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A survey of the methods, techniques, and procedures used in teaching slow-learners in industrial arts in Indiana

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A SURVEY OF THE METHODS, TECHNIQUES, AND PROCEDURES USED IN TEACHING SLOW-LEARNERS IN INDUSTRIAL ARTS IN INDIANA

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CHAPTER I

INTRODUCTION

Changing economic and social conditions have brought changes in the functions of the school in its relation to pupils, home, and community. The schools are being charged with certain responsibilities and duties that in the past were not considered a part of the activities of the school. The training in wholesome living, the provision for social experiences, vocational outlets, personality development, and many other duties and responsibilities have been placed in the hands of school administrators and teachers.

To meet these added duties and responsibilities, the school endeavors to provide for the pupils (1) social experiences that will make the pupils assets to the community in which they live; (2) the proper training in physical and mental health so they may enjoy a healthful and wholesome life; (3) sufficient training in the fundamentals for use in adult life; (4) an intelligent choice of an occupational level commensurate with their abilities so as to insure some economic independence and contentment in their after-school life.

Many pupils are not receiving the benefits that the

schools are endeavoring to give them although they are entitled to them as members of a democratic society. Individual differences, social problems, home conditions, and economic status are factors in their maladjustments. Thus, a problem is created for teachers trying to give them the necessary training in preparation for their future experiences.

The problem of the teachers is to make adjustments in the courses of study adapted to the needs, limitations, aptitudes, interests, and abilities of the pupils. If courses of study are beyond their abilities and above their mental level, many pupils lose interest, become maladjusted and anti-social to the school situation. This may lead to many forms of juvenile delinquencies and these pupils become community debits rather than community assets.

An accepted concept in educational philosophy is that equal educational opportunities should be given to all pupils. All pupils, whether they are truants or regular in attendance, indolent or studious, laggards or leaders, should be given all of the educational benefits that they have the capacity to absorb.

To make it possible for the pupils to receive these educational opportunities teachers must devise techniques, methods, and procedures so as to reach all and provide courses of study within the scope of their abilities, needs, and limitations. If such provisions are made the pupils

may achieve some success in certain areas of the courses of study.

Pupils in need of adjustments are classified under various heads, such as slow-learners, dull normals, borderline, retarded, etc. In this survey they are to be called slow-learners.

The term slow-learner shall be understood to mean (1) those pupils whose intelligent quotients (70-90) have indicated that they must engage in the unskilled occupations, such as laborers, handy men, routine machine operators, and the like; and (2) the type of pupils who find it difficult to master the abstract materials in academic classes and many of the processes, operations, techniques, and the related information in the industrial-arts classes.

Frequently school administrators attempt to solve some of the problems of pupils who are maladjusted in their academic classes and are gaining no benefits from the class activities, by sending them into the industrial-arts courses where they may be provided with manual activities and be permitted to work with concrete materials. In many instances these pupils have been "dumped" into the industrial-arts classes without regard for their interests, abilities, limitations, or aptitudes. Since teachers have not made the necessary adjustments in their courses of study to meet the needs, limitations, aptitudes, and abilities of these

pupils, they are unable to achieve any success with the shop activity. Many teachers of industrial arts have felt as Hoopes did when he said, "No doubt the fallacy, centering the dull's school activities in the shop, was arrived at by the simple deduction that he could use his hands if his head was empty."[1]

Industrial arts does not offer unlimited possibilities for all pupils. Adjustments are necessary for the pupils and also for the courses of study to obtain the limited results that their abilities and capacities warrant.

STATEMENT OF THE PROBLEM

Many industrial-arts teachers are requested to receive in their classes pupils who are not doing or who are unable to do satisfactory work in their academic classes. In view of this fact, the industrial-arts teachers must endeavor to give them certain desirable educational benefits that they were not receiving in their other classes. Usually these pupils lack interest in their school work and are maladjusted to the average school situation and are very often mentally inferior to average pupils. These pupils have no incentive to achieve success in their academic

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[1] Paul C. Hoopes, "What to Do With the Dull Child," Industrial Arts and Vocational Education, 25:9, January, 1936.

classes because the courses of study as organized are above their mental level. Industrial-arts activities will not solve all problems of maladjustment in these pupils. Though they may be taught on an individualized basis, taking into consideration the different rates of speed with which pupils work, and individual differences and capacities, other adjustments in the industrial-arts courses are necessary. Adjustments as to content, techniques, method, and procedures, of industrial-arts classes should be made. Of equal importance, are the adjustments to be made to suit the mental level of the pupils, their social experiences, and their vocational opportunities and outlets. These adjustments are necessary if the teachers of industrial arts are to present the pupils with the best educational opportunities and outlets.

