A PROPOSED COURSE OF STUDY IN MATHEMATICS FOR SLOW-LEARNING ADOLESCENTS OF SECONDARY SCHOOL LEVEL

A Thesis Presented for the Degree of Master of Arts

By

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CHAPTER I

INTRODUCTION

One of the major problems of educating the slow-learning child of secondary school age is the serious dearth of interesting and practical courses of study. The great need for formulating such courses of study and for adapting them to the nature and interests of the more mature slow-learner has often been expressed by authorities in the field of Special Education. 1

In consideration of this lack of material, the task of preparing a Course of Study in Practical Mathematics was chosen as a topic for this thesis in the field of Special Education. This Course of Study was initiated in 1931 and formulated by a Conference-Survey method, followed by a questionnaire six years later to determine its efficacy. The question of whether the problem still existed in 1946 was affirmatively answered when some fifty special class supervisors and teachers on the secondary school level chose this problem as the major topic of their group discussion at the first Special Education Workshop at The Ohio State University in June, 1946.

In the development of most courses of study for the slow-learning child on the secondary school level, it has been assumed that the teacher will have a fairly homogeneous group of children; however, most

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Berry, Charles Scott, Public School Education of Mentally Retarded Children, Ohio State University Press, 1933, p. 20.
teachers who are given the task of educating a group of this kind find it very diversified in nature, with children differing greatly in abilities, specific aptitudes, and background information. It is granted by most authorities that the proper method of educating the slow-learning adolescent is to select a group fairly homogeneous in nature, but since in the majority of school districts this is impracticable because of insufficient special education facilities, the varied problems resulting from a large range in mental and chronological age, psychological factors, and educational achievement must be met realistically by the present-day special education teacher. The heterogeneous quality of such a group can usually be explained when one takes into account the varied reasons which determine placement in such a group in most schools. An example of the diversified nature of a typical slow-learning group is presented in Table I, pp.99,100. Common selective factors for these children follow:

1. Children considerably over-age for the elementary school, yet lacking in standards of achievement necessary to complete elementary school work. Their physical maturity is such that they can no longer adjust to the average elementary school environment.

2. Children of inferior ability, permitted to pass from grade to grade in elementary school, with the expectation that their parents would take them out of school on a working permit at the age of fourteen or sixteen. Upon finding it impossible for the child to secure or to hold a job, many parents insist that these children return to school for further education.
3. Children of inferior ability with behavior problems which stem directly from their frustrated attempts to compete with regular class groups. Many of these problems exist because parents have refused to accept the fact that their children need special education.

4. "Borderline" slow-learning children who might have succeeded, with considerable application, in a regular class group, but who, from circumstances of illness, absence, or physical handicaps, have fallen hopelessly behind.

5. Emotionally maladjusted slow-learning children, whose personality problems have been such that the regular class teacher could not provide sufficient individual attention. This group might include children from foster homes, broken homes, or those from a low economic level who have been moved rapidly from one school to another.

6. Children of average or better than average intelligence who have for some reason failed in school. Non-readers are good examples of this category.

A common fallacy in the construction of courses of study for the slow-learning is the assumption that the curriculum established for the regular school may be utilized for this group by handing it out piecemeal and assuming that the slowed-up assignment processes and the elimination of some of the more difficult phases will accomplish the goal of educating the slow-learning child. Another fallacy has been the use of elementary school materials for all beginning work without adaptation to the more mature interests and community life problems of these children. It is somehow assumed, since they are
slow-learning and have not yet assimilated these elementary school concepts, that their interest will be held and that their education will be accomplished by simple repetition of material of obviously elementary age level. The failure of this type of program is all too often evidenced by the negativistic attitude of many adolescent slow-learning groups.

It is granted that these young people must somehow achieve elementary skills in tool subjects if they are to meet even the more simple problems of our complex society, whether the goals be proper health habits, motor skills, reading, writing, arithmetic, or any other attitude, appreciation or skill. The techniques which are used are of singular importance, for we must teach this material in a manner that will capture the interest of these emotionally quite mature boys and girls. One must remember that there is no plateau of abilities, but that in each of these individuals exist "peaks" of learning if they can but be isolated. One must take into account that these children are often quite sensitive to their own deficiencies, and appreciate attempts on the part of the teacher to alleviate the deficiencies, but strongly resent the teacher who points them out in a disparaging manner. It therefore rests upon the special class teacher to adapt his elementary subject matter to the proper ability, age, interest, and community problem level, giving careful attention to the types of work which these students do well, and even ignoring, if necessary, the work which they cannot do.

This realistic approach is essential in any course of study which
professes to prepare the slow-learning child for an integrated and satisfying place in his community, and to avoid the development of a "failure complex" toward life. The very first time one of these young persons comes in contact with an employer, he will be asked: "What can you do"? - not, "What did you fail in school"?

The following Course of Study is proposed as one which will effectively aid the instructor in teaching slow-learning adolescents the necessary tool subjects to permit them adequately to meet typical social and vocational situations. This Course of Study has been used with a succession of secondary school special class groups in The Garfield Heights City Schools over a period of fifteen years, and follow-up questionnaires (Exhibit 1, pp. 95-98) to the group presented in Table I have established two facts: (1) that the Course as a whole proved to be of great practical value to each of these individuals in his successful adjustment to community life; (2) that the selection of Mathematics as a basic subject in an integrated program is a very efficacious method of accomplishing the desired results.
CHAPTER II

PROCEDURES FOR DEVELOPMENT OF COURSE OF STUDY

To determine the necessary skills for special class students to meet present daily problems and to prepare them to meet some future problems in their social and vocational situations, a Conference-Survey method was used.

The first step was to learn how these youths were occupied outside school and what mathematical skills were necessary to accomplish these activities successfully. Some delivered papers, some worked part-time in bowling alleys or grocery stores, some waited table in parents' restaurants, others did the family purchasing, or helped with repairs and decoration in the home. Still others aided their foreign-born parents in banking and financial transactions. A myriad of other daily activities were reported, many looming as obstacles because these young people lacked the simple fundamental skills to meet the problems successfully.

The next step was to determine what specific mathematical, reading and writing skills these slow-learning children had already achieved in the considerable period of time which most of them had already spent in school; to determine personality problems within the class; to determine home backgrounds and whether they could be utilized to assist the teacher. Further, it was essential to determine learning motivation, since most of the individuals had already developed a "failure complex" in all school situations.

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The third step was consultation with industrial foremen and employers, the persons engaged in the supervision of these slow-learners in industry, to establish what mathematical skills were most necessary for successful employment.

This survey resulted in the determination that simple skills in addition, subtraction, multiplication and division were all important, as was education in cooperative attitudes toward employers and fellow-workers. These, with reading skill adequate to follow directions for use of safety devices and emergency measures, were reported by employers as sufficient necessary elementary skills. Some specific skills were also suggested, such as use of calipers, micrometers, scales, thermometers, time-clocks, rules, and other common industrial instruments.

Housewives employing girl students from this group were consulted on skills desirable in domestic help. Here again the requirements were within reasonable ability limits of these young people — to count items of clothing, make simple purchases, follow written instructions for utilizing mechanical household equipment, such as refrigerators, electric sweepers, stoves; to follow recipes and formulae, to use scales, thermometers, measuring cups, tape measures, clocks, telephones. Added to these, the desirability of cooperative attitudes. The care and treatment of children was also emphasized, offering a suggestion for both the Home Economics course of study and for classroom discussion material.

Since the Special Class under study was to participate in the highest possible degree in regular programs of Industrial Arts, Physical Education, Home Economics, Art, and extra-curricular activities in the
high school, a survey was also made of the skills necessary to permit reasonably successful competition with regular students in these programs. Here, too, the results indicated the necessity for simple mathematics - to add, subtract, divide, to use fractions, to read and follow mechanical safety directions. Again, the necessity of cooperative attitudes, group participation, and in the case of the Physical Education program, habits of health and cleanliness, were emphasized.

Thus was obtained a summary of desired skills and attitudes, through the participation of employers, teachers of other classes to which these students would report daily, and most important from the standpoint of motivation, the special class students themselves. Mathematics, in all cases, proved to be a most urgent need.

Here, then, was our frame of reference for building a practical Course of Study.

With these factors in mind, the Experience-Units of Banking, Buying and Selling, Budgeting, Weighing and Measuring, Insurance, Bonds, and Taxes in the following chapters were developed. Within the framework of these Units, provision was made for individual differences by breaking the class down into four achievement-level Groups, to permit all students to participate in a common experience-unit on different levels. This plan stimulated the effort to master the subject of the immediate Group and pass on to another, yet avoided a feeling of discrimination in the less able groups, which might have occurred had not all participated at once in a common project.
Of the four achievement-level Groups, Group I consisted of those students lacking basic mathematical knowledge: recognition of numbers, their relationship in addition and subtraction, and the application of this fundamental information to very simple realistic transactions, for example, savings accounts, simple purchasing, making change. In general, Group I included only those on the lowest IQ level, with the addition of those children not necessarily deficient in intellect, such as non-readers, aphasics, those with post-traumatic manifestations, and other atypical cases, who, because of organic or emotional "blocks", failed to develop normally. Many in this latter group were found able, after several years of special class rehabilitation, to take their places with regular class groups.

Group II encompassed those who had achieved a 5B grade level in Mathematics, but whose intelligence was such that they would advance beyond the fifth grade level only in rare instances. On this level, simple multiplication and division were attempted with success, using bills up to $10.00 and cash up to $5.00. For example, this Group acted as Tellers for the savings accounts of Group I and performed other simple banking procedures in the Banking Experience-Unit.

Group III comprised individuals whose level of achievement in Mathematics was approximately Grade 5A. Here were introduced checking accounts, actual checkbooks, verification of bank statements, certified checks, and more complex banking procedures. Some division, fractions, and more difficult computations were possible as well.

Group IV included those "borderline" individuals of sixth grade
level in Mathematics who might, under very auspicious circumstances, have succeeded with a regular classroom group, but who, due to unusual handicaps, were better adjusted in a special class. Many of these cases could be considered typical "remedial" cases. Group IV simulated all the processes of banking, simple and compound interest, mortgages and drafts. Some of these particular students found it possible after a few years of individualized help to return to regular school programs with fair success.

In the execution of this Group plan, each of the more able Groups answered questions of the less able Group appearing before it to transact business, and many opportunities arose to stress courtesy, to refer individuals to proper sources for further advice, and to impress these children with responsibility for their individual tasks.

The Groups were conducted in an "informal classroom" manner, permitting the freedom and physical activity necessary for slow-learning adolescents. Disciplinary problems, which might well have resulted under these circumstances without careful supervision, seldom occurred, obviously because these young people felt interested, responsible, and successful under this plan. In isolated instances where a disciplinary problem arose, the class, of its own volition, usually corrected the difficulty, and opened opportunities for discussion of the total problem of school and community government and the individual's responsibility thereto. The behavior problems which manifested themselves in this situation also served to point up individual personality or psychological difficulties for proper action.
In similar manner, in the course of the Experience-Unit operation, innumerable occasions offered themselves for the introduction of other experiences, permitting the teacher to "tie-in" discussion of other habit patterns and social problems. These occasions formed the basis for the integration of the Mathematics Course of Study with the social aspects of community life.

It must be remembered that any Experience-Unit, to function effectively, must meet certain criteria, best exemplified by the following quotation: "that the work should grow out of a real-life experience; should be suited to the child's social, physical, and mental level of development; should further both individual and group growth; should provide for the development of desirable habits and attitudes of conduct, as well as for the acquisition of appropriate knowledge and skills; should be so developed that the interests, skills, habits and attitudes fostered by it carry over into life outside of school; and should provide for the practical use of the tool subjects, and give opportunity for many kinds of experience".2

All units should involve these three types of experience:

1. First hand, entailing actual visits to places where applicable work is being performed.

2. Second hand, provided through movies, pictures, posters, charts, reading material, or lectures by persons qualified to speak on the Experience-Unit subject.

3. The child's personal application of his first and second hand experiences to Art, Industrial Arts, Home Economics, and other courses, as well as to his home and out-of-school activities. Noteworthy examples of this experience are: budgeting of money earned on part-time jobs; starting personal savings account; measuring for construction pertaining to the Unit or to other courses.

