, including the experimental and supplemental schools.

Experimental Schools. In the first part of the study 200 schools were selected for experimentation purposes. These were carefully selected as representative of the entire country and only after assurance that full cooperation would be extended by the school administration and faculty. In How to Evaluate a Secondary School, (13, page 25) the seven types of measures used to obtain a weighted composite score are found and are quoted here:

	Per Cent
Scores on the evaluative criteria	40
Judgment of visiting committee in schools as a whole	20
Growth as measured by standard tests	20
Success of the product of the school	10
(1) Pupils entering college;	
(2) Pupils not entering college	
Judgment of pupils	6
Judgment by parents of seniors	4
	<hr/> 100

Evaluations. Approximately 500 evaluations, on this rating scale, were made of each school on the different phases of the "evaluative criteria." These evaluations were combined into individual scales called "educational temperatures" and recorded on a graph thermometer. Each thermometer was fully validated by statistical data and then rejected, retained or modified.

Cooperative Study Criteria. The evaluative criteria used in rating any school system were included in ten general headings, as follows: (10, pages 43-51)

1. Philosophy: significant points of view
2. Curriculum and courses of study
3. Pupil activity program
4. Library service
5. Guidance service
6. Instruction
7. Outcomes of educational program
8. School staff
9. School plant
10. School administration

It was made clear by the directors of the Cooperative Study that each school had the right to formulate its own philosophy of education and to make explicit statements of aims and purposes, in keeping with that philosophy. The directors did, however, present a statement of guiding principles as a general guide to educational thought and practice in the field of secondary education, but at the same time it was made clear that a school might accept or reject any of them, but insisted that the school should be prepared to justify its action (10, page 4).

In its final form these criteria were presented with statements of guiding principles by which the person, or persons, doing the evaluation were to be guided. In some cases the results of the evaluation were recorded in the form of factual data, while in others it was a matter of philosophy as expressed by the school. After all tabulations were complete the data were compiled and recorded on the "educational temperatures" furnished as a part of The Cooperative Study. On these temperature scales were printed the means and percentiles as found in the experimental schools, by which the evaluated school could judge its position in comparison with the other schools.

CORRELATION BETWEEN THIS THESIS AND THE COOPERATIVE STUDY

In this thesis the techniques used by the Cooperative Study will be followed as closely as is possible. What

the Cooperative Study has attempted in the field of general education this study will try to do for the individual department of industrial arts.

In an effort to develop criteria that will parallel those of the Cooperative Study as closely as possible, and still represent the entire industrial arts department, the writer made a rather intensive survey of the library. The results of that search were written down and analyzed for completeness and appropriateness. Several college faculty members and graduate students majoring in the industrial arts department were asked to criticize the list and all agreed that the list would represent an evaluation of the complete department. A class of thirty-five superintendents and high school principals unanimously approved the list, which is as follows:

1. Philosophy of the Department.
2. Attitude of the Administration Towards the Department.
3. The Industrial Arts Library.
4. Courses of Study in Use.
5. The Instructor.
6. Instructional Conditions.
7. Safety Precautions.
8. Housekeeping.
9. Tool and Machine Arrangement and Condition.
10. Physical Condition of the Shop.

Following the evaluative criteria is given a list of graphs in the form of thermometers on which the final data will be recorded just as the Cooperative Study used, with this exception, there will be no printed means or percentiles on them because the work has not been validated so that such marks could be established.

Summary. The Regents' Inquiry was predicated on the theory that the schools were not properly educating the students of New York to meet the demands put on them by modern civilization. Two years were required in research in operating experiment schools, and in conducting tests and surveys and when the task was finished their reports included, not only a recommendation that high school curricula be changed, but that colleges make necessary changes to meet the needs of this incoming youth. They recommended sweeping changes in the entire educational system up to and including the State Department of Education.

In an effort to set up valid evaluative criteria the committees of the Cooperative Study of Secondary School Standards worked five years and spent approximately \$200,000 in carrying out their full program. Their work was tabulated in six published volumes and "educational temperatures" and the data were translated into charts in order to portray effectively the findings of the different committees. Their work is recommended for use by the various evaluating agencies and associations.

The chief purpose of this study is to fabricate a technique for evaluating an industrial arts department, and the criteria being developed for the industrial arts department are being formulated with the intention that they may

be administered in conjunction with that published by the Cooperative Study committees, or that it may be administered independently. It will be the problem of the next chapter to develop the complete rating criteria for applications to industrial arts departments.

CHAPTER V

THE DERIVATION OF EVALUATIVE TECHNIQUES

The techniques used in an evaluative program are of very great importance. Conditions must be controlled as far as possible, and precautions taken to eliminate artificiality. Time spent in careful planning and surveying before the committees begin their actual evaluative work may save much confusion, and result in greater validity of final product. Eells, in his report Can Experts Judge Secondary Schools? (11, Section 5), explains the techniques used by the Cooperative Study.

The surveys of the participating schools were conducted by four committees, each consisting of two full-time experts and a member of the State Department of Education or other recognized educational leader in each state.

Thus, in the Cooperative Study, there were four separate committees to visit each participating school over the period of eight months during which the actual evaluating was carried on. The proceedings of those committees were, in general, as follows: (10, page 7)

1. Preliminary conference with school administrators to study the philosophy of the administration and any problems that might require special interpretation.

2. A tour of the school plant under the guidance of the principal. The purpose of this visit was to get a full picture of the physical setting of the school plant.
3. Criteria blanks that had been filled out by the principal and faculty were checked for errors and omissions.
4. Classroom visitation followed. These visits varied in length, after which an interview with the instructor took place.
5. After visitation the committee made a thorough check of the administration, pupil activity, library service, permanent records, budgetary practices, guidance, faculty meetings and of the entire physical plant.
6. Visits with a representative group of the senior class. This conference might be held with the pupils giving written answers to questions, or oral answers and elaborations to the questions as the examining committee saw fit. The reason for the conference was to give the committee members the impressions of their school as held by the seniors.
7. Committees attended all assemblies, school programs, and observed pupil activities of all

kinds when possible. Upon request they would meet with the faculty in a group, or individually, with the school board, service clubs, the parent-teacher groups, etc.

3. The last thing the committee did before leaving the school was to make a careful and detailed review and revision of the evaluative material gained and formulate a general qualitative evaluation of the school as a whole. In doing this last task the committee sat together in a group, the work usually requiring from three to eight hours.

A. COMMITTEE FOR EVALUATING INDUSTRIAL ARTS DEPARTMENTS

The techniques used in this Cooperative Study committee were essentially the same as if they had been evaluating the individual departments of the schools. The evaluation program recommended in this thesis will correspond as closely as possible to that of the above study, the work being as closely correlated as possible. A committee for evaluating the industrial arts department, and its recommended techniques is given in the following pages.

It is highly desirable to have as many professionally qualified persons on the committee as is possible. A committee of five is desirable, and not less than three is recommended.

The evaluative committee would be made up of the following persons if this recommendation were followed:

1. A professor from a graduate industrial arts education department.
2. A departmental head from a teacher training institution.
3. A graduate student.
4. An experienced industrial arts classroom teacher.
5. A director of a city industrial arts program.