This survey was made to discover, if possible, the best methods, procedures, and techniques to make these adjustments in industrial-arts courses of study suitable to the needs, limitations, capacities, abilities, interests, and aptitudes of slow-learning pupils.

IMPORTANCE OF THE PROBLEM

"The dull comprise the lower fifth or fourth of all pupils in intelligence,"[2] says H. J. Baker. The number of

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2 H. J. Baker, Characteristic Differences Between Dull and Bright Children. Bloomington, Ill.: Public School Publishing Co., 1927, p. 5

slow-learners to be found in the average school makes it important that they receive due consideration and proper encouragement in their school activities. Certainly the importance of training slow-learners should not be minimized because, first, the pupils in their after-school life will be engaged in work with their hands for the most part; secondly, the growing trend toward emphasis upon the importance of industrial training of pupils in the public schools has placed definite responsibility on administrators and teachers to see that the training meets the needs, limitations, aptitudes, interests, and capacities of the pupils who are receiving it. It also probably could be assumed that for many pupils, especially the slow-learning pupils, the industrial training may be vocational training. If a fair degree of success is to be predicted for their economic and social life, slow-learners should be able to take their places in the social order with definite training for their duties and responsibilities. The community owes them the opportunity to achieve success to the limit of their abilities and the best possible training ground is the public school.

Many school systems are not large enough to equip separate classes, or employ specially trained teachers. Often it is necessary for slow-learners to be placed in classes with average students. Under these conditions, the teachers should have a very definite knowledge of the organi-

zation and plan for such a curriculum that is based upon the needs, limitations, aptitudes, interests, and abilities of the slow-learner. Finally, all adjustments for pupils must be made to the fullest extent of the school's facilities and resources, if equal educational opportunities are to be given all of the pupils.

PROCEDURE

With the aid of Mr. Sylvan A. Yager, vice-principal of the Laboratory School and chairman of the committee, who has a wide acquaintance with the industrial-arts teachers of the state, the names and addresses of the outstanding teachers of industrial arts were selected from the State Directory of Public School Teachers of Indiana.

Mr. Allen T. Hamilton, Supervisor of Industrial Arts of the State Department, and Mr. Harry E. Wood, Director of Fine Arts and Vocational and Practical Arts of Indianapolis Public Schools, were requested to send the names of teachers of industrial arts who were particularly interested in the work along the lines of this study. Several teachers were contacted personally to obtain their reactions to the study.

Teachers of elementary, junior high, and senior high, in towns, cities, and rural communities were invited to contribute to this study. An effort was made to get a complete representation of the varying conditions that are found in the

different public schools of the state of Indiana. Teachers were asked to comment on any of the adjustments they used in organizing a course of study in industrial-arts activities for the slow-learning pupils.

Two hundred ninety-five letters were mailed to the teachers and later one hundred twenty-five follow-up cards were sent. A copy of the letter and the follow-up card are in the Appendix.

LIMITATIONS OF THE SURVEY

The letter used in this survey would probably be listed under the questionnaire-type letter. However, as such, it was placed in an unfavorable position. The letter did not contain specific questions but rather requested that teachers give any information or results that they might have obtained in teaching slow-learning pupils. Many teachers considered certain factors suggested in the letter and ignored others. The request for specific information was answered with general information. Letters were sent to full-time industrial-arts teachers. Although only ninety-three responses were received from the two hundred ninety-five letters and the one hundred twenty-five follow-up cards, a truer picture is probably represented of what the teachers were actually doing than would have been received from a check list on a questionnaire.

CHAPTER II

A REVIEW OF THE LITERATURE CONCERNING SLOW-LEARNING PUPILS

There is not a great deal of literature on the subject of the slow-learner in industrial-arts activities, so this review will include some of the general literature on the slow-learner in the field of general education. As has been mentioned elsewhere in this study, the school population includes a large number of pupils who are slow-learners in need of special attention from the teachers to obtain the maximum results in their school activities. The problem for the teachers is to adapt courses of study to the needs, abilities, limitations, and interests of these pupils.