The following Course of Study was predicated on all these principles, implemented by the Conference-Survey of prospective employers, suggestions of teachers of other classes which the students attended, reported activities outside of school, and needs as outlined by the special class students themselves.

The diagram presented in Figure 1, page 13, shows the form of a typical Experience-Unit.
Figure 1
Plan of Typical Experience Unit

Interest between the home and school

1. Number concept
2. Counting money
3. Adding change
4. Subtracting change
5. Recognition of coins and bills

6. Multiplication using money up to $10 in bills and $5 in change
7. Division - using cash
8. Savings accounts
9. Simple bank procedure

10. Checking accounts
11. Monthly statements
12. Check books
13. Certified checks
14. Checking check book stubs with monthly statements
15. More complete banking procedure

16. All the processes of banking - savings, loans, checking, both simple and compound interest, mortgages, bank drafts, certified checks, etc.

This work to involve all fundamental skills
CHAPTER III

COURSE OF STUDY

Utilizing the criteria and the essential bases for Experience-Units established in Chapter II, the following outline of the proposed Course of Study in Mathematics is presented for use by teachers of special classes on the secondary school level.

Experience-Units for Banking, Buying and Selling, Budgeting, and for Weighing and Measuring, have been presented in some detail, with suggestions for their application to the capacities of the four individual achievement-Groups. Also included are sample Worksheets, to assist the teacher in determining the results of his teaching, and to stimulate the student by giving him concrete information on his accomplishment. It will be noted that the reading vocabulary in the Worksheets is graduated in difficulty to provide for the greater ability of the higher achievement-Groups.

Experience-Units for Insurance, Government Bonds, and Taxes are more briefly presented, due to their abstract nature and the necessity for a more general application of principles to the class as a whole. For these same reasons, suggested Worksheets for these Units are presented for the entire class, and not for individual achievement-Groups.

Material Lists necessary for the implementation of the Experience-Units are supplied, and an outline of possible correlative processes follows the presentation of the Units.

Games, Devices and Drill Techniques used with the outlined Course of Study appear in Chapter IV.
A Follow-Up Survey, made six years after the initial use of the Course of Study, appears in Chapter V. The results of this Survey formed the basis for the revised Course of Study.

Conclusions and Recommendations, Chapter VI, present general recommendations for the administration of special classes in the secondary schools, and make further suggestions for general improvements in Courses of Study for these classes.

**Experience-Units**

In the operation of all Experience-Units entailing field trips, it is essential that the teacher spend considerable preliminary time acquainting the class with the value and the reasons for making such trips. Attention should be given to the behavior expected of a group offered the opportunity of making a field trip, and the class carefully prepared to expend every effort to make the occasion valuable to its purpose of subsequently simulating the experience.

**Banking**

After careful preparation of the class for the experience, arrangements may be made with some local bank for a field trip. Let the students observe the actual work which takes place, and, if possible, observe individually the procedure used by teller, manager, clerk, or other employee. If the class has home-room dues, this trip should present an excellent opportunity to have the Class Treasurer start a savings account, a real-life opportunity to observe this experience in a bank.

If the group is large, it should be broken down into smaller groups, each group to be given the responsibility of observing a
particular phase of banking, i.e., the teller, the manager, the cashier, who handles such transactions as utility bills, Government Bonds, Withholding taxes, sale of Sales Tax Stamps, or the person in charge of the safe deposit vault.

Upon returning to the classroom, sufficient time should be set aside for discussion of this trip by each group, so that all students fully understand the types of experience which were observed, prior to starting the actual class work of running a bank. Here provision appears for the development of verbal skills, so important for the slow-learning child. "It is highly desirable that much attention be given to correct speech. At best, the mentally retarded will do little reading and still less writing, but they will be constantly required to speak. The ability to express their ideas in simple, grammatical language will be a great asset in dealing with their fellows."3

It is most helpful to have a local bank official, acquainted with the nature of the group, come in and answer questions during the period of the class discussion of the field trip.

After this groundwork, the group is ready to participate actively in the Banking Experience-Unit. The first step is the construction of a bank front, with tellers' windows to simulate those in a bank. Here appears the opportunity for the Industrial Arts teacher to correlate the initial skills of the Industrial Arts Course with the Experience-Unit. Since it may not be possible for all the group to participate in the actual construction of the bank front, small groups may be assigned such tasks as writing letters of appreciation to the bank which

3Berry, Charles Scott, Public School Education of Mentally Retarded Children, Ohio State University Press, 1933, p. 21.

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made the trip possible, decorating and painting the bank front as parts are constructed, printing signs, etc. Another group might construct simulated checkbooks, bank notes, deposit slips, withdrawal slips, promissory note forms and bank drafts by mimeographing. Thus, all groups can be actively engaged in a common group experience, which offers excellent opportunities for the development of cooperative work habits, emphasized so strongly in the Conference-Survey of employers.

When the actual mechanical work is completed, the differentiation of the work into achievement-Groups should be effected:

**Group I** participates in the Banking Experience-Unit as follows:

1. Counts out play money for each teller at beginning of day.
2. Counts out forms for use of bank patrons.
3. Acts as guards for the vault, permitting persons in and out of the locked door, and helping to locate shoe-box "safe deposit boxes", provided for each child in the room.
4. Makes simple deposits and withdrawals on savings accounts.
5. Pays utility bills, purchases Government Bonds, places papers in safe deposit.

Errors which these students will make, such as failure to recognize certain numbers, inability to count money properly or to check errors which may be made by tellers (purposely), serve as stimuli for the learning of these skills so that they may participate effectively.

These errors also furnish the opportunity for the use of flashcards, simple numbers games, and writing of numbers, as described in Chapter IV. Further motivation to learn these skills and to use care
is engendered by their discovery that they lose money through their lack of knowledge.

**Group II** participates as follows:

1. Acts as tellers for the very simple savings accounts maintained by Group I. This activity will involve responsibility for certain amounts of cash taken in and withdrawn during the day.

2. Handles the different denominations of money in making change for utility bills and purchases of Bonds, and the final accounting for all money transactions during the day.

3. Adds totals on all deposit and withdrawal slips as the transactions are made, as well as totals for all utility bills and bond receipt stubs at end of day.

4. Adds and subtracts deposits and withdrawals and places the correct amounts in bank books.

5. Multiplies the number of bills of each denomination by 2, 5, 10, etc., to obtain total amount of money in cash drawers at end of day. (This Group must be encouraged to do this problem by multiplication rather than by addition, to teach the former skill).

In these tasks the students learn individual responsibility for a job, since they must account for all cash at the end of the day. Errors may prove to be due to lack of knowledge of multiplication tables, thus providing stimulus for the use of flash-cards in learning these tables. They recognize the need for rapid calculation and for coolness in order to serve the line-up before their windows, and are taught courtesy in
handling customers, particularly since they may have to point out errors on deposit or withdrawal slips before other persons.

**Group III** participates as follows:

1. Deposits total money which they are given to checking accounts.
2. Maintains individual checkbooks, complete with checks and stubs, entailing entry, addition and subtraction.
4. Verifies bank statements rendered on checking account balance.
5. Purchases certified checks or travellers' checks for definite stated purposes.
6. Maintains savings accounts, drawing interest, learning not to keep all assets in checking account.
7. Handles teller's job for deposits to checking accounts, learning the difference between savings accounts and checking accounts bank books.
8. Some members of this Group may compute simple 1% interest on savings accounts of Groups I and II, involving simple multiplication. The interest amount may be changed from time to time for use of different multipliers.

Students in Group III must account for their checking account balances and cash bank balances at the end of each banking day, and their errors stimulate further practice in arithmetical skills on their level.

**Group IV** participates as follows:

1. Makes up bank statements for all checking accounts, learning
to interpret and understand bank statements. This involves addition and subtraction and review for the Group.

2. Makes bank loans for purchase of automobiles, houses, furniture, and figures interest thereon, issuing promissory notes. These transactions involve multiplication, division, and the simple use of decimals.

3. Carries on the more involved procedures of the bank, such as final accounting of all monies from all tellers at end of day.

4. Purchases and computes quarterly payments on protective insurance for the bank.

5. Discusses Federal Reserve Banks and their relationship to small local banks. This Group should also make a trip to a Federal Reserve Bank.

6. Participates as leaders in the Bank Experience, checking work of all other students on a student-aid basis, giving them opportunity to review mathematical skills.

7. Studies certified checks, travellers' checks, and their particular advantage in the scheme of finances.

8. Computes withholding taxes for all employees on the basis of 20% or 1/5 of cash salary.

9. Pays salaries of all employees.

10. Makes bank draft to Collector of Internal Revenue for total withholding taxes, as well as to State Division of Taxation for Sales Tax Stamps sold at the bank.

11. Acts as Manager of the bank to discuss loans and interest
with other members of Group IV. This necessitates figuring of interest, discussion of securities and assets, and other typical problems.

The simulation of loan processes opens the entire discussion by the teacher of the advantages of dealing with a bank rather than with finance companies requiring little security but extracting greater sums in interest. The entire problem of consulting with the local banker regarding financial transactions, purchase of insurance, property, etc., develops the habit of recognizing the source for proper guidance in financial affairs. Some discussion of counterfeit money and how to recognize it may be introduced. Some local person associated with police, FBI, or Federal Reserve Bank might be secured to discuss this subject with the entire class.

Government pamphlets entitled, "Know Your Money" may be secured from any Federal Reserve Bank, and are most valuable as teaching aids.

These suggestions are, of course, merely examples of the many diversified activities which can spring from a banking Unit, and illustrate clearly how fundamental skills may be learned through these Experience-Units.

**Necessary Materials**

**Construction**

Heavy Cardboard.

Orange crates for wood.

Dowelling for window bars, to be made in shops by students.

Paints and brushes.
Forms

Mimeographed checkbooks, bank books, other forms

Play money, coins and bills of all denominations, up to the amount of $50,000.00.

Other

Lock for safe deposit vault

Table for patrons' use

Bulletin board display of bank checks, deposit and withdrawal slips, Bonds, other forms.

Worksheets

Worksheets are provided each member of the class daily, directing his banking activities. They must be carefully worded to be entirely understandable, and planned within the reasonable skills of individuals, yet contrive to offer a challenge and stimulus to further study.

Sample Worksheets follow.
Worksheet - Group I

Date_________________________

Name_________________________

Group I

Banking

Today you will be the manager of the ____________________,

and you will make deposits, withdrawals, and pay gas, light and water

bills for your store. You will be given $30.00 to start with today -

two $10.00 bills, four $1.00 bills, one $5.00 bill, and $1.00 change.

Be sure to count the money you are given to be sure you get $30.00.

Make deposits: 10 o'clock A. M. $8.00

12 o'clock noon 7.00

3 o'clock P. M. (Closing time) 10.00

Sum

Make withdrawals: $2.00 to pay light bill

1.00 to pay gas bill

Add these: 1.00 to pay water bill

Sum

Ed, who is the teller for today, will mark your savings account bank-

book for the deposits and withdrawals you have made. Be sure he does

not make a mistake, and check your money carefully each time you make

a deposit or withdraw money.

Now fill in the answers on the lines below:

How much money did you deposit in all? _________________________

How much money did you withdraw in all? _________________________

How much money is left in your account? _________________________

Note: Each student in Group I may be permitted to choose the local

store he wants to represent for the day. Members of Group I may have

difficulty reading worksheets; yet they will want to use them, just as

do other members of the special class.

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Worksheet - Group II

Date ______________

Name ______________

Group II
Banking

You are Treasurer of the ______________. You pay all bills with certified checks. You will be given $250.00 to start with today. Count your cash to be sure it is correct. The bills you must pay today are for goods bought from wholesale houses. Here is your work.

Deposits: 10 o'clock A. M. $50.00
12 o'clock noon 65.00
3 o'clock P. M. (closing time) 75.00

Add these: ______________ Sum

Withdrawals are to be made in Certified Checks:

McKesson-Robbins Co. $15.00
Hall VanGorder Co. 20.00
Bayer Aspirin Co. 5.00

Add these: ______________ Sum

Be sure that John, who is your teller today, marks your bankbook right, for you must always check carefully when you are handling money. Let the teller for Group III make out your certified checks, as that is what he is studying today. Another day you will be the teller, so be sure to watch how John S., does it, and be sure he is right.