The ability of such a committee with its varied interests, background, education and administrative experience to make a reliable estimate of the worth of a department cannot be questioned. The procedure of this evaluative staff will now be proposed.

Procedure in Evaluating an Industrial Arts Department.

The procedure for the examining committee should be, in the main, as follows:

1. Hold a preliminary conference with the principal or superintendent and instructors concerned in order that the philosophy of the school and department may be fully understood, and to bring out any problems that may call for special attention. Elicit a statement of the controlling purpose of the department.

2. Make a tour of the department under the guidance of the principal or superintendent and the head of the industrial arts department.
3. Visit each type of course taught for a full period, holding conferences with instructors after each visitation.
4. Hold conferences with a cross-section representation of the students of the department to get a full impression of their attitude towards the department and its operation.
5. Check carefully all physical equipment, arrangement, condition, safety measures, etc.
6. Fill out all evaluative lists while in the department.
7. Hold a meeting of the committee to revise all lists and to arrive at a full evaluation while still in the department, but during the absence of the instructor.

The above is the desirable method of evaluation, but if that procedure is impossible or impractical, it is believed by the writer that this work may be administered profitably by the superintendent, principal, board of education, or the instructor himself. Any method used which results in the evaluation of a department is worthwhile, in that the self-study plan will invariably bring out weaknesses which may be remedied.

Basis for Rating. It has always been difficult to put an absolute numerical value on any kind of educational work. The Cooperative Study used numerical values, however, and the results seemed to be satisfactory; therefore, the same system of rating will be proposed for rating an industrial arts department. The rating scale used by the Cooperative Study was based on a five point scale, as follows: (10, page 82)

Evaluations are to be made, wherever called for, on the basis of personal observation and judgment, in the light of the checklist as marked in accordance with given instructions, and of all other available evidence, using a five-point rating scale, as follows:

- 5--Highly satisfactory or practically perfect; the provisions or conditions are present and functioning almost perfectly.
- 4--Very good; distinctly above average; the provisions or conditions are present and functioning very well.
- 3--Average; the provisions or conditions are present and functioning fairly well.
- 2--Poor; distinctly below average; the provisions or conditions, although needed, are very poorly met or not present at all.
- 1--Very Poor
- N--Does not apply

The Graphic Representation of Ratings. In developing a system of pictorial representation the Cooperative Study made a study of several different types of graphs. (11, number 7) Because of general familiarity with the thermometer type graph it was decided to use a vertical ther-

mometer rated from zero degrees representing no value to 100 degrees representing perfection.

In this thesis the same system of representation will be used. The graph will be divided into five areas in accordance with the rating scale used. Samples of the thermometer used are given on page 53 of this thesis.

Outcomes. After the evaluations in the Cooperative Study were complete the data were compiled and percentiles estimated and represented on the thermometer graphs as provided. As the norms were calculated from a study of 200 experiment schools a reliable and accurate norm was reached. In this thesis no such experiment is possible and no norms can be proposed but percentages can be calculated by dividing the total possible score into the actual score. The accompanying thermometers are arranged according to the same curve as used by the Cooperative Study, i.e., a scale of five values and the calculated percentages which each is of the desirable percentages.

When these thermometers are completed they will give a pictorial representation of the evaluation of each phase of the program. This result can be compared to the most desirable and to undesirable phases of the industrial arts department.

The last thermometer given is to be used for the final tabulation of all percentages. The total number of applicable scores divided into the total actual scores will be recorded on this thermometer, which will give the final analysis, or picture, of the department.

On page 53 is found a set of three sample thermometers completed, with the fourth being a composite of the first three.

Explanation. In studying the sample thermometers on page 53, imaginary evaluation results are used. An explanation of each is given, with a summary of the three samples as in the last thermometer.

No. 1. Instructional Conditions. After the evaluation is complete, the total possible score was divided into the actual score and the percentage was found to be forty-five. This is recorded on the thermometer. Since fifty is the median score and the department ranks only forty-five there is definitely some part of it that needs looking into. It may be found that too much time is lost at the beginning of the period, or at the end of the period. Materials may be improperly displayed, poor instruction sheets available, or any of the checking items that would show a weakness and pull the average down.

Instructional
Conditions

Teacher
Quali-
fication

House-
Keeping

Average



Very Super-
rior

Superior

Average

Inferior

Very Inferior

No. 2. Teacher Qualifications. This average score is ninety-seven and one-half, which is a very high rating for the instructor. It is evident that he has been well trained, is progressive in his reading habits, dress, participation in activities, departmental administration and cooperation. Judging from the first chart it appears that the rating has been too high, yet outside influences beyond his control may have caused some of the first low rating.

No. 3. Housekeeping. This percentage on housekeeping came out exactly seventy, which is not a bad score, but which can surely be improved. If an investigation is made it may be found that trash, oily rags and waste are being left exposed. This would be a serious situation and would demand an immediate remedy. Dirt may be accumulating under the radiators, corners or out-of-the-way places, bringing the rating down and casting reflection on the department when the janitor is slighting his work. This can easily be remedied, but suppose the supply storage places are inadequate, and supplies are scattered around in first one place or another. In this case the teacher is either at fault, or the department simply lacks proper storage space. In the first case the principal should be able to correct the fault, while on the other hand it will probably call for school board action to eliminate a bad situation that is holding the efficiency of the department down.

No. 4. Summary of Charts. The average of the three percentages is slightly over seventy, which rates the department as superior by a few scant points. If the teacher developed his instructional materials and administered his department, as well as he is qualified to do, it would be a model for other schools to use. The third rating, house-keeping, ranks about on the level with the total average. The thermometers shows a too wide divergence in the different phases checked, and there should be some remedial work done by the principal and school board to bring about a more balanced department.

Summary. In making their evaluations the members of the Cooperative Study of Secondary School Standards would (1) hold preliminary conferences with the school administrators; (2) make a tour of the plant; (3) check the criteria blanks filled out by the faculty for errors and omissions; (4) visit classrooms during recitations; (5) hold conferences with the instructors; (6) check administrative practices; (7) examine a cross-section of the senior student body; (8) visit school programs, assemblies, with school boards, parent-teacher association meetings, and finally (9) complete their evaluations before leaving the schools. While, for comparison, it is recommended that the industrial arts department be evaluated, in general by: (1) holding conferences with superintendent and principal to determine special problems; (2) making a tour of the

department under the direction of the principal; (3) visiting the different type classes taught; (4) holding conferences with cross-section of the student body represented in the department; (5) checking all equipment carefully; (6) filling out all check lists while in the department, and finally holding a meeting of the committee before leaving the premises for comparing, revising, and arriving at a final evaluation of the department.

The committee recommended for the evaluation should be composed of : (1) a professor of a graduate school; (2) a departmental head of a teacher training institution; (3) a graduate student; (4) an experienced classroom teacher; (5) a director of a city industrial arts program.

A five-point rating scale is recommended for the evaluating as: highly satisfactory, very good, average, poor, very poor and allowance is made for conditions that do not exist, or that do not apply. The checking lists of the next chapter are to be evaluated on that rating scale, results being compiled on the graphic thermometers.

