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A Survey of the Arithmetical Concepts of Children in the Elementary Grades Pertaining to the Use of Money

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A SURVEY OF THE ARITHMETICAL CONCEPTS OF CHILDREN IN THE
ELEMENTARY GRADES PERTAINING TO THE USE OF MONEY

A Thesis
Presented to
the Faculty of
Central Washington College of Education

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
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APPROVED FOR THE GRADUATE FACULTY

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

So much is being written, and said, these days about "Why Johnny Doesn't Read," one would assume the schools were making an entirely satisfactory effort in the teaching of all subjects except Reading.

This study takes exception to any such false assumption and proposes to deal with another very important aspect of education, namely Arithmetic, with particular emphasis on money¹ and its uses. Because of the increasing complexity of our economic structure in the United States today, the writer feels too many adults do not adequately understand the use of money. Perhaps little can be done for those already in the field, but as an educator, the writer feels much can and should be done to correct this situation before our present elementary children graduate from high school.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study: (1) to survey the present concepts of money and its

¹Money. Money is interpreted as meaning, gold and silver coins, bank notes, checks, wealth considered as a cash asset, legal tender, or anything issued by recognized authority as a medium of exchange.

use, in a specific elementary grade level, in a cross section of a city that included all socio-economic levels; (2) to determine the extent to which knowledge of economic concepts is related to socio-economic level; and (3) make suggestions as to areas where greater emphasis towards understanding of money concepts should be placed.

Importance of the study. Today with our multiplicity and diversity of taxes, records, reports and statistics, it seems imperative that all children get a more thorough knowledge and understanding of basic economics, including the use of money, by the time they graduate from high school. In order to accomplish this objective it is the opinion of the writer that teachers must have a better understanding of our present deficiencies and place greater emphasis on the problem of money concepts at an earlier period in our curriculum. At the present time it appears that far too many educators are too complacent concerning the problem, probably largely because practically no literary work has been done in this field within the past few years, and stress has not been placed on this area in teacher education.

It is interesting to note after a rather careful survey of this field, that some studies have been made on the adult level but only a very few with children. These were done during the recession of the early nineteen-twenties

and again during the depression of the nineteen-thirties,
but relatively nothing has been written for the past
twenty years.

CHAPTER II

REVIEW OF THE LITERATURE

Inadequate public information on how to handle money has been in evidence to the writer for a considerable period of time. For the past fifteen years he has been a licensed insurance underwriter and as an avocation he made a study of income tax accounting. For the past year-and-a-half he has been a representative of the Washington Teachers' Credit Union. While acting in these various capacities many opportunities have been afforded to study people's financial problems, their concepts of economics, how they use money, and in some cases these deficiencies seem to stem from inadequate financial educational background. The people themselves represented practically all socio-economic levels and ranged in education from intermediate grades to college graduates and even some with doctoral degrees. Because of this experience the decision was made to survey this particular field.

Some references can be found in the literature concerning studies on adult usage of arithmetic as early as 1918. Although others have been made since that time, practically the same results have been shown in each case. Some surveys, such as Cobb and Howk's, show that adults use of the arithmetical processes are fairly elementary ones

as illustrated by the following general percentage breakdown of arithmetic usages: multiplication, thirty per cent; addition, twenty per cent; subtraction, fifteen per cent; division, ten per cent; fractions, ten per cent; and percentage and interest together, ten per cent. The remaining five per cent covers all the other processes. Cobb and Howk also show in their survey that when adults use the arithmetical processes they generally were used only in their easier forms.

The fraction one-half makes up sixty per cent of all adult fractional use, while halves, thirds, and fourths make up ninety per cent of their usage. If use and probable use are the factors which are to determine the material for the curriculum, then it would seem apparent which processes should be stressed and drilled upon for efficient mastery. But if arithmetic is used to teach practical information about such matters as taxes, budgets, and insurance to children who, when they become adults, pay no taxes, make no budgets, and carry no insurance, it is still of social importance in reading the daily paper, taking part in conversation, and in understanding civic responsibilities.¹

After pointing out the relative simplicity of arithmetical concepts used and the need for greater understanding Cobb and Howk made the following recommendations:

In order to make arithmetic meet the demands of social utility three phases need to be given more attention: (1) sufficient basic experience to gain fundamental number concepts and to make manipulative

¹DeRoy F. Cobb and Charles D. Howk, Arithmetic in The Elementary School Curriculum (Pasadena: Board of Education, 1936,) p. 9.