Answer the following questions and turn this paper in:

How much money did you deposit today? ______________

How much money did you pay out in certified checks? ______________

How much money is left in your company's account? ______________
Worksheet - Group III

Date _______________  Group III

Name _______________  Banking

You are Cashier of the _______________ today. You have collected $50.00 in bills and change from customers, and you must deposit this at the bank in your checking account. While at the bank, you will buy a Government Bond for $18.75, pay for it by check, and place the Bond in your company's safe deposit box. Then write a check for $15.00 to The Crown Paper Company to pay a bill which they have sent you. You now go to the bank and do the following work:

Deposit $50.00 in cash to your checking account. Be sure that the teller enters this in your checking account bankbook, and be sure you enter the same amount as a deposit on the stub in your checkbook.

Now go to the bank Cashier, buy a Government Bond, and write him a check for $18.75, as the Cashier directs. Go to the Safe Deposit Vault and place the Bond in your company's safe deposit box. Be sure you enter the amount of this check on your checkbook stub and subtract correctly, so that you will know how much you have left in your checking account.

Now return to your office and write a check for $15.00 to The Crown Paper Company, and write them a letter saying you are enclosing the check and what it is for. Be sure to mark this on your checkbook stub and subtract it properly.

Answer the following questions and hand this paper in:

How much in bills did you take in from customers today? ___________

How much in change did you take in from customers today? ___________

What is the sum? ___________
Worksheet - Group III (continued)

What amount do you have left in your checking account in the bank after you have done all of your work? ________________
Worksheet - Group IV

Date______________________

Name______________________

Group IV

Banking

You are the Manager of __________ today. Edward Panek comes in to ask your advice about buying a car, costing $700.00. You must check with the teller and find out how much money Edward has in the bank, both in his savings and in his checking account. You find it is not enough for him to buy a car, and you tell him how much more he will need. He has a good job and tells you he can pay the bank back at the rate of $20.00 a month. You must now figure out for him how much interest the bank will charge for the use of its money, at the rate of 6% (multiply $700.00 x .06). He will let you know tomorrow if he wants to borrow the money or if he has decided to wait another year for the car, save his money ahead of time, and not have to pay interest.

It is now time for the bank to close, and since the head teller is home, sick, you will have to help the other tellers add up their cash for the day. They will all add their cash and then you, as Manager, must see that they are all correct. Add up the totals of all the tellers, count the money, and see if the two amounts are the same. If they are not, all the tellers will have to stay and add up their money again, and you must again check to see that they are correct.

Answer the following questions:

1. How much interest would the bank have to charge Edward to loan him the money for a new car? ________________

2. How much money did all the tellers together take in, when you

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counted the money at closing time? ____________

3. Did this money you counted add up to the same amount as when you added all the tellers' accounts? ____________
Buying and Selling

The most realistic experience in this Unit is that of the grocery store. It is also one of the easiest to reconstruct in the classroom. After the preliminary orientation on conduct and value of a field trip, the class should make a field trip to a grocery store, observe the receipt of produce, its placing on shelves, pricing, preparation of window display, sales slips, weighing, packaging, etc. Many samples of merchandise may be secured in advance by writing manufacturers. Community grocers, when advised of the vocational planning activities of the teacher, will not only cooperate by contributing samples, but also by offering valuable suggestions to be met in planning the classroom store. Upon completion of the field trip, students should bring in to class competitive advertising from newspapers, showing goods and prices.

The teacher will find that the question of Charge Accounts will be brought up by some student, and it is suggested that the teacher permit the class to introduce this subject. With a group such as this it is best to discourage the use of credit, since these young people readily become victims of credit systems with exorbitant carrying charges. Mentally retarded students will never sufficiently understand the mechanics of credit systems, and although it is best for them to avoid such transactions altogether, you must teach them about credit plans. Emphasize paying bills in full on a weekly or monthly basis.

The class is now ready to construct the grocery store front, using the name of the grocery permitting the field trip, among others,
forming a consolidated name for the grocery. This construction should be correlated with the Industrial Arts teacher. Students should do the pricing (each item must be clearly marked), stock the shelves, make an opening inventory, simulate a window display, and perhaps write up the advertising on "specials" for the opening day.

The following divisions are suggested for the participation of the four achievement-Groups in the Buying and Selling Unit:

**Group I**

1. Count out money to start clerks' "cash registers".
2. Act as clerks, writing sales slips and adding them.
3. Accept morning cash, count it, and place in proper receptacles.
4. Package merchandise properly.
5. Act as customers, paying for merchandise and counting their change, or counting out exact change after checking sales slip for error.

**Group II**

1. Act as clerks, taking orders over telephone if this can be arranged, pricing sales slips therefor, and preparing the merchandise for delivery, to be paid for upon delivery.
2. Act as customers, tendering bills in payment of merchandise, and receiving change.
3. Act as customers, returning defective merchandise, and receiving correct amount in return.
4. As clerks, total up end-of-day receipts and add sales slips to verify. (Group II students should be required to multiply
number of bills by their denominations, rather than add, to find total amount, just as in the Banking Unit).

Group III

1. Act as cashiers who charge Sales Tax on sales slips.

2. Act as Store Managers, spot-checking work of employees.

3. As Store Managers, check stock and make up wholesale house orders.

4. Work up Friday's "specials" list and send it to newspapers, advising clerks to re-mark those items for sale.

5. Take an inventory.

Group IV

1. As store managers, check all receipts at end of day.

2. Pay salaries, computing withholding tax.

3. As manager, write to the Department of Weights and Measures of the community, requesting them to check the scales.

4. Write the wholesale house, telling them they have charged for an item which was not delivered, and see that it is not charged on their statement.

5. Check to see that no damaged goods, i. e., leaking cans, decayed vegetables, rodent or insect-infested foods are sold to customers.

6. Plan a "special sale" on canned goods which has become shelf-soiled, but is still in sound edible condition.

7. Plan a "special sale" on merchandise which has proved to be a non-seller, to get it off the shelves, using the term "turnover".

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8. Write the refrigerator company to report something wrong with the machinery.

9. Take a complaint about underweight from a customer and make proper restitution, or make such a complaint and request restitution.

10. "Shop" in other stores to obtain comparison of prices with those in his own store.

11. As a clerk, recognize a counterfeit bill inadvertently tendered him by a customer, and courteously advise the customer that he must refuse the bill.

12. As manager, send a clerk from Group I or II to the bank to have large bills converted into change for the clerks, checking the cash return.

13. As manager, determine store hours, and schedule clerks in accordance with Union or labor laws.

14. As manager, pay wholesale house by certified check.

(Note: Discussion of Wholesaling, Warehousing, and "Middlemen" with Group IV should precede their activities in the grocery store).

15. Act as wholesale house clerk, delivering groceries and receiving at the same time payment for monthly bill.

**Necessary Materials**

**Construction:** Heavy cardboard for store front, icebox, displays.

Orange crates for wood, paints and brushes.
Forms

Daily "specials" sheets for all stores in consolidated grocery.
Sales Slips and order pads.
Inventory blanks.
Price cards and " specials" cards

Other

Tables for counters
Boxes for cash receptacles
Simulated telephone
Real scales, hanging and counter models.
Pencils
Locked box to carry receipts to bank
Cartons for packing large orders
Paper bags to package purchases
Worksheet - Group I

Date ___________________  Group I
Name ___________________ Buying and Selling

Today you will go to the grocery and buy the groceries for your family. These are on your list:

1 lb. butter ________

________

1 box soda crackers ________

1 lb. Yuban coffee ________

________

Look at the daily bargain slips in the store and see if any of your groceries may be bought for less money at one store than another in this market. Then check the bargain slips to see if there is anything else you need which is on today's bargain list at one of the stores. You find that today you can save 4¢ by buying 1 lb. of rice, which you might buy tomorrow or next day, anyway. Add this to your grocery list above in your own handwriting. You decide that the prices are all right, and buy your groceries.

Give the clerk the right change, and be sure he gives you a sales slip so that you can add it up when you get home, and make sure he made no mistake. If there are not too many people waiting for the clerk, check the sales slip to be sure it is right before you leave the store.

Now on the grocery list above, put in the right amounts that the clerk charged you. Don't forget to add in your rice. Add these all up and turn this paper in.
Worksheet - Group II

Date ____________________

Name ____________________

Group II

Buying and Selling

Today you are working as a clerk in the _______Grocery. You must be there at 7 o'clock, as the store opens at 7:30, and you want time to count your change before you are ready to wait on customers. Write the amount of the change given to you on a slip of paper and place it in the cash box with your money. What is this sum? ______

The phone rings, and you take an order over the telephone, writing down the groceries wanted on a sales slip. Be sure you get the name of the customer right. She tells you that she will come in later and pick up her groceries and pay for them.

Now go and place the groceries in a paper bag, or in a box, if there are a lot of them. Be careful to enter on the sales slip only those items which you have in stock, and put the price beside them. Then list those items which you do not have, and make a dash instead of a price. Add up all the prices. What is the amount? ______

Now it is closing time. Count the money in your cash box. How much is there? ______. How much money did your customer pay you when she picked up her groceries? ______. Add these two amounts. Is the sum the same as the amount on the slip you made out this morning? Or is it more? If it is more, how much more? ______.
Worksheet - Group III

Date ______________________  Group III
Name ______________________  Buying & Selling

You are assistant manager of the _______ Grocery today. The Manager has told you to make up a "specials" list for Friday's big day. Make a list of those groceries which will be sold a few cents cheaper on Friday, place the sale prices on the list, and place it in the window. Be sure that at the top of the page you tell when the groceries will be on sale. Make another copy of this list and mail it with a note to the newspapers. Make another copy for all the clerks, so they will know about the changed prices and will mark the groceries, and not make a mistake on Friday. Now make another copy to return with this sheet to the teacher, after you have answered the questions below: (You will have to make four copies of the list altogether).

1. Did the clerks make the changes on the prices of the sale groceries when you gave them the Friday "specials" list?

2. You gave the clerks one copy, and are turning one copy in to the teacher. List on the lines below what you did with the other two copies: ____________________________

3. Tell here why you chose the items on your "specials" list for Friday, instead of choosing some other items?

______________________________

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Worksheet - Group IV

Date ____________________________

Name ____________________________

Group IV
Buying and Selling

Today you are a Wholesale House man, delivering the following groceries to the ___________ Grocery. Today is the day he will pay you for all the groceries he has bought from you in the past month.

Deliver your groceries, and have the clerk check the delivery slip to make sure that everything is there. Make out your bill for the past month, as listed below:

October 5, 1943.....20 lbs. butter @ 35¢ per lb. ____________
October 8, 1943.....100 lbs. veal @ 37¢ per lb. ____________
October 10, 1943.....200 lbs. sugar @ 3¢ per lb. ____________
October 25, 1943..... 20 heads lettuce at 4¢ per head _________

What is the total? ____________

Example: 20 lbs. butter

_____ x .35 = cost for each lb.

_____ cost of 20 lbs.

Figure out by multiplication what each item cost, and add the totals.

Now, since the Manager of the Grocery is a good customer of your wholesale house, he receives a 2% discount (.02) from the total bill for paying cash when you come in with the bill. Can you figure what the amount of the discount will be? If you can, place it here ________.

Then subtract this amount from the total you have put in above. The Manager then pays you the amount he owed by certified check. You mark the bill "Paid", sign your name, and give him the bill for a receipt.
Make sure you have subtracted the discount. If you cannot do this, ask someone to help you, or ask the teacher. Then turn this sheet in.
Budgeting

This Unit seems to be one of the most interesting to all students in the class, probably indicating it as one of the greatest problems in the family. They hear about "saving money" and "not being able to afford pleasures" at home. These problems may be discussed and home experiences used to introduce the Unit.

One of the best methods of starting the Unit is to have one student bring in a simple budget kept by some member of his family. Failing this, the teacher can use a personal budget. To supplement this, a textbook for problems and explanations can well be used.

Individual Budget Books for each student may be made in class, but experience seems to indicate that they are more interested when these books are obtained in printed form. Society for Savings Banks have in the past provided excellent budget books. Some newspapers and some large concerns, such as insurance companies, have also used these booklets as advertising. The community library may be able to assist in securing such forms.

In this Unit, Worksheets are used daily, as in other Units, and students are permitted to determine the salary on which they will base their budgets.