CHAPTER VI
EVALUATIVE CRITERIA

In checking and evaluating the various sections of an industrial arts department, the underlying philosophy and expressed purposes and objectives of the school and the nature of the pupil population which it serves should be kept constantly in mind. Persons making the evaluations should continually ask themselves, "Do the practices of the department accord with the philosophy and objectives of the school and meet the needs of the pupil population and community as well as do the same departments of other schools?"

The two-fold nature of the work--evaluation and stimulation--should also be kept constantly in mind. Careful, discriminating judgment is essential if these purposes are to be fulfilled. While the attainment of a high score is desirable, it is of secondary importance, and should not be allowed to interfere with the work of carefully evaluating the entire department. The evaluators must be on their guard against the tendency to give the higher of two scores when in doubt. Unless a superior evaluation is definitely justified, one of average, or below, should be given.

Check Lists. A separate check list is given for each of the several different phases of the department to be checked. In this list are to be found the several dif-

ferent points on which the rating is made. Some may be given that do not pertain to that department, while others may be omitted. In which case those not pertaining will be marked with the "N", and five points subtracted from the total possible score. For every item that is not listed and the evaluator feels should be included he will write it in and add five points to the total possible score, ranking his own addition with those already given. The evaluation of each will then be made on the same basis as the rest of the unit.

Evaluations. Evaluations are to be made on the basis of personal observation and judgment in the light of the check list as marked in accordance with the given instructions, and all other evidence, using a five-point rating scale, as follows:

- 5--Highly Satisfactory: The provisions or conditions are present and functioning almost perfectly.
- 4--Very Good: distinctly above average; the provisions or conditions are present and functioning very well.
- 3--Average: the provisions or conditions are present and functioning fairly well.
- 2--Poor: distinctly below average; the provisions or conditions are present in an inadequate amount, or if present are functioning poorly.

1--Very Poor: the provisions or conditions, although needed, are very poorly met or not present at all.

N--Does Not Apply.

Under Comments make notations of compensating features or particular shortcomings, explanations, justifications of evaluations, or other pertinent matters.

A. PHILOSOPHY OF THE DEPARTMENT

Guiding Principles. It is essential that each department of the educational system have a clearly defined educational philosophy. The department must correlate its philosophy with that of the school, fulfilling at least some of the aims of the school. The department should be able to justify any marked variation from the accepted principles of the school. Without such a statement of objectives growing out of sane educational philosophy, the department will lead an aimless life.

The Check List on Controlling Philosophy. The department is to be rated on the following criteria.

1. The aims of the department are at all times to contribute to general education as defined by the philosophy of the school. ()
2. The department exists as part of the school for the educational development of the pupil. ()
3. Accomplishments of the department will reflect either good or bad on the entire school. ()

4. Every unit taught can be assigned to consumer education, occupational guidance, leisure time activities, mechanical competence, technical, literacy, safe living or some other purpose of general education. ()
5. Every process carried out in the department is, and should be an educative process. ()
6. All things taught have some practical or cultural value. ()
7. Development of coordination of mind and muscle is an important part of education in the industrial arts training. ()
8. Develops in each pupil an active interest in industry and in industrial life, including the methods of production and distribution. ()
9. Develops in each pupil proper consumer education, and proper use of things purchased. ()
10. Develops in each pupil an appreciation of good workmanship and design. ()
11. Develops in each pupil pride or interest in his ability to do useful things. ()
12. Develops in each pupil self-confidence in his ability to deal with unusual or unfamiliar situations. ()
13. Develops in each pupil self-discipline which requires one to do a thing when it should be done whether he wants to do it or not. ()
14. Develops in each pupil habits of careful planning of all work. ()
15. Develops in each pupil elementary skills in the use of the more common tools and machines in modifying and handling materials and an understanding of some of the more common construction problems. ()

16. Offers exploratory experiences in materials, in jobs, and in human relations. ()
17. Develops in each pupil a thoughtful attitude in the matter of making life pleasant for the other fellow. ()
18. Develops habits of orderliness in house-keeping, job planning, and procedure. ()
19. Develops in each pupil habits of experimenting to secure information for himself. ()
20. Develops in each pupil habits of careful observation and retention of information. ()

Write in any items as expressed by the departmental philosophy, which you believe should be added to this list, adding five points to the total possible score. Evaluate additions with same points in mind as used in others.

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given to the controlling philosophy of the department.

B. ATTITUDE OF THE ADMINISTRATION TOWARD THE DEPARTMENT

Guiding Principles. The attitude towards a department as held by the administration of the school has much to do with the success or failure of the department. The industrial arts department should not be favored or discriminated against any more than any other. Its students should be allowed to elect their courses and should never be given

the impression that the industrial arts department is a place where they will be sent if they fail in another subject or as a last resort in disciplinary cases. If there is another department of the school that cannot control its pupils, there is no reason to believe that they will do any better in the industrial arts classes. Any teacher who asks that a pupil be transferred to the shops classes is admitting his own failure.

If the department is to be administered efficiently it must have full cooperation from the superintendent and principal and must have sufficient funds made available to carry on its work.

The industrial arts teacher is just as much a part of the system as are those instructors in English, history or any other academic subject. He should have no more work put on him than is allotted to the other faculty members. Just because he can do some things that others cannot do, does not give the administration the right to add to his burden in order to lighten others, or to get some things done that no one else can, or will do.

Check List. This rating should be done, keeping in mind that the department is just one of the many in the school, and that the instructor is no better or worse than other members of the faculty. He has the same rights they have.

1. Enrollment in department is elective. It is not used as a "dumping" ground for incapable or incorrigible students. ()
2. Principal cooperates with instructor in solving departmental problems. ()
3. Instructor is not used as janitor handy-man to keep building in repair. ()
4. Sufficient funds are made available for the needs of the industrial arts library. ()
5. Student load of industrial arts instructor compares favorably with that of other instructors of the system. ()
6. Sufficient funds are provided for upkeep and purchase of new equipment in proportion to the program of the department. ()
7. Janitor service is provided the department such that the instructor can place dependence on it without fear of having work sloppily done or loss of tools. ()
8. Administration is fair in the apportionment of extra-curricular activities to the industrial arts instructors. ()
9. Administration provides a satisfactory building for the department. ()
10. A proportionate amount of time is spent by principal and superintendent in supervising and visiting the industrial arts department. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given to the attitude of the administration toward the department.

C. THE INDUSTRIAL ARTS LIBRARY

Guiding Principles. The library should not be just a collection of books and magazines. It should provide the reading reference facilities necessary to make the educational program of the department efficient and effective. Its books and other resources should be chosen in the light of the specific aims and purposes of the department. By teaching pupils where and how to find information from reference materials, the teacher is performing a worthwhile task in that he may not be merely teaching fact-finding techniques, but the habit of reading good books and magazines may be established in the pupil. Adequate provisions for the library should include books and other periodicals necessary to supply the needs of the department; provisions for caring for all materials available; a budget for the purchase of new materials as it becomes available; encouragement of the pupils to develop reading as a habit.

Magazines. The following magazines are suggested for the library, and should be included in every large department. They furnish industrial knowledge as well as leisure time reading, in which nearly every boy will find something of interest.