> There is today definite agreement that there are a number of pupils in any unselected school population who cannot profit by the organization and curriculum of the average public school. For them special provision must be made if our schools are to provide for their fullest development. Outstanding among those who need such special provision are the children who are retarded to some degree in their mental development.[3]

What of the philosophy in the education of the slow-learner? What attitudes must school administrators and

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[3] Christine P. Ingram, Education of the Slow-Learning Child. Yonkers-on-the-Hudson, New York: World Book Co., 1935, p. 3.

teachers have? Schorling, in his article "Slow-Learning Pupil," says,

> The dull are different from the normal not in kind but in degree. The fundamental problem of the slow-learning or dull pupils is to find something that is appropriate. The main challenge for the dull, as well as for the gifted student, is achievement.[4]

The school administrators and the teachers must be prepared to present the challenge in such a manner that the slow-learner has a measure of successful achievement. Furthermore, the teacher must realize that:

> The basic philosophy underlying the education of retarded children is no different from that recognized for all children. The fundamental aim of all education is to teach children to live wisely and well in the environment in which they find themselves.[5]

The adjustments in courses of study to realize this aim must emphasize an educative process in keeping with the capacities, needs, aptitudes, limitations, and interests of all the pupils and must prepare them for the part they are to play in their vocational and avocational life. Their experiences in the classroom should be such that the pupils are prepared to meet like experiences in their out-of-school life with a better understanding of their meaning, and with

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[4] Raleigh Schorling, "The Slow-Learning Pupil," Educational Forum 1:211, January, 1937.

[5] "A Guide to Curriculum Adjustment for Mentally Retarded Children," Bulletin No. 11. Washington, D. C.: Office of Education, United States Department of the Interior, Government Printing Office, 1936, p. 19.

some knowledge of methods of solving them.

What are some of the characteristics of slow-learners? How do they differ from the normal? The variance is largely in mental traits. In physical traits they are normal or nearly normal. In sensory and motor capacities they are not far from normal. As to instincts and emotions they do vary but little from normal.[6]

It is in the mental processes that the difference will be found between the dull and the bright pupils. The slow-learner is weak in forming associations, very low in imaginative powers, has poor memory, a short span of attention and poor in generalization.[7] Baker says, "A person is not bright or dull because he looks the part, but because of the quality of his thinking."[8]

The educative processes must be concerned in a measure with the mental traits, also with the interests, aptitudes, and limitations of the slow-learner. The organization of courses of study to care for the needs of slow-learning pupils must consider the following factors:

1. A clear definition of the group for whom the

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[6] Raleigh Schorling, "The Slow-Learning Pupil," Educational Forum 1:211-15, January, 1937.

[7] Ibid.

[8] H. J. Baker, Characteristic Differences Between Dull and Bright Children. Bloomington, Ill.: Public School Publishing Co., 1927, p. 12.

curriculum is being devised.

2. A statement of the basic principles and premises in which the curriculum will be built.

3. A statement of the objectives toward which to strive.

4. A plan of pupil organization and under the curriculum plan proper

a. Decision as to the attainments or outcomes,

b. A plan for achieving these attainments,

c. Specific techniques and methods of teaching,

d. The provision of suitable materials and references.[9]

If as has been said, "(a) Mentally retarded pupils can work more successfully with objects and materials than they can with tools of literacy (words, numbers), and (b) that in the realm of symbols as much as their 'mental age' may indicate,"[10] educational opportunities should be given which are most advantageous to them. Shop activities have something to offer the slow-learning pupils that may prove valuable in developing their interests, discovering their

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[9] Christine P. Ingram, "Curriculum Making for the Slow Child," Educational Method 11-513-20, June, 1932.

[10] "A Guide to Curriculum Adjustment for Mentally Retarded Children," Bulletin No. 11. Washington, D. C.: Office of Education, United States Department of the Interior, Government Printing Office, 1936, p. x.

aptitudes, and instilling in them confidence in their abilities to do things successfully. The participation in shop activities leads to wholesome social experiences and it prepares the pupil in part to engage in some of the world's work. Industrial arts presents situations that may have a basis in the pupil's own experience. It satisfies his urge to be doing things worth while.