This Unit is ideal either for review of simple fractions, or to teach this skill, and while this would seem to limit the benefit of its exercise to Group IV and some of Group III, the training is gratifyingly successful in all Groups.

Home visits by the teacher at this stage are productive of greater interest and cooperation, especially when one of the families can be
persuaded to have the child assist in the actual home-operation of a budget.

As a correlative factor with the English classes, the students themselves write the letters to obtain Budget Books, write to Home Service Departments of local newspapers for pamphlets and advice, and contact both school and community library.

Each student keeps a Budget Book, entering daily, weekly and monthly expenditures.

Plain envelopes with play money are set aside for each item of the budget, and filed by the student. These files are checked weekly by Group IV members, in accordance with the Worksheet for that Group.

Little more preliminary work is necessary, once materials are assembled, save an orientation period on the value and results of budgeting.

Suggested division of Groups for this Experience-Unit follows:

**Group I**

1. Add weekly allowance for four weeks to secure amount of monthly allowance.

2. Add monthly allowance twelve times to obtain yearly allowance. (This gives simple concept of money spent in a week, a month, and a year).

3. Subtract the amount they spend each week from total monthly amount and find how much is left for the remaining three weeks, practicing simple subtraction.

4. Take given amount of money and divide it into four equal piles by counting.

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5. Decide what money is to be spent for rent, food, savings and movies, or divide money into four envelopes marked with the desired expenditures.

6. Do simple subtraction and addition of the computations mentioned above in their budget books.

Group II

1. Take monthly salary and count it into amounts listed on Worksheet and place amounts in envelopes marked: "Clothing, Savings, Pleasure, Transportation, and Miscellaneous Bills". Compare total with monthly salary.

2. Add list of given expenditures under proper headings, and subtract from amounts in budget envelopes.

3. Do simple addition, subtraction and short division in budget books.

Group III

1. Take monthly or weekly salary, divide by simple fractions: Shelter 1/4; Food 1/4; Clothing 1/5; Savings 1/10; Pleasure 1/20; Transportation 1/10; Miscellaneous Bills 1/20.

2. Use these simple fractions in determining lowest common denominators and work budget divisions out in twentieths. (Fractions Game in Chapter IV may be utilized to show how these twentieths go to make up one unit).

3. Provide lists of expenditures with varying amounts, involving dollars and cents, for entry in budget books, and subtract from money in budget envelopes.
4. Serve as student-aides for Groups I and II and assist them to divide their money, and check correctness of their Worksheets and computations.

Group IV

1. For the most part, Group IV should be taught the entire concept of using money intelligently for the purchasing of their needs. Practice in simple use of fractions, their relationship as parts of a unit, etc., can be developed.

2. Many members of Group IV will be able to understand the conversion of fractions to simple decimals, and then use decimals such as 5% of their salary for an item such as transportation.

3. They may be able to secure typical monthly salaries from home, and set up a real budget, once they have secured figures on family expenditures.

4. Check the work of all other Groups, including regular checking of budgeting envelopes to forestall errors.

It will be seen in the presentation of the type of work which each Group will do under the Budgeting Experience-Unit that this Unit may be worked simultaneously with the Banking and Buying and Selling Units, which should be continuously maintained in the classroom, if at all possible. This will give real-life experience in spending money for items such as food, savings, bonds, utility bills, etc., as they withdraw it from the budget envelopes.

Sample Worksheets for each Group in Budgeting follow.

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Worksheet - Group I

Date __________________________  Group I
Name __________________________  Budgeting

Your weekly allowance is $1.00. Take this to the bank and get it changed into four equal amounts. You will then have four quarters. Prepare four envelopes, and mark them: "Lunches, Movies, Savings, Church." Put one quarter into each envelope. You receive $1.00 each week; there are four weeks in the month. Put the amount you receive each week of the month down on these four lines:

_________ __________ __________ __________  Add these up.

What is the sum? __________

There are twelve months in the year. Add the sum you placed above twelve times, and place the new sum here__________.

You spend in one week:

18% for lunch one rainy day. Subtract this from the "lunches" envelope. How much do you have left for lunches for the rest of the week?__________.

15% for movies. Subtract to find out how much is left in your envelope for "movies". What is left?__________.

25% for school bank. Add to find out how much is now in your savings account. What is this sum?__________.

15% in the box at Church on Sunday. Subtract to find out how much you have left in your "Church" envelope. ________.
Worksheet - Group II

Date __________________________ Group II
Name __________________________ Budgeting

Prepare seven envelopes and mark them: "Food, Clothing, Shelter, Savings, Fun, Carfare, and Extras". Your monthly pay is $100.00. Get this amount from Tom, who is giving out money today, and count it to be sure it is right.

Place $25.00 in the "Food" envelope
Place $25.00 in the "Shelter" envelope
Place $20.00 in the "Clothing" envelope
Place $10.00 in the "Savings" envelope
Place $5.00 in the "Fun" envelope
Place $10.00 in the "Carfare" envelope
Place $5.00 in the "Extras" envelope

Add: __________ Is this amount the same as your salary? __________.

If it is not, you will have to do this addition over.

The first week you spend money for the following things:

Rent - $20.00  Magazine - $.15  Savings - $2.00
Stockings - $.75  Gift - $.75  Insurance - $1.00
Bread - $.14  Newspaper - 3.20  Taxes - $2.00
Meat - $4.00  Medicine - $1.25  Car Pass - $1.25
Milk - $1.54  Doctor - $2.00  Gas Bill - $2.50
Movie - $.15  Candy - $.10

How much did you spend from your "Shelter" envelope? __________

How much is left in your "Shelter" envelope? __________
Worksheet - Group II, cont. (Budgeting)

How much did you spend from your "Food" envelope? 

How much is left in your "Food" envelope? 

How much did you spend from your "Clothing" envelope? 

How much is left in your "Clothing" envelope? 

How much did you spend from your "Savings" envelope? 

How much is left in your "Savings" envelope? 

How much did you spend from your "Fun" envelope? 

How much is left in your "Fun" envelope? 

How much did you spend from "Carfare" envelope? 

How much is left in your "Carfare" envelope? 

How much did you spend from your "Extras" envelope? 

How much is left in your "Extras" envelope? 

How much money is left in all your envelopes together? 

Subtract this from your total salary and you will know how much you have left from your pay to spend in the next three weeks. Place this amount here . 

Do all the problems on this page so that they can be checked by Tom in Group IV.
Worksheet - Group III

Date ____________________

Name ____________________

Group III

Budgeting

The salary you make each month is $240.00. Get this amount of money from Tom, who is in charge of money at the bank today. Be sure to count it to make certain that it is correct.

We consider that there are four weeks in a month. You will remember that we talked about this in class. Divide your monthly salary by 4 to find how much money you will have each week. Do this problem: \( \frac{4}{240.00} \).

The fractional parts of your weekly salary used for various items on your budget are listed below. Find the amount of cash for each item. One problem is done for you. Use it as an example.

Shelter - 1/4 of your weekly salary is placed in an envelope marked "Shelter", and saved for rent, gas and light. \( \frac{1}{4} \times 60.00 = 15.00 \).

Food - 1/4 of your weekly salary. Place in separate envelope.

\( \frac{1}{4} \times 60.00 = \) __________.

Clothing - 1/5 of your weekly salary. Place in separate envelope.

\( \frac{1}{5} \times 60.00 = \) __________.

Pleasure - 1/20 of your weekly salary. Place in separate envelope.

\( \frac{1}{20} \times 60.00 = \) __________.

Carfare - 1/10 of your weekly salary. Place in separate envelope.

\( \frac{1}{10} \times 60.00 = \) __________.

Savings - 1/10 of your weekly salary. Place in separate envelope.

\( \frac{1}{10} \times 60.00 = \) __________.

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Worksheet - Group III cont. (Budgeting)

Extras - 1/20 of your weekly salary. Place in separate envelope.

\[
l/20 \times $60.00 = \text{_______}.
\]

You spend the following cash this week for the articles listed below:

Rent..............$15.00  Family went to movies....$1.00 (25¢ ea.)
Food............ $6.00   Money for stockings......$.50
Dress Material....$1.00  Pass on trolley............$1.25
New heels on shoes...$.50  Savings.................. $2.00

New trousers for brother.......$2.00

Mark these amounts in your budget book in the correct columns. Answer the following questions:

1. How much is left in each of the following envelopes:

<table>
<thead>
<tr>
<th>Savings</th>
<th>Food</th>
<th>Clothing</th>
<th>Shelter</th>
<th>Pleasure</th>
<th>Carfare</th>
</tr>
</thead>
</table>

Example: $20.00 was in food envelope

- $6.00 was spent first week for food
- $14.00 left in food envelope to last for next 3 weeks

Do the problem for each envelope the same way. Write your problems on this sheet and have Tom in Group IV check your Worksheet.
The salary per month you are using is $200.00. Get this money from Tom. What is your salary per week, using four weeks to a month? 
________. Example: $400.00 Answer: 

The fractional parts of your weekly salary used for the items on your budget are:

1/4 Shelter, gas & light = 20
1/4 Food = 20
1/5 Clothing = 20
1/10 Savings = 20
1/20 Pleasure = 20
1/10 Carfare or Automobile = 20
1/20 Extra Bills = 20

Change the above fractions to twentieths, as you were taught last week. Example: 1/4 = 5/20 4/20 = 5/20

Now change these fractions to decimals, as you were taught last week. Example: 5/20 = .25 4/20 = 20/4.00
2/20 = 20/2.00 1/20 = 20/1.00

Now, using these decimals or percentages, find how much of your weekly salary is used for each item listed above.

Example: $50.00 total weekly salary
.25 (percent of weekly salary used for food each week)
250
100
$12.50 (must be placed in food envelope each week)
Worksheet - Group IV, cont. (Budgeting)

Using this sample, work out by decimals the amount you would use for each item each week, and place the answers in the blanks below:

<table>
<thead>
<tr>
<th>Shelter</th>
<th>Clothing</th>
<th>Savings</th>
<th>Pleasure</th>
<th>Carfare</th>
<th>Extras</th>
</tr>
</thead>
</table>

If you add up all the fractions after you change them into twentieths, you should get 20/20, or one unit. Try this.

If you add all the decimals you should get 1.00, or one unit. Do this.

You spend the following money this week. Place these amounts in the right column in your budget book. How much do you have left in each envelope? Mark the amounts you have left in the blanks below:

- Belt ........... $1.00
- Gasoline ........... $1.03
- Stockings ....... .60
- Movies ............ .25
- Gas bill ........ 1.25
- Savings ........... 2.00
- Light bill .......1.25
- Doctor bill ....... 2.00
- Car pass ....... 1.25
- Groceries ........ 5.00

<table>
<thead>
<tr>
<th>Food</th>
<th>Clothing</th>
<th>Shelter</th>
<th>Savings</th>
<th>Carfare</th>
<th>Pleasure</th>
<th>Extras</th>
</tr>
</thead>
</table>

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Weighing and Measuring

"Quantity, amount, size, space, distance, time - what do these mean to slow-learning children? A child may glibly recite about pints, quarts, bushels, pounds, tons, feet, yards, miles, etc., and still have no known points of reference for these terms. Has he experienced these measures in concrete situations, so that by constant association and comparison he knows what is represented by the facts he deals with? Does he know about how much bulk a ton of coal represents? Has he seen the school bin which holds ten tons? Does he think of this as ten times as big as the one-ton bin at his home? How high is the school building or his home? Can he look at other buildings and compare their heights with that of the school building or the terminal tower down town? Is the concept of twenty feet for the child so clearly identified with the size of his room that he can think of the school auditorium which is two hundred feet long as ten times as wide as his own room, or the house forty feet long as twice the length of his room? What familiar place or building represents to him a space one hundred feet long - what playground or park or apartment house for example? What is his concept of a mile? Has he walked a mile enough times to have a vivid experience from this standpoint? Has he measured the time it takes him to walk to school each morning?"