<u>American Boy</u>	<u>Industrial Arts and Vocational Education</u>
<u>Aviation</u>	<u>Leisure</u>
<u>Aero Digest</u>	<u>Occupations</u>
<u>Better Homes and Gardens</u>	<u>Popular Homecraft</u>
<u>Boys Life</u>	<u>Popular Mechanics</u>
<u>Field and Stream</u>	<u>Popular Science Monthly</u>
<u>Hobbies</u>	<u>Radio News and the Short Wave</u>
<u>Home Craftsman</u>	

It is not required or even expected that all these magazines be located in the industrial arts department, but it is desirable that they be placed where they are easily accessible to the department. All are not required, but each will be a valuable asset to any library because of their potential boy-interest materials.

Books. Reference books must be available in such numbers as to meet the needs of pupils and teachers. Several copies of each textbook should also be kept in the shop library.

The Check List. The department library is to be rated on the following points.

1. Available magazines are sufficient for the needs of the department. ()
2. Magazines stored in the industrial arts department are properly cared for and properly filed. ()
3. The number and variety of reference books is sufficient to meet the needs of the department. ()
4. Reference books are properly cared for. ()

5. Several copies of each textbook used are kept in the shop. ()
6. The checking system in use is efficient; books and magazines are properly returned and in good condition. ()
7. Supply of suggestive project material is sufficient to meet the needs of the department. ()
8. Suggestive project materials are properly filed and cared for. ()
9. Funds available for library use are sufficient for the needs of the department. ()
10. Teacher has choice in the purchase of new library materials. ()
11. Extensive use is made of free or nearly free teaching aids as library materials. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given to the industrial arts library.

D. COURSE OF STUDY IN USE

Guiding Principles. The course of study may be defined as that part of the curriculum which is organized for classroom use. It suggests content, procedures, aids and materials for the use and guidance of teachers and pupils. Because change is universal, constant adaptation and development of the curriculum is necessary. Additions and deletions should be made as fast as changes in industry and educational discovery take place.

The Check List. Rate the course of study on the basis of the following statements.

1. Courses of study are on hand for each course taught. (Printed, typed or mimeographed) ()
2. Available state courses of study are on hand and show evidence of being used. ()
3. Objectives of the different courses taught are posted or available for student examination. Each student is aware of the purposes of his particular course. ()
4. The course of study is in accordance with the objectives and philosophy of the school. ()
5. The course of study is flexible. ()
6. The course of study meets the needs of the pupils involved in that particular course. ()
7. Provision is made in each course of study for correlation with other appropriate fields. ()
8. The courses of study provide for out-of-school activities. ()
9. Courses of study are being revised continuously. ()
10. Where no course of study is provided by the state, the teacher provides one of his own making. ()

Note: Write in here any points as expressed by the department that have been omitted. Add five points to the total possible score for each item added.

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given to the course of study in use.

E. THE INSTRUCTOR

Guiding Principles. The instructor is the nucleus around which the industrial arts department is built. He is the life of it, and without an instructor who is interested in working with boys, and in this type of work, and who is capable of directing their activities, and who has had enough experience and training to command the respect of his students the department will not function efficiently. He must have a deep desire to teach and must possess a sincere desire to help others; he must be a student of child-behavior and learning processes. He must constantly be on the lookout for methods of improving his techniques and testing the results of his teachings. A progressive teacher always invites constructive criticism from those qualified to give it and keeps himself posted on the new advances in commerce, science, and industry particularly. Teachers should be thought of as guides to personality development with emphasis upon thinking and cooperative participation rather than as teachers of isolated skills, techniques, and "related information."

The Check List. The evaluation committee should interview the teacher and examine his credentials and then rate him on these points.

1. Teacher is qualified as to degrees and educative training. An undergraduate major is essential. ()
2. The teacher has some qualifications as to experience in some field of industry. He should be able to go out of the classroom and earn his living at some particular trade. ()
3. Teacher's qualifications as to teaching experience. ()
4. Shows recognizable signs of interest and joy in his work. ()
5. Demonstrates a sincere enjoyment in working with boys. ()
6. Demonstrates patience in working with slower students by a willingness to give extra help when needed. ()
7. Regularly reads professional magazines and books to keep in touch with latest movements and techniques. ()
8. Is progressive in course planning. Keeps courses up to date in content. Invites student participation in course planning. ()
9. Has personality traits that students like and respect. On friendly terms with students and other teachers. ()
10. Dresses properly for his work. Looks the part of a progressive teacher. ()
11. Neat in appearance outside of shop. ()
12. Does not become confused when several students confront him with requests for assistance at the same time. Remains cool and controlled under pressure. ()
13. Participates in school activities. ()

14. Participates in community activities. ()
15. Demonstrates pride in showing his department to visitors, in explaining his work. ()
16. Uses progressive grading system, such that at any time a student will know what credit he has received and what work he still has to do for final credit in the course. ()
17. Keeps records up to date. ()
18. Cooperates with other teachers in exchange of ideas, activity programs, extra work required, etc. ()
19. Pupils evince the proper respect due him as an instructor. ()
20. Carries out a continuous program of education in the community to keep his patrons informed as to the activities of his department. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given to the instructor.

F. INSTRUCTIONAL CONDITIONS

Guiding Principles. The instructional conditions of the department should be such as to leave no doubt that it is strictly an educational organization. Evidences of the following desirable conditions should be found: goals or objectives appropriate to the degree of development and skill required of the pupils in the courses an efficient

system of grading; methods of showing progress as the pupils go from one learning level to another; efficiency in the conduct of the classes, business-like in every respect; indications of adequate teacher preparation; evidence of regular student participation in the activities of the department; ample teaching aids; a personal relationship between pupils and teacher that demonstrates respect for his ability and authority; helpfulness between teacher and pupils; and provisions for all types of learning accorded that department.

The Check List. The classroom conditions should be rated on these points which indicate an estimate of desirable instructional achievements.

1. Classes are started promptly without too much waste of time and in a business-like manner. ()
2. Classes are timed for dismissal without waste of time. ()
3. All talk on the part of the instructor is relevant to the unit of work. ()
4. Conversations on part of students are relevant to the unit of work. ()
5. All teaching devices are assembled and ready for use when classes are begun. ()
6. Demonstration equipment and materials are laid out in order for convenient use. ()
7. When called for a demonstration or lecture, the class is attentive as if they expect something important and worthwhile to be said or done. ()

8. Seats are so arranged that all pupils can see and hear. All are given opportunity for questions. ()
9. The teacher maintains an efficient and open method of keeping grades. ()
10. The teacher demonstrates willingness to assist all students, with no particular interest in one more than others. ()
11. There are stunts, incidents and amusements to keep interest up. Students display anticipation()
12. Lesson materials show evidence of being kept up-to-date. ()
13. Special information sheets covering new developments in industry and commerce are used frequently. ()
14. Motion picture and slide projectors are used in an effort to increase the emphasis of teaching. ()
15. Students take active part in class demonstrations by questioning and suggesting solutions to problems under consideration. ()
16. The teacher uses a lesson plan, made by himself, giving emphasis to points to be brought out in lesson. ()
17. Bulletin boards and blackboards are used for educative purposes, students are trained to watch them for new information, announcements, etc. ()
18. Displayed materials are properly arranged for good effect; only good materials used; properly protected. ()
19. The instructor is the recognized leader of his class. At any time he may call for assembly without too much trouble. Pupils carry on their work in business-like manner; accept his word as final in all matters that pertain to his department. ()
20. Classes are of efficient size; size must be judged by amount of floor space, equipment and types of courses taught. Thirty-five students should be considered as a maximum number. ()

21. Students take part in class organizations freely, accept responsibilities as foremen, tool checkers, supervisors, secretaries, librarians, etc., as if they considered that part of their work; they show a willingness to contribute a part of their time and effort for the good of the class. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given the instructional conditions.