work meaningful; (2) an efficient mastery of the useful number facts; (3) practical training which can be applied to life and business situations.²

In a very practical manner Cobb and Howk remind us that:

Problems should be found that direct the pupil's reasoning into useful channels and reward it with results of real significance. The ability to determine what change one should receive after a given purchase, to keep real accounts accurately, to change a recipe that provides sufficient for four people so it will feed six is what is meant by having vital materials in the curriculum that will enable the child to find the responses life itself demands.³

Wilson, in an attempt to bring arithmetic into the curriculum on a worthwhile and functional basis suggested that since problems of arithmetic used by the public generally are simple, perhaps the necessary tool material could be taught in four years, specifically grades 3, 4, 5, and 6. He suggested that during these grades and after, motivated problems should lead the children out into actual business situations because life's problems in arithmetic are, of course, concerned with personal and business uses.⁴

The undue worry and concern over family finances suffered by some children when they overhear and only partially understand the conversations of their parents

²Ibid., p. 5.

³Ibid., p. 11.

⁴Guy Mitchell Wilson, What Arithmetic Shall We Teach (Boston: Houghton Mifflin Co., 1926), pp. 58-59.

concerning money has been noted by Watson. He also points out, "It is important for them to know how much it costs to support a family and to know and practice sensible ways of living within the family budget."⁵

In the past, so much stress was placed on repetitive drill to be sure skill was acquired in computation that the social phase of arithmetic was greatly neglected. More recently the social phase of arithmetic has been receiving more attention in the writings of various authorities. Occasionally some author explains that it includes insurance, buying and selling, money, use of precision instruments, business practice, consumer education and how to locate reliable information. The problem of how these abstract terms may be integrated into the experience and interest of pupils is well answered by Brueckner when he suggests that the community in which children live should be the laboratory for the study of social problems and that teachers should make applications of arithmetic that are within the range of experience and interest of pupils.⁶

Buckingham reinforces the necessity of teaching the social phase of arithmetic when he stresses the need of

⁵G. E. Watson, Guide to Curriculum Building (Curriculum Bulletin, No. 12., January 1950), p. 143.

⁶Leo J. Brueckner, "The Social Contribution of Arithmetic," The National Elementary Principal, XXX (October, 1950), p. 71

making a living. This, of course, involves the question of how to get enough income, how to spend wisely within that income and investing a portion of that income to provide for old age or disability. As evidence of our current deficient economic concepts he states;

People in general lack a lively knowledge of the meaning of percentage. If they had a better knowledge of it, they would not, for example, buy on the installment plan. The sellers of goods on the installment plan know their arithmetic, the buyers do not. Caveat emptor.⁷

It was interesting to note in The Balance Sheet that a newly formed organization called. "The Council for Advancement of Secondary Education," has been formed by leaders in business industry, labor and education to provide funds for a three-year study on economic education for secondary-school youth. Among other things they will attempt to find out what knowledge and understandings are really essential to economic literacy. It was stated that: "At this time, there is no agreement by either educators or the public on what essential minimum economic education for all citizens should include and, therefore, no agreement on what should be taught."⁸ The writer is heartily in accord

⁷B. R. Buckingham, "The Social Value of Arithmetic" Report of the Society's Committee on Arithmetic, Twenty-ninth Yearbook of the National Society for the Study of Education, Part I (Chicago: University of Chicago Press, 1930), p. 40.

⁸The Balance Sheet, 3-Year Study on Economic Education (January 1955), p. 230.

with this idea but feels more should be done even before the high school years are reached.

Prevey, in her study of family practices regarding the training of children in the use of money amplified the view expressed earlier that, "Few research studies have been made in this area."⁹ From the research of the current writer it would seem that practically everyone has an idea on how children should be trained in the use of money. Not only do many have ideas about the subject, but several writers have even set up rather elaborate formulas as to just how all this should be done. The unique part of this entire situation is that so many have concepts as to how it should be done, but no one has actually surveyed the field to learn what concepts children really have concerning the use of money. It has never been satisfactorily explained to the writer just how programs for education can be adequately formulated when no one has established just what is known by children and what pre-conceived concepts they already have concerning money.