"Concepts of units of measure and weight cannot be applied by all slow-learning children, but much can be accomplished in this direction with the development of these concepts, if they are not made purely a matter of verbalistic or chance acquirement. If there were specific teaching toward the development of such concepts and their meaningful application, beginning with the actual measurement and weighing of small quantities of material and later, at nine or ten years mental age, extending to interpretation of experience with larger quantities, many slow-learning children could gain satisfactory ability in interpreting the world of quantity, space, and distance". 4

Let them weigh heavy materials in the classroom and note the difference between five pounds, ten pounds, etc. Encourage them to know that 90° is twice as hot as 45°, and that certain common household instruments, such as stoves, thermometers, furnace clocks, and refrigerating dials, measure temperature, while bathroom scales measure weight. Let them see that John weighs 100 pounds and that Tom

weighs half-again as much. Then we can really hope for meaningful understanding of these concepts.

Groups I and II participate in the Weighing and Measuring Unit as follows:

1. Measure height, having place in classroom marked in inches and feet for this purpose. Members compare personal progress charts with those of other students.

2. Weigh themselves on scales provided, comparing personal record charts with those of other students.

3. Guess heights of buildings, trees, ceiling, etc., to get concept of heights of varying dimensions. Try to compare with their own heights.

4. Use various measures - bushel, half-bushel, pint, and quart baskets, to gain concept of different amounts. Fill them if necessary with a variety of materials.

5. Use rulers, made in class, and gradually introduce yardsticks and other instruments of linear measure - folding rules, tape measures. Use these in practical situations in classroom, such as building bank front and grocery store.

6. Use measuring cups, quarts, pints, and drugstore bottles to get comparisons.

7. Transpose quarts to pints, to bushels, to gills, etc. Transpose inches to feet and yards.

8. Group II members may be able to use 6" metal industrial rules.
and perhaps learn thermometer readings. Some may master use of micrometer, but this would be rare in Group II.

Groups III and IV would participate in this Unit as follows:

1. Learn or review concepts of height, weight, quantity. Act as student-aids in teaching these to Groups I and II.

2. Transpose actual measurements in feet, yards, inches and millimeters, from one unit of measurement to another. Review concept of twelve inches to a foot, three feet to a yard.

3. Measure rooms, grounds, walls and other areas in terms of coverings, such as rugs, linoleum, lumber. Carry responsibility for measurements for bank front, grocery, and other construction projects in classroom. Measure rooms at home and report some practical use of their measurements.

4. Measure and learn use of board feet to correlate with Industrial Arts woodworking projects and for purchasing lumber. Figure costs and amounts.

5. Determine temperatures and learn something of concept of why hot glass dishes break if cooled too rapidly. Learn something of concept behind tempering of metals.

6. Utilize concepts learned to make poles for draperies for windows as girls construct draperies.

7. Girls to carry concept of measuring to purchase of cloth for home economics projects.
Necessary Materials

Bottles, baskets, measuring cups of all sizes.

Measuring instruments - 6", 12" rules, yardsticks, tape measures, calipers, metal tape measures, micrometers, gauges.

Scales, thermometers, meters, clocks, furnace gauges, refrigerator dials, thermostat wheels.

Suggested Worksheets for Weighing and Measuring Experience-Unit follow.
Tonight when you go home, take your yardstick and measure your room.

How many yards do the sides measure? 

Next, measure around the base of your father's garage, and mark the length here 
Mark the width here 
Guess how high it is, and mark that here 

How much taller do you think the school building is than your father's garage? 

Weigh yourself on the scale at school or at home. What do you weigh today? 
How much more do you weigh with your coat on and your books under your arm than you weigh without them? Place the figures on the lines below:

 pounds with coat on and books under arm.

 pounds without coat and books.

 Subtract. This is what your coat and books weigh.

Find out how much John weighs and place it here .

Place your own weight here 

Subtract to find which is heavier and how much .
Worksheet - Group II

Date __________________________
Name __________________________

Use the scale at school and find out how much John, Mary and Peter weigh, and put their weights on these lines:

John ______
Mary ______
Peter ______

Add these figures. How much do they weigh together? ______

Measure your kitchen at home tonight, and put the length here ______. Put the width here ______. If you want to find out how much mopboard it takes to go around the room, you add the width twice and the length twice, so that it will go all around the four sides. How much does it take to go all around? _________.

Mark the sides of this little square to show how much your kitchen measured on each side:

[Square diagram]

Are all the sides the same? ______ Are only two sides the same? ______

Pour water from a full pint milk bottle into an empty quart milk bottle. How many times do you have to fill and empty the pint bottle into the quart bottle to fill the larger bottle? _________.

This will tell you how many pints go into one quart.
Worksheet - Group III

Date ____________________________

Name ____________________________

Group III

Weighing & Measuring

When you go home tonight, place a thermometer in the icebox. Leave it there about twenty minutes. How cold was it? ________.

The next time your mother has the oven going, ask her to put an oven thermometer in the oven if she has one. How hot did the oven get? ________. Can you tell by the highest figure on the thermometer the hottest temperature it will measure? ________.

Ask the teacher for a micrometer and calipers to take home. Tonight, measure a pencil ________, the thickness of a spoon handle ________, a cigarette, cigar, or your father’s pipestem ________. Place the measurements in the blanks above.

Measure the longest side of your bedroom with a yardstick. How many yards did it measure? ________. How many feet would this be? ________.

Measure your kitchen table, or the sink from top to bottom, with a 6” ruler. How many inches did it measure? ________. How many feet would this be? ________. How many yards? ________.

Fill your mother’s measuring cup with water to the 1 cup mark. Then pour it into a coffee cup. Does the coffee cup hold exactly one cup of water? ________ More? ________ Less? ________. How fill the measuring cup again to the 1 cup mark and pour it into an empty quart milk bottle. Do the same thing over until the bottle is full. How many cups did it take? ________. How many cups would be needed to fill a pint milk bottle? How much more than a pint does a quart bottle hold? ________.

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Worksheet - Group IV

Date ____________________________
Name ____________________________

Group IV

Weighing & Measuring

Take a thermometer and place it outside overnight. What did it read after an hour? _______. What did it read next morning? _______. How much change was there in temperature overnight? _______. Now place the thermometer in the icebox and leave it there until you come home from school. How cold was it in the icebox? _______. What is "freezing" temperature in degrees? _______.

If your mother has a thermometer attached to the stove, called a "Thermostat", what does it do? ________________________.

Measure your kitchen with a 12" ruler. What was the width? _______. What was the length? _______. Do you know from these two measurements how to figure how many square feet of new linoleum you might need? If you know, place it here _______. If you do not know, multiply one of these figures by the other, and place it here _______. Now divide this figure by 9 to get the number of square yards _______.

Ask the teacher for a micrometer and calipers to take home. Tonight, measure with the micrometer the following things: Electric cord _______: Nail _______: thickness of cake tin _______. Now measure these same things with the calipers.

Read the electric light meter. What did it read? _______.

Read it again two days later. What did it read? _______.

Subtract _______.

That is the number of watts of electric current used in two days.
Insurance

This Unit is very important to these slow-learners who are faced with insurance problems after they leave school - industrial insurance, demanded by many firms, life insurance, lauded to the skies by salesmen, as well as many other policies so cleverly publicized in advertising. These slow-learners are most susceptible to the pressures of salesmen, perhaps because of the lack of security which they seem to exhibit. They must be given general information for practical use.

This Unit should inform students concerning different types of insurance available: automobile, life, annuities and endowments, accident, fire, theft, Workmen's Compensation, Industrial Group plans, Social Security and Hospitalization. Careful attention must be given to the explanation of each type of insurance in terms understandable to these children. It is most important that these students, some of whom will purchase automobiles, even though their budgets may not provide for them, learn that they must protect themselves and others by automobile insurance. It can be explained that in some states this is law, and the reasons for such laws. Give a hypothetical case of an accident in which the responsible person was not insured. Put the students in the position of this responsible person, and explain what lack of insurance meant to him.

It is mandatory that they understand their rights regarding periods of unemployment, during which they are entitled to Unemployment Insurance, and the conditions under which they are so entitled. The same is true of Workmen's Compensation. Some student might here
relate his father's experience with Unemployment Compensation or Workmen's Compensation.

Insurance may be presented as a means of saving money, and the purchase of Government Bonds might well be explained at the same time, as savings and a form of insurance.

When teaching this Experience-Unit, it is valuable to have a representative from some insurance company come in and explain to the class the value and the purpose of insurance. Before his lecture, however, he should be apprised of the abilities of these children, and of their peculiar needs. Vocabulary drill on words is a necessary adjunct to this study.

All Groups should participate in this Unit to as great a degree as possible. Many will not be able to read the Worksheets, but class discussion will supplement these and provide common experience for Groups I and II when they cannot read the materials.

Necessary materials

Sample Government Bonds

Sample policies of all kinds

Unemployment Insurance forms as displayed by law by employers.

Worksheets for this Unit primarily provide reading material with questions appended if desired. Perhaps verbal discussion only is more beneficial than use of Worksheets in presenting this material, depending upon the abilities of the group. Sample Worksheets follow.

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Worksheet - Insurance

(To be adapted to all four Groups)

You buy a life insurance policy for $1,000.00. Pretend that this policy costs you $24.00 a year. The Insurance Company will explain when it sells you the policy that you can pay it once a year, twice a year, each month, or four times a year. If you pay it four times a year, it will cost you $6.50 each time. Add this up four times, or multiply by 4, and you will see that by paying it four times a year, the policy will cost you $26.00. If you paid this all at once it would cost you only $24.00. What you are really doing when you pay more than once a year is that you pay interest on the insurance company's money, because if you paid it all up at once they would have your money and would not have to use their own.

You buy Hospitalization Insurance to take care of expenses for you if you get sick and must go to the hospital. This insurance costs you about $10.00 a year for a bed in a ward with other people. Let us say you paid this policy for three years. How much did this cost you? _______. Now let's pretend you had to go to the hospital, and when you were well again you had a hospital bill of $100.00. If your hospital insurance company paid this bill, how much did you save by having the hospitalization insurance? _______

Some hospitalization insurance pays only the hospital bills - your room and meals at the hospital, and some other services. You pay the doctor. Other policies include the doctor's bill too, but you pay more for those policies. You must choose the kind you want.
You can also get one policy that covers the whole family. It is a group insurance that way; if three persons in your family should have to go to the hospital all in one year, all three persons would have their hospital bills paid by the insurance company – you would not have to draw on your savings.

Hospitalization Insurance is very fine protection for persons who live alone, for even if they are only sick and do not need an operation, they can go to the hospital and get care by using their insurance.

Questions to answer: Make a check mark over "Yes" or "No".

1. All hospitalization insurance policies pay hospital bills, doctors' bills, and other expenses when you go to the hospital.

   Yes  No

2. Can you get hospitalization insurance for your entire family?

   Yes  No

3. Can you use hospitalization insurance if you are just sick and need care because you cannot get out of bed?  Yes  No

4. Can you get hospitalization insurance that will pay doctors' bills besides all hospital bills?  Yes  No

5. Do hospitalization insurance policies pay money if a person dies?  Yes  No

Give one reason why it is a good thing to have hospitalization insurance:______________________________________________
Worksheet - Government Bonds

A Government Bond may be purchased for $18.75, $37.50, or $87.50. If you keep these Bonds for ten years, you will receive $25.00 for the $18.75 bond, $50.00 for the $37.50 bond, and $100.00 for the $87.50 bond. So, on the $18.75 bond you make $______. On the $37.50 bond you make $______. On the $87.50 bond you make $______. This money which you make on the bond is the interest which the government pays you for letting them use your money for the ten years.

If you cash these bonds in before the ten years are up, you do not make the same amount of money. On the back of each bond is a list showing the amount you will receive for your bond if you sell it before the ten years are up. Look at the bond on the bulletin board and mark in this space how much you get for an $18.75 bond if you hold it only five years _______. How much if you hold it eight years? _______. How much if you hold it six years? _______. What is the difference between the amount you would get on this bond if you held it ten years instead of five years? _______.

Government Bonds are a good way to save money when people are not rich. When you buy bonds you are buying an interest in your Government. During the war your government was able to buy materials to win the war by using the money which people loaned the government by buying bonds.