G. SAFETY PRECAUTIONS

Guiding Principles. It is important that the evaluator know what to look for in making this inspection, that he know wherein danger may lie, such as a close aisle that might prevent quick exits in case of fire; benches with splinters that may be caught under finger nails; tools that are in such poor condition that extra effort may be required in their operation; nails protruding from exposed materials, walls, benches, or floors; open flames; open electrical switch boxes; broken switches; badly arranged machines so that one student may injure another in his regular routine of work; accumulations of rags that may ignite by spontaneous combustion or otherwise; exposed shafts and belts or other power units; and above all an evidence that the teacher keeps before his student at all times a continuous

safety education program conducted in such manner that they do not make light of it, thereby losing its value.

The Check List. Rate the shop; drafting room or laboratory by the following statements and guides.

1. Machines are properly guarded and those guards kept in place at all times. ()
2. Machines arranged in sequence of work, but so that no student may be injured by another who is in line of routine work. ()
3. Flooring around power machines in good condition, so as to prevent possible slipping while at work. ()
4. Footwalks, stairways, platforms, etc. properly constructed and railed and kept in good condition. ()
5. Oily rags or other waste properly stored in metal safety containers. ()
6. Scrap lumber, iron, tin cans, etc. properly stored so as to be kept from underfoot. ()
7. Nails pulled from scrap lumber before it is stored. ()
8. Electrical connections properly installed. ()
9. Electrical switches in proper working order, properly incased in insulated boxes. ()
10. Fuse box kept locked, or out of reach of most students who might be inclined to "investigate". ()
11. Cutting edges of cutting tools sharp, in proper repair so as not to require undue effort in their use. ()
12. All tool handles as ax, hammer, chisel, etc. properly attached. ()

13. Safety bulletins properly displayed, students do not take them as comic entertainment but as educational material. ()
14. Inflammable materials properly stored in safety containers in their special place. ()
15. Safety rules in evidence at each dangerous machine. ()
16. Bench tops free of splinters that might be caught under fingernails, nails that might catch clothing or flesh, acids that might burn. ()
17. Shelves kept in order; no materials or supplies piled in such manner that they might fall; or cause a person to fall in attempting to use them or the space around them. ()
18. Lumber rack kept in order; not just piled up. ()
19. Water, steam, oil or gas connections fit properly. ()
20. All materials around building properly stored or piled out of generally used space. ()
21. Corners and spaces under benches and machines kept clean and clear of rubbish or debris. ()
22. Orders given to janitor to sweep out everything left on floor. ()
23. Fire extinguishers kept properly checked and in their proper places for instant use. ()
24. First aid kit properly supplied with all supplies needed for treating minor injuries, or to protect more serious ones until medical attention can be obtained. ()
25. Furnaces properly covered to prevent sparks from flying; plenty of room to prevent crowding around it in usual routine; protected so as to prevent walls or nearby objects from catching fire from the heat. ()

26. Students handle tools in such manner as to protect others; no chisels or screw drivers protruding from pockets, soldering coppers handled properly, etc. ()
27. Acids properly stored to prevent spillage and fumes from injuring pupils, tools, or supplies. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given safety precautions.

H. HOUSEKEEPING

Guiding Principles. The school shops are merely industrial art class rooms. The results of teaching will be greater if those rooms are kept in appearance as much like laboratories and class rooms as is possible and expedient. The philosophy of the teacher will exert inestimable influence on the students in the matter of their housekeeping. It is not desirable that the school janitor should have to come around after each class period and do the work that the students could do in three or four minutes under supervision. It is not desirable that they be required to do the work of the janitor, but if the students keep the tables, benches, shelves and desks cleaned of dust, excess projects, and scraps, those that get on the floor during routine work will not show the shop as carelessly kept. There is no more reason why the dirt and filth should become piled up in an

industrial arts department than in the science laboratories. The appearance of the department will reflect on the entire school--either good or bad.

The Check List. Rate the teacher and his ability as a good housekeeper and the condition of his shops on these points.

1. Students participate in clean-up with willingness. ()
2. Clean-up period is properly supervised. (Either instructor or student assigned by instructor or class election.) ()
3. Sufficient time is allowed for clean-up without causing disturbance and loss of time from class-work. ()
4. Work benches are kept clean. (No dirt, scraps of material or projects are left on benches after class.) ()
5. Lavatories, toilet, and drinking facilities in sanitary and presentable condition. ()
6. Walls show evidence of being kept clean, or having been brushed free of collected dust, no unsightly markings or paint marks; no greasy hand marks. ()
7. Cabinets and shelves cleaned regularly and kept in orderly manner. ()
8. Machines kept free of oil, dirt and sawdust. Brushed off after each period of use. ()
9. Students' work and supplies kept in order. ()
10. Teacher's desk kept in order. ()
11. Scraps of paper, rags, and waste kept cleaned up. ()

12. Corners and out-of-the-way places are cleaned regularly. Examples: Under tables, radiators, sinks, etc. ()
13. Containers of all kinds are properly covered. ()
14. Supplies are properly stored and in order. ()
15. Windows are presentable; at least show signs of having been cleaned recently. ()
16. Storage space kept in order, projects not just piled up, but neatly arranged as to appearance. ()
17. Signs, bulletins and pictures properly hung. ()
18. Bulletin and blackboards kept in order; old bulletins not allowed to accumulate, unnecessary writing or signs eliminated. ()
19. Refuse cans properly stationed and emptied regularly. ()
20. Proper space for storing books of class members while in industrial arts department is provided. ()
21. All tools have a definite place and are kept in their proper place. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given on housekeeping.

I. TOOL AND MACHINE ARRANGEMENT AND CONDITION

Guiding Principles. The proper sequence for the powered machines is in the order of the work; for example: from jointer to surfacer to bench saw, if these machines are available. All machines should have ample working

space around them to make it possible to carry on any kind of necessary cutting work without injury to others or damage to the work. Tool rooms should be located with convenience and efficiency in mind, and all tools permanently marked so that no one will ever have any doubt as to whom they belong and where they go. Students should be allowed, as part of their training, to help in the repair work, and the upkeep of as much of the equipment as it is economically proper to be carried out in the department.

The Check List. Rate tool and machine arrangement and conditions on the following points.