> Industrial arts is a phase of general education that concerns itself with materials, processes, and products of manufacture, and with the contribution of those engaged in industry. The learnings come through the pupil's experience with tools and materials and through his study of the resultant conditions of life.
>
> Industrial arts, therefore, has general values that apply to all levels, and in a continuous program these values are progressively intensive and are cumulative in their effect as the pupil advances in maturity.[11]

To many of the pupils, the industrial-arts activities will provide opportunities to have working conditions that appeal to them and to their instinctive desires.

> Industrial arts contributes directly and significantly toward the process of socialization in two ways: first, by encouraging group purposes, planning, working, and evaluating; second, by providing experiences that are typical of the life of the community or social group. Industrial-arts education is socializing for such reasons as the following:
>
> 1. It encourages growth through doing, involving

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11 "Industrial Arts, Its Interpretation in American Schools," Bulletin No. 34, 1937. Washington, D. C.: Office of Education, United States Department of the Interior, Government Printing Office, 1937, p. 1.

multi-sensory learning.

2. It involves challenging subject matter which is drawn from present day life.

3. It makes use of the urge to try out and to explore new realms of experiences.

4. It combines enjoyable and socially valuable motor activities with equally essential intellectual growth.[12]

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[12] F. T. Struck, "Industrial Arts and the Maladjusted Pupil," American Association of School Administrators, Department of National Education Association, Washington, D. C., 1938, p. 16.

CHAPTER III

PRESENTATION AND INTERPRETATION OF DATA OBTAINED THROUGH SURVEY

TABLE I

CLASSIFICATION OF SCHOOLS REPORTING IN THIS SURVEY

Elementary schools	16
Junior high schools.	31
Senior high schools.	24
Unclassified	22
Total	93

All of the courses were not necessarily given as separate courses for a semester or longer but were combinations of courses in several instances, such as mechanical drawing, bench metal, concrete, and woodwork. These courses were offered in units for a semester or school year.

The traditional course of manual training, i.e., woodwork, seems to be the leader of the shop activities in many schools. If the instructor is limited to one shop activity he is handicapped in discovering the special aptitudes and interests of the pupils because of the lack of flexibility and variety of shop work. Greater use of the general shop in schools where the facilities are limited

TABLE II

TYPES OF SHOP ACTIVITY OFFERED IN SCHOOLS WHERE SLOW-LEARNING PUPILS HAVE BEEN PLACED

Type of activity	Frequency
Woodwork	22
Mechanical drawing	9
General shop	8
Weaving	5
Sheet metal	5
Auto shop	4
Concrete	4
Printing	4
Machine shop	3
Electricity	3
Bench metal	3
Building trades	2
Cooking	2
Free hand sketching	2
Ornamental iron	2
Radio	2
Shoe repair	2
Arc and acetylene welding	1
Farm shop	1
Forging	1
House planning	1
Plumbing	1

permits the pupils to come in contact with a variety of activities and increases the opportunity for the teacher to discover aptitudes and interests.

The classes of segregated pupils were given as opportunity or ungraded classes. In two cases reported, the pupils were with the teacher for all school activities, academic and shop. The remaining classes of this group were in the industrial-arts classes with the shop teacher.

In most cases the slow-learning pupils were placed in the regular industrial-arts classes. The following reasons were given:

1. The small numbers of slow-learning pupils in the shop classes.

2. The heavy teaching load of the teacher in the industrial-arts classes.

3. The lack of shop facilities to provide a variety of activities.

TABLE III

CLASS GROUPING OF SLOW-LEARNING PUPILS IN INDUSTRIAL ARTS

Grouping	Frequency
With regular industrial-arts classes	35
Separate classes	5

From Table IV it can be seen readily that most teachers feel that slow-learning pupils are handicapped most by lack of confidence in themselves. This lack of confidence causes timidity, indolence, unreliability and other undesirable characteristics.

These handicaps also indicate some of the difficulties to be encountered by teachers of industrial arts in teaching slow-learning pupils. Pupils who lack manipulative skills, who are poor in the association of ideas, who are poor in reading and mathematics and have no initiative or creative ability, offer a challenge to the teachers of industrial arts to discover something worth while to teach them. With an understanding of these handicaps that may be found in the slow-learning pupils, the industrial-arts teachers should have better insight in organizing the shop activities to meet the needs, interests, abilities, aptitudes, and limitations of the pupils.

