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Some Practical Methods of Teaching Fifth Grade Arithmetic

by

Selma E. McDade

An Undergraduate Thesis Submitted

to the

Faculty of The School of Arts and Sciences

of

Prairie View College

Prairie View, Texas.

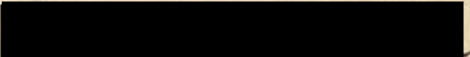
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Some Practical Methods of Teaching Fifth Grade Arithmetic.

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Some Practical Methods of Teaching Fifth Grade Arithmetic.

Purpose of the Study:- Recently books have been published along with a great many courses of study, teacher's manuals, bulletins, and articles in educational magazines on the subject of Teaching of Arithmetic.

The purpose of the writers is to give some practical methods in teaching arithmetic in the Fifth Grade. The old methods of teaching arithmetic are gradually dying, hence we are attempting to show some practical methods by which better results may be secured.

Method of Procedure:- In treating this problem, we have divided the study into the following headings:- First is the Aim; second, The Already Accumulated Knowledge; third, New Knowledge; fourth, Kinds of Fractions; fifth, Practical Methods of Teaching Common and Decimal Fractions and Problem Solving.

The Aim of Teaching Arithmetic in The Fifth Grade:- The aim of the teacher in the Fifth Grade is to equip the pupil with knowledge of those arithmetical ideas, facts, and processes that are frequently used in the every day life of the average individual. The teacher's aim: First, to review and perfect the work of the preceding years involving sufficient practice in the processes of addition, subtraction, multiplication, division and the reading and writing of numbers; second, to teach the child to make practical use of Roman Numbers; third, to have the child use all combinations in the four fundamentals and fractions, both common and decimal so that the he may attain a high standard

of efficiency; fourth, to make provision for the purposeful application of the knowledge of arithmetic to problems dealing with the common experiences and interests of children; and fifth, to extend the problem material so as to include problems involved in arithmetical requirements common to many vocations.

The Kind of Arithmetic Taught:- In this grade, arithmetic relating to civic life is taught. This acquaints the pupil with the things of every day life, things which have some meaning, things which he finds himself in need of. It teaches pupils the value of knowing how to read and pay such bills as light, gas, and water; also how to buy and sell the various commodities that are necessary for existence.

Already Accumulated Knowledge:- A child entering the Fifth Grade should have a good knowledge of addition, subtraction, multiplication and division. During the second, third, and fourth grades, the principal business of the arithmetic teacher is to teach children what numbers mean; to read and write numbers; to help them to acquire skill in the four fundamental operations.

A pupil finishing the fourth grade should have a large amount of practice in the four fundamentals. He should be able to read and write numbers of four digits fluently. Since addition and subtraction are so closely related, we might speak of them together. A pupil should be able to add or subtract numbers of four digits with the use of zeros with accuracy and speed.

In multiplication the child should be able to use three or four digit multiplicands with two or three digit multipliers.

At this time the child is expected to have a fair knowledge of long and short division. In long division a child should be able to use five digit dividends with two digit divisors. Short division is a short method of dividing. Ordinarily, a child should not be taught short methods until the longer ones have been mastered.

The New Knowledge:- The first new information that a child receives in the Fifth Grade is reading and writing numbers of any size. The teacher should have the pupils understand that they have had practice in reading and writing numbers, but they must be sure that they can use readily what they have learned and that they will be called upon to learn still larger numbers. She should also have them understand that in arithmetic, in other studies, and in the various things they do, (whether work or play) they will often be called on to count or read large numbers. They should be able to do so quickly and correctly. The pupil should be taught that each figure in a number has a value which depends on its place in that number. The use of large numbers has rapidly increased during recent years. They appear in newspapers and magazines. The pupil should be taught that when more than four figures are used to express a whole number, they are usually separated, into groups or periods of three figures each, beginning at the right, so that the number may be easily read. In each period, there are three orders or places, namely:- Units, tens, hundreds. If these facts are taken into consideration, it will readily aid the child in reading large

numbers.