1. Tools are conveniently located to work centers. ()
2. Sufficient tools are provided for the largest class. ()
3. Sufficient variety of tools are available to conduct properly an industrial arts department. ()
4. Tools are plainly marked so that there can be no doubt as to them being the property of the school. (H.S. Shop, or some such markings engraved, burned or some other permanent markings should be used.) ()
5. Tools show evidence of proper upkeep, being repaired immediately after breakage, replacements, etc. ()
6. Students participate in tool upkeep and repair. ()
7. Students show pride in the proper handling and use of various tools and machines. ()
8. Machines kept free from excess oil and dirt to prevent possible electrical shorts. ()

9. Checking system is efficient. (Whether panels, chests, or tool room is used, it should work so as to keep tools in place and prevent loss. ()
10. Storing places are plainly marked so that all tools will be kept in proper places without excuse from students that they did not know where they belong. ()
11. Hand tools are kept reasonably sharp and in good repair. ()
12. Machine tools are kept reasonably sharp. Check band saws, jointers, circular saws, etc. ()
13. Circular saws show no evidence of burns, cracks, etc. ()
14. Machines are arranged so that work progresses logically from machine to machine. ()
15. Adequate aisles of travel are provided. ()
16. Interference of workers on machines is avoided by judicious location of machines. ()
17. All work stations and machines have sufficient natural or artificial light. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given tool and machine arrangement and condition.

J. PHYSICAL CONDITION OF SHOP

Guiding Principles. The physical condition of the shop itself is a major factor in making the department a good one. The school program may be seriously restricted and impeded or it may be considerably facilitated and enriched with little additional extra cost if proper consideration is

given to these things when the shop is being built. The space provided for a shop is not just a shop or even a place of instruction; it is also a functioning part of the educational program. Because of the additional demands being constantly made on the department these factors must be born in mind: in order to operate efficiently there must be plenty of space; the building must have sanitary conveniences and proper lighting. The building itself should be attractive and appropriate in design so that beauty may be evident from both within and without; it should at all times assure the safety of its occupants, even in emergencies; it should be considered an integral part of both the school and community.

The Check List. Check the physical conditions on the following points.

1. Provision is made for the safe and easy regulation of lighting. (Sufficient number of outlets well distributed; lights on dark side of room may be turned on when needed without affecting those on other side. ()
2. Illumination for all special purposes--office, workrooms, toilets, etc. is adequate and appropriate. ()
3. Temperatures of 68 to 70 degrees Fahrenheit is maintained when the temperature outside is low enough to require heating of rooms. ()
4. Ventilating facilities assure a proper supply of clean outside air and its circulation in all parts of the building. ()

5. Provision is made to prevent direct drafts on work stations. ()
6. The heating unit is in efficient working condition, and has controllable units. ()
7. Toilet and lavatory facilities readily accessible. ()
8. Toilet and lavatories kept in sanitary condition. ()
9. The room is so arranged as to carry out efficiently the work and instruction of the department. ()
10. The appearance of the shop shows careful arrangement of work benches, lockers, work stations, storage places, etc. ()
11. There is storage space in proportion to the number of students and the type of work carried on. ()
12. The demonstration and lecture center is located so that the largest class may be seated during demonstrations or lectures; arranged so that all may see the demonstrator and so that light is properly directed. ()
13. There are blackboards and bulletin board facilities in proportion to the size of the department and enrollment. ()
14. A separate finishing space is provided so that other work will not interfere with the different finishing processes. ()
15. Bench tops are in good working conditions--kept smooth; free of nails, unnecessary markings, etc. ()
16. Vises on woodworking benches are in good working order, illustrating proper and careful use. ()
17. Machines are arranged in proper sequence for efficient work; are located with safety precautions in mind and illustrate proper use and care. ()
18. Lockers are conveniently located; have doors to protect projects unfinished or finished. ()

19. Tool supplies convenient to work stations. Or, if central tool room is used, it is conveniently located with respect to all sections of the shop. ()
20. Entire department is kept in proper order; walls, ceiling, floors properly painted and treated giving a neat appearance. ()

The Evaluation. The final rating score equals the total score divided by the total possible score. The result represents the final percentage rating given on the physical condition of the shop.

Summary. In the foregoing ten check lists is given material for a complete check of the department which it is hoped will bring out any weakness in the department. In the same way it should give due credit to any phase of the department that may be particularly progressive. With "3" used as an average rating, two ratings above and two below to designate the degree of desirability or undesirability as it appears to him, the evaluator will find it easy to locate his evaluation on one of the five levels.

Unless the department does rank above or below most of those of the surrounding communities, it will be found that most of the items will deserve a ranking of "average." Any deviation one way or the other should be strictly credited with no regard to what the final outcome will be,

but that a true picture may be drawn for the benefit of the department itself and the school as a whole.

Results will be tabulated on the "thermometer" charts of the following chapter. When all recordings have been made and averages taken for the final chart the evaluation will be complete and the thermometers will indicate the relative findings of each phase of the department.

In order to give a permanent record of the findings it will be best to fill the thermometers with ink. A regular ruling pen may be used so that one stroke will fill to the desired height. This will give a neater appearance and one that will not smear as the pages are shuffled together. Red ink might be used for the total average thermometer to make it stand out against the others. In any case the tabulations will have more effect if neatly done.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Since the first accrediting agency was established in 1885 the techniques of evaluating schools and their products progressed more or less regularly. At that time the primary purpose of evaluation was for the accreditation of high schools for college entrance requirements, but recent efforts have been made for an entirely different purpose--stimulation.

In the beginning of this thesis it was stated that the primary aim of this study was to produce material that could be used for evaluating an industrial arts department, the purpose of which might be for either accreditation or stimulation.

The Use of the Evaluative Criteria. The material in Chapter VI has been read by several members of the Oklahoma Agricultural and Mechanical College faculty as well as several men who hold positions as superintendents of high schools in Oklahoma. Their criticisms and suggestions caused several changes to be made in order to eliminate as many faults as could be found. So far as the writer could find there has been no other attempt to formulate criteria for evaluating an industrial arts department, but it is believed this material, if used according to the instructions, will

result in a satisfactory evaluation. It is believed that the material is sufficiently comprehensive in scope to cover the entire department, and it is hoped that it will be used widely in an effort to raise the standards of industrial arts education in the schools of the state. The ultimate satisfaction derived from its development will be in proportion to the use it receives and the contribution it makes to the field of industrial arts education.

Statements of Conclusions. There can be no doubt about the desirability of a good evaluative program. It is the only way by which progress can be measured, and it is one of the best stimulants available to bring about progress. Evaluation brings out weaknesses that are sometimes not even thought to exist. It is only by evaluation that an organization can keep itself operating efficiently. In the case of a business concern an efficiency expert is called in to diagnose and search for weak spots and leaks in time, money and goods. In the case of a sick man, who does not know what is wrong with himself, a doctor is called in for examination until the cause of the trouble is found. Would it not be better if he called on the physician regularly for physical examinations so that he would know at all times how he is faring, physically and possibly prevent that loss of time, heavy expense, and severe suffering? Why would it not be a good plan to apply

that same principle to the schools?