The majority of teachers indicate that slow-learning pupils should be started on simple or elementary projects in the shop activity. A better opportunity for successful performance is given by using simple projects. Difficult projects may lead to failure and discouragement because of the lack of ability to do the work.

The assembly of parts of projects gives an opportunity for successful achievement because of the simple skills and

TABLE IV

HANDICAPS OF THE SLOW-LEARNING PUPILS IN INDUSTRIAL ARTS

Handicaps	Frequency
Lacks confidence	18
Mentally retarded	16
Not dependable	13
Timid	10
Indolent	9
Poor readers	7
Poor muscular coordination (Manipulative skills)	6
Unable to associate ideas	4
Lacks initiative	3
Lacks originality	3
Lacks creative ability	2
Poor in mathematics	2

techniques required and yet allows the pupils a measure of accomplishment in putting together the parts.

Rough carpentry projects also require elementary skills and techniques in their completion. The pupils do not have to use a high degree of accuracy; the time spent in completion is less than in more accurate work. Thus pupils will not tire so easily and become bored as slow-learners often are.

Production work furnishes useful activity and the pupils realize that they are doing something worth while and contributing something of value for school use.

TABLE V

THE NATURE OF THE ACTIVITY PROVIDED FOR SLOW-LEARNING PUPILS

Nature of Activity	Frequency
Elementary Projects	26
a. Simple skills	16
b. Elementary operations	10
Assembly Type Projects	12
a. Assembly of parts made by other students	8
b. Assembly of parts that may be bought	4
Semi-skilled Activity	7
a. Form shop projects	4
b. Rough carpentry	3
1. Concrete forms	1
2. Storage bins	1
3. Platforms	1
Production Activities	5
a. Projects for school use	5

The achievement goals in Table VI indicate the ends toward which industrial-arts teachers of slow-learning pupils strive.

A consensus of opinion is that pupils must be made to feel self-confident in their ability to achieve success in some skill, technique, or process in the shop activity.

One of the important means of building up self-confidence is to arouse or develop an interest in some activity. The creation of interest may lead to the discovery of special aptitudes and interests; it may permit the student to do the kind of work he can do successfully; in fact from the creation of interest, all of the achievement goals may be attained.

TABLE VI

ACHIEVEMENT GOALS FOR SLOW-LEARNING PUPILS AS INDICATED BY THE TEACHERS OF INDUSTRIAL ARTS

Goals	Frequency
To build confidence in self so as to overcome the sense of inferiority.	14
To give the slow-learning pupils an opportunity to do the kind and the amount of work he can do successfully.	12
To give non-academic pupils a chance for achievement. .	12
To learn the fundamental processes of the shop activity.	12
To develop and hold the interest of pupils who have shown no interest in other types of school activities .	11
To give opportunities through flexible shop courses and general shop courses for a pupil to find an interest in some shop activity	10
To develop special aptitudes and abilities.	9
To achieve vocational placement.	9
To undergo cooperative experiences and to develop social responsibilities	7
To develop good citizenship	6
To understand the relationship between shop courses and community outlets for vocational opportunities.	5
To undergo the optimum of self-guidance	5
To develop interests and appreciations of the academic subjects through their relationship to their shop interests	3

Pupil interest is the starting point of any successful attainment with the slow-learning pupils. If interest may be secured or developed, then a better insight may be obtained of the pupils' abilities and aptitudes.

The economic status of pupils, in part, may determine their present needs in a particular shop activity and their after-school needs when they take their places in the community life. The organization of industrial-arts activities should be based on these needs. Correlation of shop activities and other school activities assist pupils in the preparation for their needs, both present and after-school.

TABLE VII

BASIC FACTORS IN PLANNING FOR SLOW-LEARNING PUPIL SHOP ORGANIZATION

Factors in Pupil Shop Organization	Frequency
I. Pupil interest used as basis:	17
1. To develop shop interest.	8
2. To discover out-of-school interests	5
3. To discover and arouse community interests.	4
II. Pupil ability determined through:	14
1. Teacher's observation of:	
a. Work habits	5
b. Shop aptitude	4
c. Skill and technique	3
d. Knowledge of related information. . . .	2
III. Organization of activity to meet the immediate needs through:	14
1. Shop training	7
2. Adjustment to the school situation.	5
3. Proper social experiences	2
IV. Organization of activity to meet after-school needs through:	13
1. Vocational opportunities in the community .	8
2. Proper consumer information	3
3. Cultural appreciation of the world's work .	2
V. Correlation of shop activity and other classes:	12
1. To aid in overcoming maladjustment in school situation through:	7
a. Group cooperation	3
b. Self-guidance	2
c. Self-control	1
d. Self-confidence	1
2. To build up interest in all school activities	3
3. To aid in overcoming difficulties in academic classes.	2