As long as the Roman numerals are used in the least form, it will be necessary to teach them. Because of the fact, that they are gradually going out of use and that they are more difficult to learn, little attention outside bare necessity should be given them.

The pupils are given the following letters and their value.

$I = 1$; $V = 5$; $X = 10$.

They are then taught that repeating a letter, repeats its value. If a letter is written before another of greater value, the difference of their values is expressed. If a letter or combination of letters is written after a letter of greater value, the sum of the values is expressed. In writing numbers of four or more orders, hundreds are written after thousands, tens after hundreds and units after tens. Roman numbers are practically used in making outlines, chapters in books, or continuous stories in papers and magazines.

It is absolutely necessary for a pupil in the Fifth Grade to know the use of all combinations in the Four Fundamentals, and especially the multiplication tables if any progress is to be made.

Fractions:- If a survey was made in the upper grades of our elementary schools to find out what the pupils know about fractions, the report would show that we are falling far short of a reasonable standard of attainment. It is easy to find pupils who not only cannot perform the fundamental operations with

fractions but also who hardly seem to know what a fraction is. The kinds of fractions are the common and decimal. A common fraction is any number of equal parts of a whole, and whose denominator is always written; while a decimal fraction is one whose denominator is not written but is ten or some power of ten. Common fractions are also taught by the use of objects.

Common and decimal fractions are closely related in that, sometimes, they are of the same value. To convert a common fraction into a decimal is very simple. Likewise, a decimal to common fraction.

Practical Methods of Teaching Fractions:- To introduce the study of fractions, the teacher should make the fraction idea clear. The definition of a fraction should be developed. The meaning of the numerator and denominator should be thoroughly understood. The teacher should emphasize the fact, that the denominator is the number of equal parts in which an object or group of objects is divided, and the numerator expresses or names the number of these parts taken. There are four fundamental meanings that should receive the thoughtful attention of the teacher and be made clear to every pupil.

First:- That a fraction expresses a part of one whole unit.

Second:- That it expresses a part of a group of objects.

Third:- That it expresses a comparison between two single objects.

Fourth:- That it expresses a comparison between two groups of objects.

Pupils should be taught that to change a common fraction to a decimal is simply to divide the numerator by the denomina-

tor and place a decimal point before the proper figure of the quotient. A more thorough explanation of the process, that will make children understand better is through the use of halves and fifths.

$$1/2 = 1.0/2 = .5; \quad 1/5 = 1.0/5 = .2$$

Common fractions are also taught by the use of objects. The teacher should have the children bring an apple, orange, or lemon so that each one can work individually.

The teacher might say, "Each one cut your fruit into halves." Each child then, can readily see that $2/2 = 1$ whole. If each half is cut into 2 equal parts then we have fourths. 1 whole = $4/4$. Another method is by the use of money. Teach the child to think of the number of cents in $1/2$ of a dime, or $1/5$ of a dime. Divide the dime into 2 equal parts and it can see that $1/2$ of a dime is 5 cents and that $1/5$ of a dime is 2 cents.

Sheets of papers about 6x8 in. are also good objects. The sheet is folded into halves and then cut showing that $2/2$ makes a whole. Each half is then cut equally showing that we have four equal parts. This shows that if in each half we have 2 equal parts in the whole we will get 4; then $4/4$ make a whole. Likewise lines, circles, and squares can be used.

Decimal Fractions:- There are two plans in common use in introducing the study of decimal fractions. One plan provides that decimal fractions be presented as a special case of common fractions with denominators of 10, 100, etc. The second plan is that decimal fractions are taught as an extension of our system

of notation to tenths, and hundreths. Either plan is defended by the one using it and opposed to by the one who does not. The method now used most frequently is by the use of United States Money. The teacher should emphasize the fact that when there are two digits to the right of the point, called the decimal point, it always means hundredths. By using money the teacher can show that \$.62 is 62 hundredths of a dollar. Teach them that there are 10 dimes in a dollar and 100 cents in a dollar. The first digit to the right of a decimal point always means tenths and the second hundredths. To show how a number like 42.07 is written; this amount will be as money and the necessity of writing a 0 after the decimal point in such cases will be stressed. Constant practice should be given in the reading and writing of decimals. Decimals running to more than three or four places occur very rarely in the experience of most people.