A further statement by Prevey, as a result of extensive study, tends to corroborate the findings of the

⁹Esther Elizabeth Prevey, A Quantitative Study of Family Practices In Training Children In the Use of Money (Journal of Educational Psychology, October, 1945), p. 412.

writer when she wrote:

There are large areas about which there are few or no data. There are few facts about children's experiences in saving, borrowing, lending, giving, or in sharing information about the family's financial resources and obligations. We know little about the relationship between parental practices in teaching children the use of money and the later money habits developed by the children as they near maturity....There are few or no studies on either a limited age range or a restricted economic group.¹⁰

Since no direct investigation has been made regarding the concepts of children pertaining to the use of money, and since the writer has felt for many years that there might be a definite relationship between economic concepts and the socio-economic status of the child, this survey was made to add empirical information to an area in which so little information is published.

¹⁰Ibid., p. 412.

CHAPTER III

PROCEDURE

In order to: (1) survey fifth-grade students' present concepts of money and its uses, and (2) determine the extent to which economic concepts are related to socio-economic level, definite steps were taken. These steps involved: (1) description of the materials used, and (2) description of the groups studied.

The data for this study was obtained by giving two tests: (1) Gough's Items-in-the-Home Index which consists of twenty-one questions to determine each child's socio-economic status;¹ (2) a test consisting of fifty questions devised by the writer to ascertain children's concepts pertaining to the use of money. These two tests were stapled together and administered in the same sitting. Both of these tests are appended. No names were written on these tests, only the school and room numbers were recorded. It was felt children would be reluctant to answer many of the questions if any means of identification were used.

Gough's Home Index is a shortened version based

¹Harrison G. Gough, "A Short Social Status Inventory," Journal of Educational Psychology, 40:52-56, January, 1949.

primarily on a re-analysis and re-working of items in the Sims Score Cards and the American Home Scale. To these Gough added certain original items and rearranged so as to facilitate scoring.

The Home Index score is obtained by counting the "Yes" responses in the first twenty questions and then adding extra points for item twenty-one depending on the number of books in the home. No points are added for 0 through 99 books; one point is added for 100 through 499 books; and two points are added for 500 or more books. Scores could thus range from zero through twenty-two.

On a sample of 55 college students these twenty-one items showed a test-retest reliability coefficient of .989. The coefficient, when calculated by the Kuder-Richardson method on 252 high school students was .74. This represents a minimum estimate of the internal consistency of the scale.

In another sample of 261 high-school seniors from a small city of about twenty-five thousand people, a mean of 9.82 was found with a standard deviation of 4.08.

It is interesting to note that the Home Index has a higher correlation between both the American Home Scale and the Sims Score Cards than they do with each other. This, of course, implies that the Home Index is the best

measure of whatever scales are in common, and tends to confirm the validity of the Index.²

Before devising the test to ascertain children's concepts regarding the use of money, the writer spent considerable time surveying the written material in the general field of arithmetic to determine the type of questions were being used in the various surveys. While no surveys had been made in this particular area, they were helpful in formulating a set of questions. Minimum economic concepts for elementary children were discussed with a number of educators in the field as well as college professors. After this was done, fifty questions were written and presented to the Head of the Economics Department of Central Washington College of Education for consideration. Some suggested changes were made and again presented not only to the Head of the Economics Department but also to another professor who was to be on the writer's committee. All questions were thought to be within the experience or educational background of fifth-grade pupils, or at least desirable.

Validity was thus established to a much higher degree than the usual teacher-made achievement test. It was assumed that because of the care in preparation of the questions children's concepts of money and its uses were

²Ibid., pp. 54-55.

quite adequately sampled by the test.

No names were used or coding system employed so no re-test reliability check was possible. This is recognized as a limitation by the writer.

These tests were given to all the fifth-grade pupils in three schools in Yakima, Washington. These schools were Adams, Garfield and Roosevelt and were chosen because of their location in the city. Theoretically, these schools represented, to a large extent, the three groups in Gough's socio-economic scale, namely; the lower, middle or average, and upper socio-economic classes.

Adams School is located "east of the tracks" in an area that is generally considered to be the financially under-privileged section of the city. Its school population is ordinarily composed of approximately forty per cent Negro children along with a scattering of Mexican and Indian children. While no attempt was made to survey the entire school, one room showed thirty-five per cent of the parents were receiving Welfare funds, Aid for Dependent Children, or some other form of public assistance.

Table I shows that of the fifty-nine pupils enrolled in the fifth-grades in the Adams School, only sixteen could be classified in the bottom one-third according to Gough's socio-economic scale, thirty-six in average, and seven were even in the top one-third. Gough's three socio-

economic levels are assumed to reasonably represent the general national picture socio-economically because he had validated his scale in terms of the American Home Scale and Sims Score Cards as discussed earlier.