The teaching devices in Table VIII show the importance of demonstrating the steps and techniques to be used in making a project for the slow-learning pupil. Slow-learners are low in the imaginative processes and it is necessary to demonstrate to them the manner in which the operation is done, to arouse their interest. Seeing the operation and seeing the completed projects enable them to make a more complete association between the steps to completion and the completed projects. On the other hand, because of poor memory, the lack of ability to associate ideas, and poor reading ability, the use of job and instruction sheets and class discussion are not as effective as other teaching devices.

TABLE VIII

TEACHING DEVICES USED BY INDUSTRIAL-ARTS TEACHERS WHO HAVE SLOW-LEARNING PUPILS PLACED IN THEIR CLASSES

Devices	Frequency
Demonstration of steps and techniques to be used. . .	18
Examples of the projects to be made	12
Illustrations of the projects in pictures	10
Pupil helpers or apprentices.	10
Pattems of projects to be made.	9
Instructional sheets.	5
Job sheets.	4
Class discussion of steps and techniques to be used .	3

TABLE IX

TEACHING METHODS USED BY THE TEACHERS OF INDUSTRIAL ARTS WHO HAVE SLOW-LEARNERS PLACED IN THEIR CLASSES

Method	Frequency
Individual instruction	21
Group instruction	12

Table X, showing the techniques, probably represents the most important one of this study. The techniques indicate how the teachers are attempting to solve the problem of successfully training slow-learning pupils in the various industrial-arts activities. With these techniques they are trying to guide the pupils toward the goals that the teachers have expressed as being desirable results to attain in industrial-arts education.

The ultimate goal is achievement, and to achieve pupils must participate in activities they can do in a creditable manner. Special assignments in the care and maintenance of the shop and activities of a similar nature which slow-learning pupils can do with a measure of success, tend to build self-confidence because they are contributing something useful to the shop activities. Lack of confidence handicaps any pupil, and it is important to assist slow-learning pupils in

establishing confidence in themselves. Another important step in the building of self-confidence is to have the pupils believe that the teachers are aware of their ability to accomplish certain things that contribute directly to the success of the shops' activities.

If pupils manifest no interest in school activities, teachers must create or develop interest before they may hope to direct the pupils toward the ends desired. Through a variety of activities, or flexible courses of study, some interest may be found or created to enable the teachers to have a starting point for discovery of aptitudes and abilities. Through creation of interest, the desire for participation in many other school activities may be aroused.

Slow-learners because of mental handicaps must have carefully prepared units of instruction, simple problems and projects, and sufficient time to keep their rate of progress near the average of the class. Also because of slow-learners' need for greater supervision, it is necessary for them to have extra help from the teachers and from better students in the class.

By the use of these techniques the teachers hope to give the slow-learners the emotional, mental, and physical satisfaction of contributing useful work to the shop activity.

TABLE X

TECHNIQUES USED BY INDUSTRIAL-ARTS TEACHERS WHO HAVE SLOW-LEARNING PUPILS IN THEIR CLASSES

	Techniques	Frequency
I.	The assignment of special duties to:	18
	1. Care and maintain shop facilities.	8
	2. Do errands and jobs for the teacher. . . .	5
	3. Take charge of tool room	3
	4. Assist with stocks and supplies.	2
II.	Pupil confidence in himself and his ability to achieve success built up through:	18
	1. Encouragement and praise on the part of the teacher at every opportunity..	5
	2. The prevention of any embarrassment to the pupil because of the lack of ability . . .	3
	3. The assignment of work within the scope of pupil's ability.	3
	4. The use of simple projects to insure success in completion	3
	5. Providing of work that is useful	2
	6. Excusing of pupils from the more difficult steps of operations.	2
III.	Interest created and discovered by:	16
	1. Flexible courses of study that permit a pupil to work in certain areas in which he shows interest and aptitude	6
	2. General shop courses that offer the type of work a pupil may do successfully. . . .	4
	3. A trial period in some shop activity . . .	3
	4. The use of conference period to determine in what directions a pupil's interest lies, i.e., hobbies, play interest, and extra-curriculum interests	2