Problem Solving:- Every teacher of arithmetic has at some time had unusual difficulties with her pupils in problem solving. The question of teaching children to read, interpret, and solve problems in arithmetic is a very vital one. If the child is given a clear understanding of the meaning of the problem, it will serve as a very justifiable introduction to the solving of the problem. In problem solving, the mode of reasoning must be determined by the individual. Some of the elements of problem solving are:-

1. The reading of the problem.
2. The interpretation of the problem.
3. The planning of the solution.

4. The solutions, or the actual computation through the use of mechanical processes.
5. The evaluation of the results¹.

It is the duty of the teacher to determine, before assigning a lesson in problem-solving, whether there are any ideas involved, situations described, or conditions mentioned with which the pupils are unfamiliar. A clear mental image in the minds of the pupils should be made, if problems are to be read properly. The pupil should be encouraged to look for an idea in the problem, and to read the problem in a way that will indicate to himself, and others clearly, what that idea is. Teach the child that there is a central idea in every problem and he will most likely strive to emphasize the proper words. The teacher should always assign problems concerned with the needs, activities and interest of children.

If an analysis is desired it has been found best to place it to one side by itself. The pupils should be taught one and two step analysis. If the analysis calls for only one of the fundamental operations, then, we have what is known as one step analysis. Example:- If 9 children spend \$.90, what does 1 child spend? If the analysis of a problem calls for two fundamental operations then, we have what is known as two step analysis. Example:- If 9 children spend \$.90, what will 15 children at the same rate same rate spend?

Any project that provides for exercise of desirable processes and is in accordance with the work of the grade has educational value. A project gives opportunity for the meeting and solv-

¹Morton, R. E., Teaching Arithmetic in Intermediate Grades.

ing of problems. The best projects involve purposeful activity and provide for planning executing and judging on the part of the children. The teacher should allow the children to take the initiative in the formulation of the project. The project must have an aim. An ideal project grows out of a natural situation, but the teacher must help to create the situation. Example:-

Project- To Give a Party for New Children. After a long vacation, the children usually seem indifferent to school work; then there are always a number of new children entering the class for the first time. Some activity will perhaps identify them with the class. The class suggests a party. Refreshments, entertainment, decorations and games are discussed. The plans for the party are organized by the children in the form of problems.

Problem one- What shall we have for refreshments? The children decide that ice cream, cookies, nuts and fruits seem the most practical. Problem two- Securing the refreshments. The children decided to have pears, apples peaches, nuts and cookies. The children will get prices from the store. They determined the number of guests expected at the party. They decided to give only two articles of fruit to each person. They find the cost of the nuts and cookies. After finding the total cost, it was divided and apportioned.

Projects of such nature gives excellent arithmetic material.

Problem three- Entertainment: The children suggest recitations a play and games. This causes them to search their Readers for suitable poems to recite at the party.

Problem four- Invitations and place cards are made which gives the children a lesson in English and spelling.

The success of the project organization and method depends on the skill of the teacher as a helper and guide and on the spirit and purpose of the children².

Summary and Conclusion:- Since many of the failures in grades four and five are due to the lack of ability or lack of interest in arithmetic; special attention has been given it. In consulting the various authors on the Modern Methods of Arithmetic, you will find that they all bring out practically the same points. In this discussion, "Some Practical Methods of Teaching Fifth Grade Arithmetic," the writer has tried to show the purpose of the study; its aim; the kind of arithmetic taught.. What the child should know when he enters the grade and what should be taught? If the teacher wishes to get the best results, she should make use of some practical methods.

² Freeland Adams and Hall, Teaching in the Intermediate Grades.
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