The Garfield School was selected for the survey because it was thought to be about an average district financially. Very few people were on Welfare or Public Assistance, and most of the school patrons either work for wages, hold positions of responsibility, or own their own small business establishments. It might be of interest to add that less than one per cent of the children were colored.

A surprising discovery made by the survey showed that Garfield School compared very closely with the Adams School on the socio-economic scale. Of the fifty-nine pupils in the survey; fourteen ranked in the bottom one-third, thirty-nine in the average or middle, and only five were in the top one-third. One possible explanation of this might be that Welfare recipients in this state, where benefits are well above the national average, apparently are able to attain as adequate a socio-economic status as many salaried people.

The Roosevelt School was selected because of its location in one of the wealthier sections of the city and it rated as anticipated on the socio-economic scale.

TABLE I
SOCIO-ECONOMIC LEVELS OF FIFTH GRADE STUDENTS
IN THREE DIFFERENT ELEMENTARY SCHOOLS

	ADAMS			GARFIELD			ROOSEVELT			YAKIMA TOTAL		
	High one- third	Middle one- third	Low one- third									
Num- ber	7	36	16	5	39	14	34	17	3	46	92	33
Per- cent- age	11.9	61.0	27.1	8.6	67.3	24.1	63.0	31.5	5.5	26.9	53.8	19.3

Fifty-four fifth grade children were tested and only three were found to be in the bottom one-third, seventeen rated average, while thirty-four proved to be in the top one-third.

The writer personally administered the tests in all the schools during regular school time and within a two-week period. Every effort was made to assure the children that it was for survey purposes only and that no one was interested in any individual paper. All the children showed a willingness to cooperate and the writer feels an honest effort was made by all the participants. Only two facetious answers were noted in the entire one hundred and seventy-one questionnaires.

This chapter has described the Gough scale for estimating socio-economic status and the test prepared by the writer to survey children's concepts of money. The sample studied has been described and compared with Gough's norms for socio-economic level. It was noticed that the Yakima sample was somewhat higher than the national population if earlier studies accurately sampled the general population.

CHAPTER IV

RESULTS

The present study was an attempt to determine to what extent fifth-grade children understand basic concepts relative to money. Secondly, it has long been the hypothesis of the writer that children in the upper socio-economic groups have a better understanding of money and its uses thus giving them a distinct advantage in the study of arithmetic, the pursuit of financial success, or the study of economics when they go to college. For this reason the hypothesis was tested.

One hundred-seventy-one fifth-grade pupils were tested in the survey using the test of economic concepts. From the forty-five questions a score of fifty points could be determined because a few questions involved multiple answers. The range of scores was 5 to 42 and the mean was 26.40 for the total Yakima sample. Schools varied as shown by the following listed means and ranges:

	<u>Mean</u>	<u>Range</u>
Adams	24.42	5 to 39
Garfield	23.10	12 to 36
Roosevelt	30.07	18 to 42

The average student apparently knew only about fifty-three percent of the questions that the writer and other judges felt that elementary school children could benefit by knowing. The best informed student who got 42 answers correct had only 84 per cent correct. The poorest score of 5 means that he only knew 10 per cent of the answers. Because of the fact that each of these concepts would be so valuable to the problems of making a living the writer feels that the scores are much lower than would be desirable.

The writer selected eight of the forty-five questions for individual review, which he considered to be fairly typical of the balance used in his money concepts test. Two questions involved computation of numbers and will be given first consideration. Question 19 was, "What was the total amount your father paid if he said he purchased ten shares of General Electric at $46\frac{1}{2}$?" Because so many people are investing, to some extent at least, in the stock market these days, and with the resulting discussion around the dinner table, it would seem many children would have considerable general knowledge about it. Also after the Congressional investigation with its resulting news articles, few could escape hearing anything at all about it. In spite of all this, only four and one-tenth per cent knew how much the ten shares of General Electric stock would cost at $46\frac{1}{2}$.

Question 20 was, "An advertisement in a paper reads, 'Clearance Sale, Everything Marked Down 50%.' How much will an article regularly priced at \$10.00 cost during this sale?" As stated earlier the writer realizes this question did involve some simple computation of percentage, but he was surprised to learn only fifty-seven and three-tenths per cent could correctly ascertain how much the article would cost.