TABLE X (continued)

TECHNIQUES USED BY INDUSTRIAL-ARTS TEACHERS WHO HAVE SLOW-LEARNING PUPILS IN THEIR CLASSES

Techniques	Frequency
5. Home visitation to secure any information from parents that may indicate pupil's interests.	2
6. Home repair items such as electrical appliances, furniture, or toys brought to the school	1
IV. The lesson planned in detail so as to:	11
1. Limit the instruction to minimum essentials	4
2. Plan each step of the procedure carefully.	3
3. Care for individual differences.	3
4. Present related information in a clear and understandable manner.	1
V. Effective class administrations by means of:	11
1. Personal attention of the teacher.	6
2. Provision for individual differences . . .	3
3. Individual pupil records that show progress, shop aptitude and ability, mental ability, and interests.	2
VI. Effective class organization by means of:	10
1. Small classes.	3
2. A shop foreman (pupil) to assist with routine duties	2
3. The division of classes into groups (with a better student in charge) to work out projects together.	2
4. Placing slow-learners in groups of same chronological age level.	2
5. Special classes.	1
VII. Work periods on projects or units lessened for slow learners by:	10

TABLE X (continued)

TECHNIQUES USED BY INDUSTRIAL-ARTS TEACHERS WHO HAVE SLOW-LEARNING PUPILS IN THEIR CLASSES

	Techniques	Frequency
	1. Assignment of simple problems and projects	6
	2. The division of the course of study into units that permit completion more rapidly.	4
VIII.	Slow-learners given extra help by:	9
	1. The use of a better student to aid them.	3
	2. Extra time in the shop during the school day.	2
	3. The performance by the teacher of the more difficult steps	2
	4. After school assignments to work out special difficulties with the teacher.	2
IX.	Reading experience given the slow-learner by:	4
	1. The use of job and projects sheets in simple form.	2
	2. The correlation of shop and other classroom activities.	1
	3. Class reports on related information	1

Teachers who required slow-learners to meet requirements that were the same as pupils of average ability did not wish to lower the general standard of the shop activity.

THE INTERPRETATION OF MINIMUM REQUIREMENTS

Some teachers felt certain minimum standards should be required of slow-learners before completing the shop course satisfactorily. From the following list it is possible to see the lack of uniformity in these standards:

1. Master the fundamentals of the industrial-arts activity.
2. Pupils must complete a minimum number of projects or processes.
3. Pupils must complete a definite amount of work on a project satisfactorily.
4. Effort with which the slow-learner attempted to complete his work.
5. Aptitude shown in shop activity.
6. Interest shown in shop activity.
7. Ability shown in shop activity.
8. A good quality of shop work done by slow-learners.
9. The class attendance of slow-learner must be regular.

TABLE XI

REQUIREMENTS FOR THE COMPLETION OF SHOP ACTIVITY FOR SLOW-LEARNING PUPILS

Requirements	Frequency
Minimum	23
Average	3
Maximum	0

CHAPTER IV

CONCLUSIONS

Slow-learning pupils are placed in shop classes with average pupils in most instances. Many teachers of industrial arts have heavy teaching loads and are limited in the amount of time that they may give to each pupil. Slow-learners need a great deal of supervision and individual instruction if they are to obtain the maximum benefits from the shop activity. Adjustments must be made in the courses of study to suit the needs, limitations, capacities, abilities, and interests of the slow-learner. Further adjustments are also needed in the methods and techniques with which teachers attempt to train the slow-learners to the limit of their capacities.

To do this successfully in industrial-arts activities with slow-learning pupils the writer reached the following conclusions:

1. Industrial-arts courses must be adjusted to suit the needs, limitations, aptitudes, capacities, and interests of slow-learning pupils.

2. The slow-learner must have confidence in his ability to contribute something worth while to the shop activity.

3. The slow-learner must have confidence in the teacher.

4. Teachers must have patience, sympathy, and an understanding of pupils' needs to aid them in solving their problems.

5. Slow-learning pupils should be able to see the progress they are making.

6. Industrial-arts activities may provide

   a. The proper social experiences that the slow-learner has missed in other school activities.

   b. Guidance to a healthful and wholesome life.

   c. Training that may provide a vocational response.