Bonds should be cashed in only when you have a money problem which you cannot meet any other way. Remember, too, that if you lose a bond it can be cashed just like a dollar bill, so keep your
bonds in a very safe place. Federal Reserve Banks will keep your bonds for you for nothing, or you can put them in a Safe Deposit Box. In case you lose a bond, go to the Postoffice or a Federal Reserve Bank immediately, and ask them what to do. Keep a record of your bond serial numbers, and take the number of the lost bond with you when you go to report it lost. Serial numbers are printed on every bond you buy. Look at the sample bond on the bulletin board. What is the serial number? ______.
Taxes

The Tax Experience-Unit should teach as much as these students are able to absorb about taxes with which they will be confronted in their daily life. Withholding taxes, how they are taken out of salaries, and for what purpose; the relation of withholding taxes to Federal Income Taxes. They should thoroughly understand the difference between their "take-home" pay and the pay they are offered when they are hired for a job. They should be taught to keep a record of these withholding taxes which are taken from their pay, even though the employer is required by law to give them this information yearly.

All the students should be taught to ask the advice of the Income Tax Collector (Collector of Internal Revenue) in their community if they must make out income tax returns.

Sales Tax Stamps, their cost and use, should be briefly explained. They should be informed about "hidden taxes", taxes on gasoline, cigarettes, liquor, etc. Show them tax stamps on cigarette packages, perfume bottles, and movie tickets.

Groups I, II, III and IV will all participate in this Unit in accordance with their ability to assimilate the information. Considerable discussion of this Unit is necessary in preparation for any worksheet problems.

Necessary Materials

Sample income tax forms, personal property tax returns, sales tax stamps, withholding tax slips, cigarette tax stamps, etc.
Worksheet - Taxes (To be adapted to all Groups)

Date ____________________________  Group _____

Name ____________________________  Taxes

Your total salary is $200.00 per month. You have no exemptions because you aren't married, nor do you have children, so you pay 1/5 of this amount (20%) for withholding taxes each month. What would you pay for withholding taxes each month? This sample problem will show you:

\[
\frac{\$200.00 \text{ monthly salary}}{\times 0.20 (20\% \text{ of salary})} = \frac{\$40.00}{\$40.00 \text{ Amount of tax each month}}
\]

What would you have to pay in withholding taxes per month if you earned $300.00 each month? Do this problem here:

Sales Tax on each dollar you spend is 3%. If you buy a new coat for $60.00, what Sales Tax would you have to pay? Work out this problem:

\[
\frac{\$60.00 \text{ for new coat}}{\times 0.03 (3\% \text{ of } \$1.00)} = \frac{\$$1.80}{\$1.80 \text{ Sales Tax on } \$60.00 \text{ coat}}
\]

Add the Sales Tax to the cost of the coat, and what did the coat really cost you, including the Sales Tax? _______

If you buy furniture for $150.00, what Sales Tax would you pay? _______. How much did the furniture really cost you? _______

The next time you go to a movie, look at the stub before the ticket-taker tears it in two. What did it really cost? _______. How much of this was Amusement Tax? _______

List here two "hidden taxes" ______________ ______________
Correlation of Mathematics Course of Study with Other Subjects

"There will undoubtedly always be going on in a class work that is unrelated to the unit or that must be thought of as only supplementary to it. The need for periods devoted to the development of important specific habits, attitudes, and skills has already been noted. There is also the continued need for inculcating hygienic practices and for providing opportunity for games and rhythm and for the development of enjoyment of music and stories. There will also be activities evolving from the need to utilize incidental happenings in the life of the class. There may also be handwork, home economics, or shop work going on that has developed from real needs that are not a part of the unit. John's mother may need an ironing board; the girls' class may be asked to make curtains for the kindergarten or may be planning and serving meals for teachers' luncheons. There are usually nature observations also being carried on - of the weather; the arrival of the early birds; the growth of bulbs, seeds, plants; and other features of the natural environment. The teacher must therefore make provisions for necessary supplementary activities when she plans a unit. The unit will not comprise all the activities of the pupils' day or develop without interruption".5

English, Social Studies, Reading, Writing, Industrial Arts, Home Economics, Art, Science, and Character Education are subjects which can and should be correlated in a natural manner in developing any of the Experience-Units outlined in Chapter III. Some suggestions follow:

**English:** Letters of appreciation; letters requesting samples; letters enclosing checks; reading simple information pamphlets or work sheets, or mimeographed material adapted to the individual's reading vocabulary; verbal reports of field trips. Discussion of movies witnessed, development of vocabulary, punctuation, grammar. Student introduction of speakers to the group. Library usage.

Social Studies: Discussion of transportation; communications; telephone, telegraph, radio; sales tax study; withholding tax study; study of Government Bonds; Government control of banks (Civics); Banking, study of the Mint, foreign exchange. Discussion of school government, student councils, patrols.

Industrial Arts: Construction of bank and grocery store; Christmas gifts; decoration of simulated bank and grocery, or of classroom.

Home Economics: Study of foods and nutrition; budgeting; meal planning; utility bills; table service; care of children; household equipment; measuring units.

Art: Decorating, painting, printing for Experience-Unit facilities; coloring of forms; price tags; advertising; window displays; Christmas gifts; leisure-time activities; construction of games and devices.

Science: Study of plant and animal life cared for in classroom.

Sex problems and growth problems; measurements.

Character Education: Teamwork, sportsmanship, ethics, cooperative attitudes, habits of cleanliness, responsibility to Government, attitudes on sex and marriage.

The imaginative teacher will find the opportunities for the development of subjects of allied interest so numerous that he will be unable to take advantage of them all. Maintaining a home, transportation to and from work, daily living problems, social and recreational problems, all become natural outgrowths of this work.

The amount of time to be spent in the development of these Units
cannot be estimated, since all groups vary in ability, time spent in other classes, and in individual requirements. Complete latitude must be vouchsafed the special class teacher to permit each individual to proceed at his own learning rate. The special class teacher will find that in all classes will appear individuals in whom exist "valleys" of deficiency corresponding to the "peaks" of ability mentioned previously. In these cases it is important that the individual not be given work in which he will inevitably fail. Rather, he should be encouraged to concentrate on other Units in which he will find success. It must be remembered that the philosophy of Special Education is to emphasize success and to stress those areas where the students "do well", and to minimize occasions for repeated failure.
CHAPTER IV

GAMES, DEVICES, AND DRILL TECHNIQUES

To provide opportunity for repetition of fundamental arithmetical skills in a play atmosphere is essential for the slow-learning child. The following sample games and drills, properly planned and supervised, serve both to aid retention of these skills and to present opportunities for the introduction of ethics, team spirit, sportsmanship, and social responsibility.

Numbers Game No. 1

Purpose: To provide simple drill in numbers identification, addition, subtraction, multiplication and division, in digits 1 to 100.

Procedure: Two large circles are drawn on the blackboard, and numbers from 1 to 100 are drawn within the circles at random, as illustrated in Fig. 2. Two teams are chosen, so arranged by the teacher that members from the same group come up simultaneously on both teams. One team forms before each circle. The teacher then asks a drill question adapted to the abilities of the contestants first in line. The first of the two contestants to solve correctly the problem scores "1" for his team, and both parallel members of the teams take their places at the ends of the lines. A member of Groups I or II should be scorekeeper, to provide individual drill in simple addition, and the task of keeping score should be rotated at short intervals.

Example: If two team members are from Group I, use a simple problem, such as: "Pick out No. 10". Two Group IV members might be asked: "Divide 100 by 4".
Fig. 2—Diagram for Numbers Game No. 1
Numbers Game No. 2

Purpose: Drill in addition, subtraction and multiplication, digits 1 to 10. (Primarily for use of Groups I and II).

Procedure: A large circular piece of cardboard, superimposed by a smaller rotating circle of cardboard, to be constructed by the students. Numbers from 1 to 10 are placed on the outer edge of the rotating disc and on the adjacent area of the base cardboard, so that numbers are parallel, as illustrated in Fig. 3. If a two-man team is playing, one member spins the disc and the other add, subtracts, multiplies, or divides given numbers, the problem to be designated by the teacher in accordance with the ability of the participants. In a two-man game, it is more effective to have members of Groups III or IV rotate the disc for members of Groups I and II, to verify the answers, and to aid in teaching helpfulness and social responsibility.

If an oversized disc is constructed to hang at the front of the room, the entire class may participate actively, with the teacher stating the problem and calling upon the individual, thus providing competition among members of the Groups.
The Chart
As the center circle rotates we have -2x2; 3x2; 4x2; etc. Also, we might have 2+2; 2+3; 2+4; etc. Many possibilities for subtraction exist also with this chart.

Score
A 3
LH 1 LH 1
LH 1 LH 1
LH 1 LH 1
LH 1

Fig. 3—Diagram for Numbers Game No. 2
Fractions Game

Purpose: To teach fractions. (Primarily designed for Groups III and IV).

Procedure: A large circle is drawn on the floor with chalk, segmented four to ten times, as illustrated in Fig. 4. The teacher selects individuals from the Groups to fulfill such requests as:

"Erase 2/5 of the circle".

This game is an excellent introduction to the Experience-Unit of Budgeting, since the subject is taught on the basis of fractions of income.
Fig. 4—Diagram for Fractions Game
Arithmetical Baseball

Purpose: Drill in addition, subtraction, multiplication and division.

Procedure: A "pitcher" is chosen for each of two teams, and the game proceeds in innings, as in baseball. The "pitcher" pitches a problem in oral addition, multiplication, subtraction or division to the "batter" on the opposing team, and each correct answer merits a first, second or third base. If the team "up to bat" answers four successive pitched questions, one run is credited to the team. Whenever three students on either side fail to answer their questions, their team is "struck out", and the other team comes up to bat, or has its inning. The game may be divided into innings in such a manner that the first two innings would be addition questions, the next two subtraction, etc. An "umpire" is chosen to keep the scoreboard, set up to simulate a baseball scoreboard.

This game is easily adaptable to football, basketball, or other seasonal games which appeal, with necessary changes in goals and intervals.
Shuffleboard

Purpose: To teach addition, recreational skill, and develop coordination.

Procedure: A shuffleboard may be drawn on the floor. Any type of wooden disc and "shovel" may be utilized. Members of participating teams may be designated score-keepers.

Bowling

Purpose: To teach addition, recreational skill, and develop coordination.

Procedure: A small bowling set may be kept in the classroom. Construction of backboard for pins may be utilized as a project at the time one of the Groups is learning measurements, and may be correlated with the Industrial Arts program.

Miscellaneous Games, Devices and Drills

Purpose: To teach or review fundamental skills; identification of numbers, letters, colors, simple addition, subtraction, multiplication, recognition of pictures and titles.

Procedure: Counting of bills, change, chalk, pencils, blocks, number of pages read in readers, number of pupils in class, number of brothers and sisters. Scoring of games on playground and in classroom. Use of flash-cards (see Figs. 5 and 6).

Flash-cards with equal or unequal numbers of stars, letters, digits or pictures on each half are effective drill devices for simple counting and number recognition (Fig. 5). These flash-cards may be used as a scored game for two or more children to stimulate
drill. Similarly, unrecognized words with pictures may be used, and words, with or without pictures, may prove effective devices for the very slow groups (Fig. 6). Example: "John, how many "G"s are on each half of the card at which you are now looking"? Or, "Mary, how many of the word "Bond" appear on each half of this card"? Recognition of colors may also be taught with these cards if this deficiency exists, by coloring the cards differently. Multiplication, division and subtraction flash-cards may also be used.

Most card games, Bingo, Lotto, Flinch and Dominoes, are excellent for number recognition for Groups I and II. Parcheesi, or other games entailing movement of discs a certain number of spaces, may be employed in teaching simple mathematical routines.

The benefits which students derive from games, devices and drills, both in mathematics and in knowledge of social attitudes, depend to a great extent on the ingenuity and interest of the special class teacher. The students themselves react with enthusiasm to the competition, and to the alert teacher, opportunities for lessons in teamwork, sportsmanship, and ethics appear in myriad form. All these habit patterns can be carried over into gymnasium classes, recreational activities, and serve to teach those social attitudes stressed by both employers and teachers as of great importance, and so often lacking in a group of this nature. (See Chapter I).
Fig. 5
Word and Related Picture Cards

Unrecognized Word Cards

"New" Word Cards

Fig. 6
CHAPTER V

FOLLOW-UP SURVEY

To check the efficacy of the Course of Study to some degree, a Questionnaire was administered as a Follow-Up Survey to the original class of slow-learning children shown in Table I, pp.99 and 100, six years after the group had left school. This Questionnaire is included on pp. 95-98 as Exhibit I.