The rest of the questions were purely conceptual in nature and will be taken in the order they appeared in the test. Question 5 asked, "How much does an average man earn a month?" Excluding one astronomical figure of \$23,422 the balance of the answers were computed and found to average \$220.58. Fifty-one students thought the average man earned less than one-hundred dollars. One thought five dollars per month was about average and of course the top estimate was \$23,422. All answers scored between \$200.00 and \$500.00 were considered correct and even with that much latitude only thirty-nine and seven-tenths per cent got a satisfactory answer.

Question 6 stated, "If there are four people in a family, about how much should their groceries cost a month?" A very wide range developed in the answers to this question. Twelve pupils had different answers ranging from two-hundred to eight-hundred dollars per month, while forty-two had answers of twenty dollars or less. The extreme answers

were two dollars for the low and eight-hundred as the top. Most of the children seemed poorly informed.

Question 11 asked, "When you are sixteen and can get a work permit, how much an hour do you think you should be paid?" Eighteen pupils thought they should be paid differing amounts from three to eighteen dollars an hour, while twenty thought two dollars an hour would be enough for them. The total range showed five-cents an hour for the low and twenty dollars an hour for the high. The average wage expected was one dollar and sixty-six cents per hour. This is higher than the average worker earns per hour as wages in Yakima.

Question 16 was, "Is it ever 'good business' to borrow money and go into debt?" Only sixteen pupils thought it was ever good business to go into debt. This was only nine and four-tenths per cent of the total group. Business leaders and economists certainly would not agree with the majority of the children. Most adults use the borrowing principle. Does this mean that many of the children will feel they are doing wrong when they eventually use time payments?

Question 18 asked, "When one uses a time payment plan instead of paying cash for something such as a car, radio, or refrigerator, does it generally cost more____, less____, or the same as cash____? Forty-six and four-tenths per

cent of the group studied, realized it cost more to use a time payment plan, but thirteen and one-tenth per cent actually thought it cost less. Forty and one-half per cent thought there was no difference in the cost. Almost as many thought there was no additional cost as those who realized it did.

Question 21 stated, "When a person buys a ten dollar article at a ten per cent discount, will he pay more than ten dollars_____ or less than ten dollars_____? Thirty-three and one-half per cent said he would pay more as compared with the sixty-six and one-half per cent who had the correct concept. For such a simple concept it would seem a much larger majority should know this answer.

From analysis of the total group, and the different schools, it appeared that children's over-all economic concepts were much poorer than might be shown if teaching efforts were directed more specifically to this area. Study of some of the individual questions brought to a focus the types of things children do not know.

In order to test the hypothesis that children in the upper socio-economic groups have a better understanding of money and its uses than those in the lower groups two approaches were used. First, a Pearson Product Moment correlation coefficient was calculated between scores on Gough's Items-In-The-Home Index and the writer's test on

economic concepts. Second, "t" tests of significance were calculated between each of the three socio-economic levels.

Using the first mentioned method the correlation of .36, with a standard error of .07, was found between scores on Gough's socio-economic index and the writer's forty-five item test on money. The correlation was significant at the one per cent level of confidence. This means that if these two scales were administered again and again to groups similar to the ones used in this study that ninety-nine times out of a hundred the relationship between socio-economic level and knowledge of monetary principles would not be zero. The relationship is not high but it is definite.

To further describe any relationship that may exist "t" tests were run between mean scores on economic principles test for upper with middle, upper with lower and middle with lower socio-economic groups. Table II shows some results of the economic concepts test for the high, middle and low socio-economic groups. There were forty-six children classified in the upper group according to Gough's socio-economic test. The mean score on the economic principles test for this group was 28.97. When this is compared with the ninety-two pupils in the middle group, we find they had a mean score of 26.01 or a mean difference

TABLE II

MEAN SCORES ON ECONOMIC CONCEPTS TEST FOR HIGH, MIDDLE AND LOW
SOCIO-ECONOMIC GROUPS

Mean Score on Economic Concepts		Mean Difference	Standard Error of Mean Difference	Degrees of Freedom	Level of Significance
Upper Socio- economic Group Mean 28.97 N 46	Middle Socio- economic Mean 26.01 N 92	2.96	1.24	136	.05
Upper Socio- economic Group Mean 28.97 N 46	Lower Socio- economic Group Mean 23.88 N 33	5.09	1.47	77	.01
Middle Socio- economic Group Mean 26.01 N 92	Lower Socio- economic Group Mean 23.88 N 33	2.13	1.15	123	Not Significant

of 2.96. This difference was significant at the .05 level of confidence. In the comparison between upper and lower socio-economic groups the mean difference of 5.09 was significant beyond the one per cent level. There was, however, no significant difference between the middle and lower groups.