Regular evaluations in the schools are just as important to the school as regular examinations by the doctor are to the patient. Many persons do not like to go to a doctor, and it will be found that some superintendents do not want their schools evaluated because of the fear that it will uncover some of their blundering mistakes and questionable policies. Some reasons why the writer believes educational institutions should be evaluated are:

1. It is only by an evaluation program that different schools can be compared.
2. It is only by a method of evaluation that progress can be determined.
3. It is only by a method of evaluation that some unsatisfactory phases of the system be detected.
4. When the faculty is anticipating an evaluation program they will tend to expend a little more effort towards producing better results in their work.
5. The results of an evaluation program should offer good material for a rehabilitation program.
6. Evaluation will act as a stimulus, if for no other reason than the fear of a bad report.

Methods of Evaluating. Any attempt to compare one thing with another, or a condition with a desirable or undesirable one is an attempt at evaluation. Simply examining a situation for good or bad points is evaluating. The only valid method of evaluation is by supplying concrete evidence to substantiate the findings. This of course calls for a written report. The written report may take any one of several forms. It may be by the use of questions and answers, by the use of diagrams or symbols, or by comparing the actual conditions with desirable standards. This thesis is being constructed on the last plan, and desirable conditions and philosophies are set up as a guide by which the actual present conditions may be compared.

Recommendations. It is the aim of the rest of this chapter to set up conditions for an evaluation program and offer a plan of procedure. Plans should be carefully made for such a program, and it should not be done without due consideration. Members of the committees should be chosen carefully, and in the light of their qualifications and willingness to serve on the committee. A person who is serving on such a committee against his own wishes will certainly not perform the task as well as if he were doing it voluntarily and with an idea of service to the state. He should be qualified to do the work he is asked to do, and it is only by careful choice of committee members that a valid evaluation can be made.

In a recent evaluation by a state examining committee where the schools of a city of ten thousand population were being evaluated by request, the examining committee did not include any person who was sufficiently technically trained to participate in the evaluation of the industrial arts department. The committee was made up of fifteen people, and included city superintendents, principals, college faculty, a state librarian, home economics teacher, an English teacher and a music teacher, but none of them were trained industrial arts people.

The Evaluative Committee. In the administration of this evaluative material it is recommended that the committee consist of at least five members chosen because of their qualifications and from the following sources:

1. A professor from a graduate industrial arts education department.
2. A departmental head from a teacher training institution.
3. A graduate student.
4. An experienced industrial arts classroom teacher.
5. A director of a city industrial arts program.

These members should be appointed by the State Board of Education, subject to their acceptance. Funds should be provided in sufficient amount to care for all expenses. The members should be given leaves of absence from their places of regular employment with pay because their work

will be in the interest of education. There should be no extra pay for their services, because that would open possibilities for grafters who might have political pull enough to be appointed to the committee because of the pay it afforded. If there is no extra pay only those with a sincere desire to contribute their efforts to the cause will be interested in serving on such a committee.

Rating a Department. In the work of evaluating an industrial arts department it is recommended that no special preparation be made by the department in anticipation of the visit of the evaluative committee. The evaluation should be done as nearly as possible under average conditions. The committee should arrive unannounced, after having completed every possible arrangement before the actual rating is to begin. The rating should require a full day of work, and in the case of a complicated system, as some of the large cities have, possibly more time should be used. No time limit can be set, but the committee is urged to use all the time they consider necessary to complete the work.

After complete arrangements have been made for the evaluation and the committee has arrived in the school, the following routine should be followed:

1. Hold a conference with the superintendent, principal, and instructor or instructors concerned in order that the philosophy of the school and the department may be fully understood, and to bring out any problem that may call for special interpretation. This meeting will probably last from one to three hours.
2. Make a complete tour of the department accompanied by the superintendent or principal. If the school has only one shop this will be comparatively simple but should be done thoroughly.
3. Visit each type of class taught taking notes, possibly holding a conference with the instructor for a few minutes after the class.
4. Hold conferences with a cross-section representation of the students of the department. This conference should give the committee a full impression of the opinion the students have of the department.
5. Check carefully all physical equipment, arrangement, condition, safety measures, etc.
6. Fill out all evaluative check lists while in the department, individually, and not in the presence of the instructor.

7. The committee should meet after the checking work is finished and compare and revise all lists until they have arrived at a full evaluation of the department. This last should be done in the absence of the instructor, principal, or superintendent.
8. Construct the final rating graph by using a thermometer form. In filling the thermometers black ink should be used for the thermometers representing the different parts of the evaluation, while red ink should be used on the final one. Pencil markings will smear and ruin the looks of the page as they are shuffled together, presenting an unsightly appearance, and thereby losing some of the effect gained. The more attractive the thermometers are the greater will be their value.

None of the material should be released until a full and complete report is ready to be sent out to all the parties concerned. This will eliminate possible misunderstandings and undue explanations. The work of the committee should be accepted in its final form without change or correction. A complete record of the work should be retained by the chairman of the committee for possible future reference and copies forwarded to the State Board of Education and the examined school. Every member of the

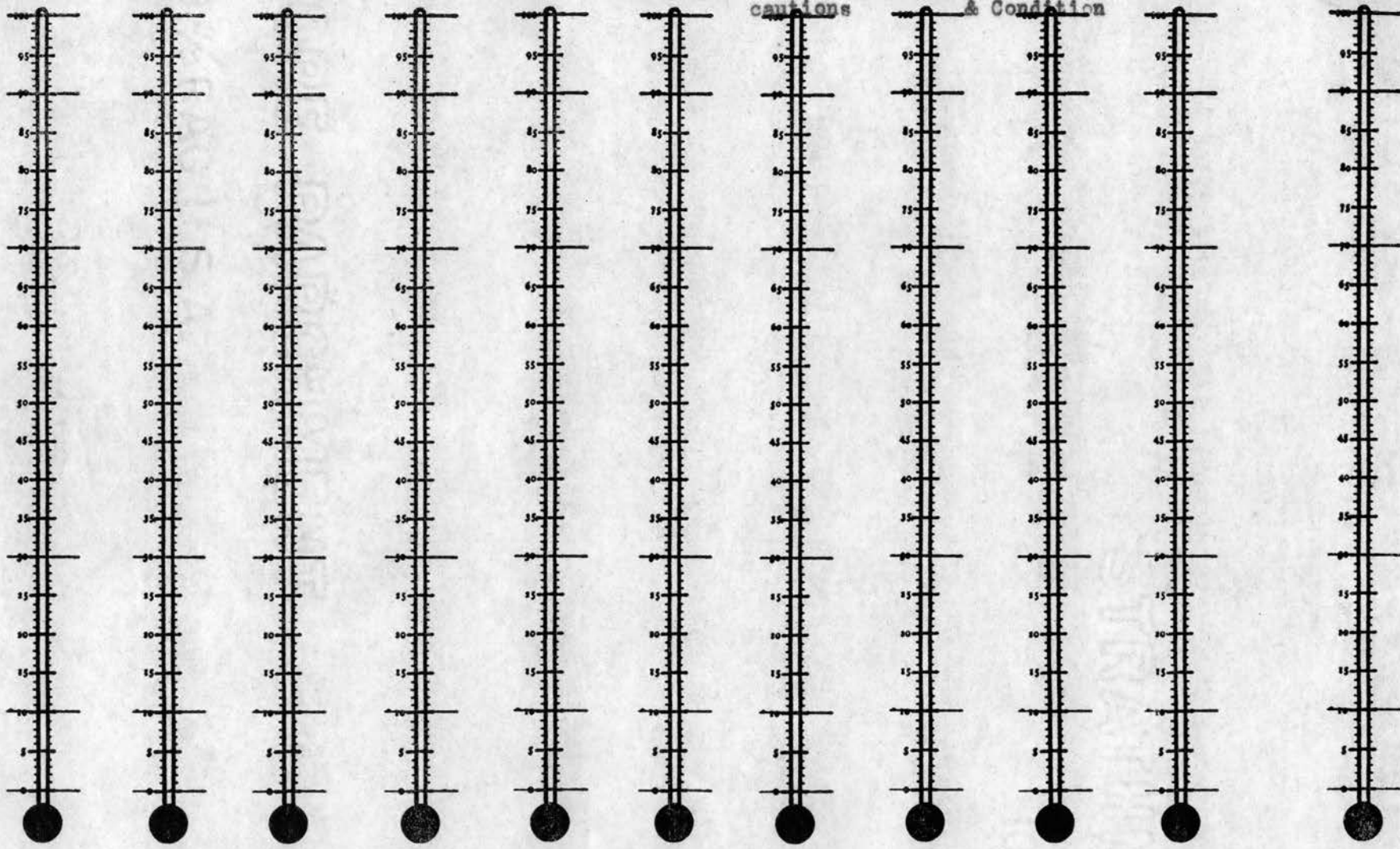
committee should feel free to offer helpful suggestions where he thinks they can be used. It is only by having a complete feeling of freedom and cooperation that the committee will offer such suggestions or criticisms.