7. The maladjustment of each pupil must be considered separately by the teacher.

8. The shop activities must hold the interest of the pupils.

9. Slow-learners must be given a great deal of encouragement for their efforts.

10. Slow-learners should have a definite place in the shop personnel and organization.

11. Teachers have need for special methods and techniques to train slow-learning pupils in industrial arts.

12. Slow-learning pupils must be guided expertly in each step or procedure that they take.

13. Industrial arts is not a cure for all maladjustments in pupils but may help some slow-learners find themselves.

RECOMMENDATIONS

Shop courses should be very flexible so as to give a "sampling" of several activities to determine interest and aptitudes of slow-learners.

Problems or projects should be selected within the scope of the slow-learner's ability.

Courses of study should be modified to suit the pupils' ability.

The time element is not to be considered in moving slow-learning pupils from one level of work to another.

Slow-learning pupils should be trained carefully in use of tools and equipment to prevent excessive breakage.

Cheap materials should be used to avoid high costs.

Mechanical ability tests should be used more frequently to determine aptitudes and abilities in industrial-arts classes.

Certificates or awards should be given to slow-learners for the performance of satisfactory work.

Pupils should be placed in classes of same chronological age level.

Industrial-arts teachers should demonstrate operations and procedure of the activity frequently.

All directions given should be brief and simple.

Industrial-arts teachers should reorganize course of study to suit the level of the slow-learner.

School administrators should give more study to the problem of slow-learners.

A better program in teacher training institutions for training teachers to teach all types of pupils.

Further study is needed of the methods and techniques best suited to teach slow-learners.

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A P P E N D I X

545 West 29th Street
Indianapolis, Indiana
November, 1938

Dear fellow teacher of Industrial Arts:

Frequently, Industrial Arts teachers are assigned the responsibility of providing a course of study in Industrial Arts for pupils that have not been able to progress at a normal rate in their academic classes.

These pupils are usually over age, and of low ability, or have some special aptitude that has not been discovered and they often prove to be quite a problem for any teacher. If the number is sufficiently large they are grouped in a separate class; usually they are placed in the regular classes; but in either situation, work of the proper grade level and consistent with the interests, needs, limitations of these retarded pupils must be planned.

I have often been assigned pupils of this type and find that a great many adjustments are to be made to obtain satisfactory results with these students. I have also observed that many other teachers of Industrial Arts have had such pupils asssigned to their classes and are likewise confronted with the problem of adjustment of the course of study to the pupils' needs, limitations and etc.

Because of my interest in this problem I have decided to make a study of it as it relates to the work of Industrial Arts teachers in Indiana.

A study of this kind needs the help and assistance of teachers of Industrial Arts in order to obtain a complete picture. I am seeking your cooperation and I would appreciate it if you would describe rather completely all the adjustments you find it necessary to make in planning and organizing a course for such pupils. Please include such items as the type of work you provide; the factors involved in organizing their work; how it differs from the work you provide for your regular classes (in Industrial Arts); the amount of time these pupils spend in Industrial Arts; the number of such pupils assigned to you; their grade level; the quality of work they do and any other information that would help in securing the complete picture of the way you handle these pupils and the results you get.

Write in your own way any information that may be of value in understanding just how you handle this problem. You will find enclosed a stamped, self-addressed envelope for your reply and I assure you that I shall be very appreciative of you cooperation in this study. An early reply would be of great aid to me.

Yours truly,

JLS : AS

J. L. Simpson

Note

This problem has been a very important one with many Industrial Arts teachers for some time, and during the last decade it has become quite serious.

I urge you to cooperate with Mr. Simpson in his study of this problem in order that we may not only know the extent to which it exists; but that we may also know the techniques being used in handling it.

(Signed)

Sylvan A. Yager
Laboratory School
Indiana State Teachers College

545 W. 29th St.
Indianapolis, Ind.
February, 1939

Dear Sir:

Sometime ago I sent you a letter seeking your cooperation in making a survey of methods, procedures and etc. in handling Slow-Learner pupils in Industrial Arts classes.

I know you are very busy with your own work but I would like to include any contribution that you may have to this survey.

Please, may I have a reply to my letter.

Yours Truly,

J. L. Simpson