Although from a scientific standpoint this Follow-Up Survey may leave much to be desired, it is nevertheless significant in terms of making improvement on the original Course of Study. Its results consistently agreed with the much more valid results of studies of larger groups of slow-learning children reported by V. V. Anderson and Flora M. Fearing, from the standpoint of types of occupations pursued by these students.

The Questionnaire revealed that of the twenty-two students surveyed after a six-year period, five (one a female) held skilled jobs in industry, eight held semi-skilled jobs, and two laboring jobs. Three were in domestic service, two had chosen the Armed Services as careers, and both were doing semi-skilled work, and two were unemployed. The three domestics and the two unemployed were females.

The range of weekly starting salaries was $5.00 to $38.00, and the range of salaries at the time of the Questionnaire, six years later, was $15.00 to $57.50. This gives evidence of the individual adjustment of these twenty-two slow-learners as independent citizens.

The two who were unemployed were not dependent upon public funds, having been supported by parents, and gave every evidence of having been provided for in case of the parents' deaths.

Since considerable time had been given in the class to the avoidance of indebtedness, it was interesting to note that nineteen had no debts. Three had debts, but questions evidenced their ability to pay rapidly on an installment plan, emphasizing the need for including a study of installment purchasing. All, with the exception of the two unemployed, reported that they were able to live on their salaries, without help from relatives or other sources. Six had purchased automobiles, and of these, five had completely paid for the cars. The other owed a very small amount. All but seven of the twenty-two maintained small savings accounts, either under their own names or jointly with relatives. One girl had assisted a parent in the purchase of a home. The remainder were paying room and board, or rent.

Only two of the group maintained charge accounts, both at grocery stores, and in these two cases bills were being paid weekly, in full. Eight had purchased Government Bonds. We see, then, a very stable economic picture for these twenty-two young people.

The balance of the Questionnaire had to do with questions concerning the retention and practical use of the mathematics which had been taught in the special class, with emphasis on the Experience-Units presented in Chapter III. All reported familiarity with banking procedures, particularly savings accounts, since none had a checking
account, and reported that they remembered the processes involved in banking from their classwork. Of the sixteen who reported on Budgeting, eleven maintained a simple type of budget and five did not. All stated that they recalled the method of budgeting learned in class, and the eleven who maintained budgets were administering them in the manner taught. None reported difficulty in counting change, or in handling their own financial affairs. In answer to the question, "Did the Mathematics you learned in school help you?", seventeen answered "Yes", (most of them indicating emphatic confirmation) and the remainder of the group were indefinite in their replies.

All but four recalled vividly the games which were used for purposes of drill, emphasizing the importance of repetition and drill through games.

Suggestions for additional mathematics cited by the group itself included: Fractions (5); Long Division (2); Algebra (2 - both skilled workers in industry); Geometry (1 - skilled pattern maker); further knowledge of technical measuring instruments, such as micrometers, calipers and gauges (4); the remainder (8) stated that they had learned sufficient mathematics for their occupational and social needs.

Both Algebra and Geometry proved too difficult for any member of the class, although the three individuals who suggested further education therein were not cognizant of their inability to master these concepts. Normally, these individuals would not be required to use these skills. It was ascertained that these suggestions arose from
the fact that employers had refused promotions to desired jobs on the basis that Algebra and Geometry were required in those jobs.

On the question of Social Security, twelve understood the principle, three carried Social Security but did not understand it, and three were in occupations not requiring it.

Of the seventeen who reported on taxes, none had income sufficient to require payment of income tax (this survey was made before the advent of the withholding tax) and all who had completed forms for this purpose had sought the proper source for help.

Fourteen of the twenty-two traded primarily with chain stores.

Leisure-time activities utilizing mathematics were reported as follows: Games (5); Cards (11); Bowling (3); Movies (1); one reported Gambling.
CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

A survey relevant to the expectations of employers who would eventually hire these slow-learners, as well as a study of the present and future needs of special class students from a community standpoint, elicited suggestions which have been incorporated in the Course of Study.

It has been suggested that a further survey be made of this group after the lapse of another five years, to determine vocational and social status attained with greater maturity, to determine the group's individual objectives, and the plans which they may have made for security during possible depressions and for old age.

The materials, subject matter and worksheets outlined cannot, of necessity, be used in their presented form, but are intended as a suggestion to the teacher, for adaptation to individual needs. The sample worksheets are intentionally comprehensive to present as many ideas as possible for the teacher, who must adapt them to the achievement levels of her particular group, and the individuals within that group.

Because of the apparently excellent retention of fundamental mathematical skills accomplished through the Games and Devices, additional techniques for drill have been incorporated in Chapter IV. Only a minimum of suggestions has been made for the correlation
of other areas of subject matter with this Mathematical Course of Study, since it is believed that the suggestions included will prove adequate as illustrations for the interested teacher. Dr. Charles Scott Berry says: "in teaching mentally retarded children, variety of methods can be used to good advantage. The so-called 'best method' of instruction is merely a method that has proven satisfactory in more cases (but not in all cases) than any other one method. When this method does not work, try some other method. In teaching mentally retarded children, there is no substitute for resourcefulness on the part of the teacher. . . . The mentally retarded child who can count, measure, weigh, and make change rapidly and accurately has as much knowledge of arithmetic as he will ordinarily have occasion to use". 7

Although but few Experience-Units have been outlined in this Course of Study, these will be found adequate for the average slow-learning group.

As instructor of this group, the writer emphasized the importance of seeking competent guidance in all matters in which these young people might feel inadequate. It is interesting to note that, although the writer has been in the military service for three years, and has since changed to another guidance position in the same city, at least five of the original class group have been in more or less constant contact with him since his return, for the purpose of discussing such problems as Veterans' benefits under the On-the-job Training Program, purchase of property, financial matters, and marriage. Three others corresponded regularly with the writer on personal problems during his period of military service.

7Berry, Charles Scott, Public School Education of Mentally Retarded Children, Ohio State University Press, 1933, p. 21.
"Obviously, the school has an important work to do in instructing mentally retarded boys and girls...where to secure reliable information and disinterested advice, and how to use to best advantage the free services provided by the community".8

The major emphasis of this entire thesis is on the philosophy of educating slow-learning adolescents, and the recommendations which follow present suggestions for the administration of slow-learning special classes in the secondary schools.

Recommendations

Foremost among the recommendations for the improvement of special education in the secondary schools is that of inculcating new life into the philosophy of educating exceptional children. A philosophy of the "stepchild" variety on this subject, where it exists, must be replaced by a dynamic philosophy based on the urgent necessity of fitting these children for a satisfying and contributory life in the community. From this group, very often, come the delinquents, the ne'er-do-wells, the drifters, the young people who doom themselves to failure through lack of proper guidance and supervision — all those who eventually become dependent upon society.

These recommendations are based upon a study of special education over a period of fifteen years. They form in the writer's mind the minimum steps necessary for consideration by special class administrators to fulfill their responsibilities to these children, whose futures, in many cases, rest with the special class teacher.

8 Berry, Charles Scott, Public School Education of Mentally Retarded Children, Ohio State University Press, 1933, p. 22.
Recommendations have been segregated in areas of similarity for convenience.

Selection of Students for Special Classes

Under the criteria already set up in the State for selection of students for special classes, the following minimum requirements should be established in every school district, with such modifications and ingenuity as the individual situation may require.

1. Administration of tests to determine Intelligence, Aptitudes, and Personality Problems, by school or State psychologists, to every child recommended to the special class by teachers, administrators, visiting teachers, attendance officers, guidance counselors, or any other person qualified to so recommend a child.

2. Medical examination of all such referrals to determine defects of hearing, sight, speech, or any other deficiency in the medical area, and prompt referral for correction of the defect.

3. A staff conference on all accepted special class students, the conference to include all persons in the school interested in child study and development - the supervisor of such work, psychologist, visiting teacher, public health nurse, guidance counselor, principal, teachers of regular classes which the child will attend, and the special class teacher. The purpose of the conference is to acquaint all interested persons with the problems which the child presents, to acquaint them with the long-term plan for vocational and social education which he is to undergo, and to secure the
coordination of all activities through which the child will benefit on his way to useful citizenship.

4. Succeeding this staff conference, the special class teacher or supervisor should hold a conference with the child's parents regarding his placement, explain the needs and abilities of the child, and the value and necessity of parent cooperation. The parent should be given an understanding of the long-term plan for the child for vocational guidance, prognosis, and an outline of how the parent may assist the teacher. In such cases where the home environment is irrevocably detrimental, all possible steps should be taken to remove the child from the deterring environment at once.

5. If the child is of an older and more responsible age group, a conference should then occur between him and the special class supervisor or teacher. This person should of necessity be one who holds the respect, affection, and faith of the child. The latter must face his problem realistically and be made cognizant of the need for his cooperation, and the help which the special class can give him.

6. Those children who have been placed in the special class for temporary help to assist them in regaining the achievement level parallel to that of regular class groups should be carefully earmarked for special checking, and returned promptly to such regular classes upon evidence that the difficulty has been surmounted. In this category may be found those children with reading difficulties,
aphasics who are becoming gradually rehabilitated, and some psycho-
logical personality problems.

7. Despite the earnest and continuous effort of many responsible
persons, the pernicious tendency to "dump" incorrigible children into
the special class exists in many school systems, and is an indication
of nothing less than irresponsibility and failure on the part of those
responsible for the practice. Only those children of slow-learning
capacity and those with disabilities of other sorts which prevent
their achievement on a level with regular classes should be referred
to the special class. Any other action fails of proper guidance.
both toward the incorrigible child and toward the child of inferior
ability.

Nomenclature of Special Classes

The special class should not be saddled with a designation
which stigmatizes these children and adds to the social problems
which they already face. Since almost any distinguishing name, such
as "Opportunity Class", "Immature Class", "Experimental Group", or
even "5-X", becomes opprobrious through such use, it is recommended
that the class be termed in some such fashion as "Pre-Vocational
Course", to parallel Industrial Arts, Academic, or Commercial Courses,
common to all secondary schools. By its nature, such a designation
should stimulate a sound course of study for the vocational guidance
of these children, realistically the primary purpose of the special
class.
Curriculum

Specific courses of study such as that recommended in this thesis must be designed to meet individual needs, but in general, these courses should be so designed that the following requirements be fulfilled:

1. All special class students to attend regular classes whenever the achievement level of the latter can be reasonably maintained by the student. Shop, Physical Education, Music, Art, and Extra-curricular activities are examples. Many of these children have "peaks" of ability in which they equal, or even transcend, the abilities of other regular class students, and it is of supreme importance that these "peaks" be recognized and given full scope. If this is not accomplished, the school has failed in its responsibility, since these "peaks" of ability may well form the basis for outstanding success of the child, and failure to recognize them may be the cause of his ultimate complete, and unnecessary, failure.

2. All teaching of fundamental skills in reading, writing, arithmetic, speech, social studies, science, etc., be based on typical, realistic experiences which these children encounter day by day. The "seeing-doing" method, so effective in regular classes, is essential in these special classes. Each experience problem in mathematics, reading, writing, etc., must be closely integrated with such areas as hygiene, social amenities, cooperative attitudes with students and adults, and school and community consciousness and pride.
Grading, Promotion, Certification, Records

The special class student should not be deprived of the opportunity of promotion, nor of that of graduation, when the scaled assignment requirements have been met. It may be necessary to have graduated groups of special classes to permit promotion from one group to another. In accordance with the grading and accomplishment plan set up for different ability levels, a child who has attended the proper length of time and who has met the assignment requirements with relation to his ability, should be granted a standard graduation certificate or diploma testifying to his application and effort, until such time as the State may take action on a distinctive certification for these students.

Progress notes on all special class students are essential for use by guidance personnel and for purposes of recommendation to employers. All teachers to whom the child reports for class should note the areas in which the child does exceptionally well, for those purposes. Earmarking of grades for slow-learning children should be done only on permanent records which are confidential to school authorities, never on "carry-home" report cards. Regular class teachers may disagree with this philosophy, but it is important that the slow-learner's reports do not differ from those of his fellow-students.

Guidance and Follow-Up

An intelligent, continuous and practical guidance program should be placed in operation under the supervision of a trained, well-
rounded individual. He must maintain the cooperation of prospective employers in the community so that job placement may be made when the need arises, and must maintain such relationship with prospective employers that the latter have a sympathetic and community interest in these children. It is his responsibility to see that a combination Work-School program exists, that employers and parents cooperate, and that the child is properly guided as to whether he should continue in school, will profit more by outside vocational training in trade schools, in special rehabilitation outside the school, or whether he will do best in a work-school program.