When items are added to or subtracted from the check list, the examiner will add or subtract five points for each and the final average will be found by adding the ratings as given and dividing that total by the total possible score. When this has been done for each check list, the averages will be recorded on the graph thermometers, giving the final results in graphic form. The final average for the last thermometer will be found by adding all the averages and dividing by the number of averages used. The final rating should then be recorded on the final thermometer in red ink.

Problems Recommended for Further Study. In writing this thesis, the writer has barely made a start in finishing the work that may be done in the field of evaluation in the industrial arts department. Inasmuch as this thesis is the first of its kind known to the writer, he realizes its shortcomings. He hopes that in the future some student will interest himself in the work enough to take what is given here and work it out in actual practice thus vali-

dating it and establishing percentiles that will actually represent the schools of the state as a whole. A thesis on validation might well be called Criteria for Evaluating an Industrial Arts Department as Validated by 100 Teachers, while one for finding percentiles could be entitled Results of Evaluating 100 Industrial Arts Departments. Upon request, the writer will gladly grant permission for material of this thesis to be used for such studies.

Philosophy of Department	Administra- tional Attitude	Industrial Arts Library of Study	Course of Study	The Instructor	Instruc- tional Conditions	Safety Pre- cautions	House- keeping & Condition	Tool & Machine Arrangement	Physical Condition of Shop	Average of all Evaluations
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A B C D E F G H I J

BIBLIOGRAPHY

1. Bagley, William C., The Educative Process, The Macmillan Company, New York, 1905, 353 pages. ✓
2. Bawden and others, Industrial Arts in Modern Education, The Manual Arts Press, Peoria, Illinois, 1934, 167 pages. ✓
3. Bennet, Charles A., The Manual Arts, The Manual Arts Press, Peoria, Illinois, 1917, 116 pages.
4. Bonsler, Frederick G., Industrial Arts for Public School Administrators, Bureau of Publications, Teachers College, New York, 1930, 95 pages.
5. Boyd, Ermon Eugene, Present Practices in Making Industrial Arts Courses of Study, a thesis, Oklahoma A. and M. College, Stillwater, Oklahoma, 1935, 84 pages.
6. Clark, W. E., "Curriculum Development," Phi Delta Kappan, 22: 261, January, 1940.
7. Commission on Reorganization of Secondary Education, "Educational Principles," U. S. Department of Interior Bulletin, No. 35, 1918.
8. Progressive Educational Association, Science in General Education, D. Appleton-Century Company, New York, 1938.
9. Cooperative Study of Secondary School Standards, Educational Temperatures, George Banta Publishing Company, Menasha, Wisconsin, 1940 Edition, 52 pages.
10. Cooperative Study of Secondary School Standards, Evaluation of Secondary Schools, General Report, George Banta Publishing Company, Menasha, Wisconsin, 1939, 560 pages.
11. Cooperative Study of Secondary School Standards, Evaluation of Secondary Schools, Supplemental Reprints, George Banta Publishing Company, Menasha, Wisconsin, 1939, 320 pages. ✓
12. Cooperative Study of Secondary School Standards, Evaluative Criteria, 1940 Edition, George Banta Publishing Company, Menasha, Wisconsin, 1939, 175 pages.

13. Cooperative Study of Secondary School Standards, How to Evaluate a Secondary School, George Banta Publishing Company, Menasha, Wisconsin, 1939, 163 pages.
14. Crawford, Claude C., The Technique of Research in Education, University of Southern California Press, Los Angeles, 1928, 320 pages.
15. Cubberley, Elwood P., Public School Administration, Riverside Press, Cambridge, Massachusetts, 1929, 400 pages.
16. Cubberley, Elwood P. and Bells, Walter C., Introduction to the Study of Education, the Riverside Press, Cambridge, Massachusetts, 1933, 531 pages.
17. Davis, Calvin O., Our Secondary Schools, North Central Association of Colleges and Secondary Schools, 1925, 79 pages.
18. Educational Policies Commission, The Purpose of Education in American Democracy, National Education Association, Washington, D. C., 1938, 157 pages. ✓
19. Klapper, Principles of Educational Practice, D. Appleton and Company, New York, 1912, 485 pages.
20. Menser, Paul J., "Evaluating the Curriculum," Nation's Schools 24: 49-50, August, 1939.
21. Monroe, Will S., Comenius and the Beginnings of Educational Reforms, Charles Scribner Sons, New York, 1900, 134 pages.
22. Pope, Eugene Blair, Status of Industrial Arts in Oklahoma Schools in 1938, and Suggested Statements of Controlling Philosophy for Industrial Arts, a thesis, Oklahoma A. and M. College, Stillwater, Oklahoma, 1934, 59 pages.
23. Roden, Edward M., "Child Growth," Phi Beta Kappan 22: 241, January, 1940.
24. Spencer, Herbert, Education, D. Appleton and Company, London, 1860, 283 pages.

25. Siefert, Albert F., "A Philosophy," Phi Beta Kappan, 22:238, January, 1940. ✓
26. Stewart, Maxwell S., Schools for Tomorrow's Citizens, Public Affairs Committee Inc., New York, 1939, 31 pages. ✓
27. Struck, F. Theodore, Creative Teaching, John Wiley and Sons, New York, 1938, 623 pages.
28. Warner, William E., Policies in Industrial Arts Education, Ohio State University Studies, Columbus, Ohio, 1928, 120 pages

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