The special class teacher or the guidance supervisor must plan for long-term guidance of the individual student. A well-thought-out plan may prevent "failure complexes", stultifying and frustrating wasted effort, and may even be the deciding factor in the success or failure of the child in his vocational and social education. The special class teacher is responsible for recognizing what the child "does well", and for making plans along those lines. The teacher must be given time and opportunity to know, and to know well, the community, home and agency contacts for the children under his care. The futures of these children lie in the hands of this teacher, and upon his training, intelligence and personality depend their adjustment or rejection, from the community standpoint. The necessity of mutual understanding between teacher and parent cannot be over-emphasized, since parents properly oriented to the needs of these
children can do much to assist or retard the efforts of the school to aid the child.

Special class students must meet social problems, including those of sex, in the same manner as regular class students, and these problems should not be looked upon as abnormalities because they occur in this particular group. These students should be taught to mingle on a healthy, realistic basis with their own age group, exactly as are other students.

**Housing of Special Classes**

No "outcast" area should ever be used for the purpose of the special class classroom. Neither should the classroom be obviously superior to that of other classes. Several permanent classrooms for the special class groups should be provided, with the students scheduled to move from one room to another, or "promoted" from one activity room to another, to avoid the feeling of incarceration or of differentiation from other regular students. The classroom must contain enough space to promote grouping for different ability levels, as well as some privacy for individual consultations between teacher and student, or teacher and parent.

If these administrative recommendations were met in a majority of school districts, and this could be done without changing large-scale facilities difficult to convert, these exceptional children would quickly demonstrate their ability to become self-sufficient, contributing members of the community. The result would be not only
the humane rehabilitation of a great number of valuable human beings, but also the saving of untold millions in dollars and cents, now expended in the care and support of so-called "unfortunates", who, with proper guidance and proper implementation of the aims of special education, would take their place in society on a paying basis.
"EXHIBIT I"

QUESTIONNAIRE

Administered to evaluate the Course of Study in Mathematics taught to special classes in the Garfield Heights High School; to serve the purpose of suggesting revisions and for the reorganization of the present course of study if it is not meeting the industrial and social needs of these students in their post-school period.

PERSONAL DATA

Name__________________________ Address____________________________

Birthdate____________________ Date left school_______________________

Family Status: Married or single?________ When married?__________

Any children?______ Boys ________ Girls___________________________

Do you live at home with your parents?____ If not, where?___________

Brothers?______ Sisters?______

VOCATIONAL STATUS

What is your present job?________________ Be specific here

Are you unemployed?____ If so, who supports you?________________

What is your average weekly salary now?____ What was your first
salary when you started to work?____ How long have you held this
present job?________ How many hours per week do you work?_____

Any promotions?______ If so, what were they?____________________

ECONOMIC STATUS

Are you in debt?____ If so, what for?______________________________

For how much?________ Do you buy on installment plan?____________

If so, do you ever have trouble paying your bills?________________

Does your salary pay for all your needs?____ If not, where do you
fall short?____________________________________________________
"Exhibit I" Questionnaire, cont.

Do you pay board and room? If so, how much?

How often do you pay this? Do you ever fail to pay?

How much rent do you pay? What type of house do you live in?

Do you own a car? Is it paid for?

How much do you still owe on your car?

How are you paying for it? (Finance Company, Bank Loan, Other Loan, etc.)

Who handles the money you earn?

BANKING

Do you keep your money in the bank? What kind of account?

Do you save money? Where do you keep it?

Do you recall the method of utilizing the bank learned in class in school? To what extent?

If you do not recall the method, how did you learn to use the bank?

Have you ever asked the bank for advice or information regarding your money matters? How and when?

Do you always know your bank balance? Do you keep a checkbook?

If so, does it balance with your bank statement? Have you ever withdrawn your account?

Do you have a joint or a single account? Do you have any savings other than in the bank? Name them.

INSURANCE

How much? Type? Company?
"Exhibit I" Questionnaire, cont.

Do you own any Government Bonds? ______ Value at present? ______

PROPERTY

Do you own a house? _______ Lots? ______________________

SOCIAL SECURITY

Do you keep track of the amount you have paid in? ______ What will this mean to you? __________________________

BUYING AND SELLING

Where do you trade? ________ For food? ______________________

For clothing? ________________ Other things? ___________________

Do you have charge accounts? ______ Where? _____________________

Do you pay them in full regularly? ______ Do you always know how much change you should get back from a purchase? ______ Do you check to see that you receive it? ________ Do you feel that you can handle money without trouble? __________________________

BUDGETING

Do you keep a budget? ______ Where did you learn to do this? _____

_______ Do you think it a valuable thing to know?

School, home, other

_______ Do we teach enough of this type of mathematics in school?

_______ If you try to budget your expenses, does it work? ______

MEASURING

Do you ever have to use a yardstick? ______ Calipers? ______ Scale? ______

Micrometer? ______ Other measures? ________________________________

Did you have to learn this after you left school? ______

_______ Do you think it should have been learned at school? ______
Do you ever use your knowledge about the measurement of board feet? _____ Do you make your own clothing? _____ Do you have any trouble in getting the proper amount of material for a dress? _____

How do you measure your hems? _____ Did you learn this at school? _____ Is there any other information you wish you had had in school regarding measuring? _____ Did you ever have to measure a room? _____ Could you do it? _____ If not, where did you fall down? _____ Should you know this type of measuring? _____ Did the mathematics you had in special class help you? _____

Explain: ______________________________________________________

What suggestions would you make for additions to the course or for cutting it down? __________________________________________________

Did you learn any mathematics you have not used or think you will never use? _____ Explain: _________________________________________

GENERAL

How do you use mathematics at home? _____ At work? _____

In leisure-time activities (list them) ____________________________________

Do you remember the games we played in school to learn mathematics? _____ Which ones? _____ Did they help you to learn numbers and multiplication? _____ Can you multiply now? _____ Do you use it? _____ Can you add today well enough for your needs? _____ Can you subtract easily? _____ Divide easily? _____

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TABLE I  
Slow-Learning Class, Garfield Heights Secondary Schools, September, 1934.

This Table is compiled on the bases of Form M Stanford-Binet Test, Metropolitan Achievement Tests, and Case Records. Results indicate general lack of homogeneous grouping and varied problems presented. Grade Level in Mathematics is indicated, since proposed Course of Study is mainly concerned with that subject. "Study Group" indicates initial internal group into which the individual was placed, as explained by the Thesis.

<table>
<thead>
<tr>
<th>IQ</th>
<th>CA</th>
<th>MA</th>
<th>GL</th>
<th>SG</th>
<th>Sex</th>
<th>Problem Presented</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>16-5</td>
<td>7-9</td>
<td>2-5</td>
<td>I</td>
<td>F</td>
<td>Negativistic, oversize, over-protected, early encephalitis.</td>
</tr>
<tr>
<td>56</td>
<td>15-0</td>
<td>6-0</td>
<td>1-0</td>
<td>I</td>
<td>M</td>
<td>Birth injury, oversize.</td>
</tr>
<tr>
<td>56</td>
<td>14-6</td>
<td>8-3</td>
<td>2-6</td>
<td>I</td>
<td>M</td>
<td>Senile foster parents, previous placement in home with deaf-mute child, negligible language, crippled.</td>
</tr>
<tr>
<td>65</td>
<td>12-10</td>
<td>8-4</td>
<td>3-3</td>
<td>I</td>
<td>M</td>
<td>Congenital syphilitic, poor eyesight, foreign-born parents, incipient delinquent.</td>
</tr>
<tr>
<td>67</td>
<td>13-5</td>
<td>9-3</td>
<td>4-9</td>
<td>I</td>
<td>M</td>
<td>Inferior early schooling, low economic level, hereditary mental deficiency.</td>
</tr>
<tr>
<td>61</td>
<td>14-8</td>
<td>9-0</td>
<td>5-1</td>
<td>II</td>
<td>F</td>
<td>Only mentally deficient child, superior family, poor eyesight, long record of absence, petite mal.</td>
</tr>
<tr>
<td>71</td>
<td>13-11</td>
<td>9-11</td>
<td>5-2</td>
<td>II</td>
<td>M</td>
<td>Foreign-born, language handicap, low economic level.</td>
</tr>
<tr>
<td>73</td>
<td>14-0</td>
<td>10-2</td>
<td>5-5</td>
<td>II</td>
<td>F</td>
<td>Frequent illness, parental irresponsibility, incipient delinquent.</td>
</tr>
<tr>
<td>73</td>
<td>14-11</td>
<td>10-9</td>
<td>5-5</td>
<td>II</td>
<td>M</td>
<td>Many foster homes.</td>
</tr>
<tr>
<td>66</td>
<td>16-6</td>
<td>10-7</td>
<td>5-6</td>
<td>III</td>
<td>M</td>
<td>Over-age, physically mature, sex problem.</td>
</tr>
<tr>
<td>68</td>
<td>14-9</td>
<td>10-9</td>
<td>5-8</td>
<td>III</td>
<td>F</td>
<td>Glandular case, grossly oversize, religious fanaticism, personality problem.</td>
</tr>
<tr>
<td>68</td>
<td>16-2</td>
<td>10-11</td>
<td>5-6</td>
<td>III</td>
<td>M</td>
<td>High economic level, over-protected, aggressive, stutterer.</td>
</tr>
<tr>
<td>73</td>
<td>14-11</td>
<td>11-0</td>
<td>5-6</td>
<td>III</td>
<td>M</td>
<td>No reading ability, average economic level.</td>
</tr>
</tbody>
</table>
Table I - continued

<table>
<thead>
<tr>
<th>IQ</th>
<th>CA</th>
<th>MA</th>
<th>GL</th>
<th>SG</th>
<th>Sex</th>
<th>Problem Presented</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>14-8</td>
<td>10-2</td>
<td>5-7</td>
<td>III</td>
<td>M</td>
<td>&quot;Borderline&quot; slow-learner, hereditary, psychological problem of successful elder brother.</td>
</tr>
<tr>
<td>70</td>
<td>15-8</td>
<td>11-1</td>
<td>5-8</td>
<td>III</td>
<td>M</td>
<td>&quot;Borderline&quot; slow-learner, promoted grade to grade, parochial school, with final exclusion.</td>
</tr>
<tr>
<td>74</td>
<td>13-5</td>
<td>10-0</td>
<td>5-8</td>
<td>III</td>
<td>M</td>
<td>Suspected early aphasia, delayed in reading, writing, speaking.</td>
</tr>
<tr>
<td>74</td>
<td>14-7</td>
<td>11-0</td>
<td>6-0</td>
<td>IV</td>
<td>M</td>
<td>Large, physically mature, wanted to drop out of school.</td>
</tr>
<tr>
<td>79</td>
<td>14-11</td>
<td>11-8</td>
<td>6-0</td>
<td>IV</td>
<td>M</td>
<td>Physically mature, aggressive, home insecurity.</td>
</tr>
<tr>
<td>83</td>
<td>14-8</td>
<td>12-2</td>
<td>6-0</td>
<td>IV</td>
<td>M</td>
<td>Reading handicap, undetermined cause. Left school on working permit, unsuccessful, returned in six months.</td>
</tr>
<tr>
<td>83</td>
<td>12-10</td>
<td>10-7</td>
<td>6-2</td>
<td>IV</td>
<td>M</td>
<td>Long period of illness, mastoidectomy.</td>
</tr>
<tr>
<td>85</td>
<td>16-7</td>
<td>13-8</td>
<td>6-3</td>
<td>IV</td>
<td>F</td>
<td>Sex problem, parental neglect.</td>
</tr>
<tr>
<td>87</td>
<td>14-1</td>
<td>12-3</td>
<td>6-7</td>
<td>IV</td>
<td>M</td>
<td>Language handicap, foreign background.</td>
</tr>
</tbody>
</table>

Note: Read the above table as follows: Student No. 1 had an intelligence quotient of 48, a chronological age of 16-5, mental age of 7-9, average grade level (mathematics) about the beginning of 2-B, problem was that of negativistic, oversize, over-protected female, having had early encephalitis.
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