From these findings it appears that the main advantages in learning about money are apparently gained chiefly in the upper socio-economic levels. This is shown by the upper being better informed than the lower and the upper even significantly better informed than the middle, but with no distinct advantages noticeable in the middle over the lower. This has particular significance because the mean of the upper socio-economic group was still only 28.97. Of course individual variation was shown within groups. However, the writer's hypothesis was definitely supported by the results.

It is recognized that intelligence may have been a factor in some of the results, since it would seem entirely possible that some at least, of the children in the higher socio-economic levels might also have higher intelligence quotients. Numerous studies have shown moderately high positive relationship between socio-economic level and intelligence. It would be desirable to study the relationship of socio-economic level to economic concepts with intelligence

partialled out. However, it was impossible to use this approach because no identification was used.

It was shown in Chapter III that the Yakima sample had a higher socio-economic level than the national average. In Gough's Items-In-The-Home Index approximately one-third should fall in each group. However, Yakima had ninety-two or fifty-three and eight-tenths per cent in the average group, while forty-six or twenty-six and nine-tenths per cent belonged in the top group. Eighty and seven-tenths per cent of the Yakima sample were at Gough's average or higher. Considering the high socio-economic level of the Yakima schools sampled and the judged, unsatisfactory understanding of money and its uses, it would seem reasonable that areas closer to the national average would score even lower on economic principles test. This can be assumed because of the earlier mentioned study of relationships.

In a limited survey such as this it would be unwise to place too much emphasis on its value except as a possible new approach to an old problem which has not been explored along this particular avenue before. Educational literature is replete with studies and surveys concerning social usage of arithmetic on an adult level. Considerable has been done to determine which processes are most important in business or adult life. Numerous books have been written

regarding mathematics on the secondary level, but so far the literature is singularly devoid of any studies concerning concepts such as was attempted in this research paper.

Results of this study reinforce opinions that insufficient attention is given to learning arithmetic in a way which can be applied to everyday handling of money. Administrators and teachers in the process of curriculum making might well place more emphasis on simple principles of applied economics.

CHAPTER V

SUMMARY

This study purported to: (1) survey the extent to which fifth-grade children understand concepts relative to money and its uses, and (2) determine the extent of relationship between socio-economic levels and knowledge of simple economics. Available literature was thoroughly examined but little was found except that several writers, in a period since about 1920, have suggested that more needs to be done to raise children's understanding of effective use of money.

The relative lack of specific information on early teaching of economics and appropriate arithmetic for daily use of money pointed out the importance of conducting a survey of elementary school children and their knowledge of this subject. Fifth-grade students from three elementary schools in Yakima, Washington which seemed to the writer to be representative of all Yakima schools were selected. Two tests, which were stapled together so they could be later compared, were administered to these students at one sitting. One scale was Gough's Items-In-The-Home Index which is a twenty-one item questionnaire designed and validated as a socio-economic index. The second

test was designed by the writer to measure economic concepts of children. It was validated by careful selection of items that were felt by the writer and a professor of economics to be important money concepts of children.

Analysis of the tests revealed that the average fifth-grade child was able to answer only slightly more than half of the questions. The exceptional students, of which there were very few, were able to answer only about 84 per cent of the questions. Specific items were analyzed and many children had rather distorted concepts regarding average wages, cost of living, meaning of discount, time payments and other things relative to the use of money.

The scores on the socio-economic scale were correlated with the scores on the money concepts test and a correlation of .36, with a standard error of .07, was found. This was significant at the .01 per cent level of confidence. To further demonstrate the relationship "t" tests were run between the upper and lower, upper and middle, and middle and lower socio-economic groups. The upper group received significantly higher (.01 per cent) scores on economic principles than the lower group and somewhat significantly higher (.05 per cent) than the middle group. The middle group however, was not significantly better informed than the lower socio-economic level.

The results show that there is a definite relationship between the socio-economic level of the child and his concepts of money and its uses. Since the highest socio-economic group only made an average score of about fifty-eight per cent and the lower groups made still lower scores, more emphasis should probably be placed on the teaching of actual concepts of money and its uses. Since there is a definite correlation between socio-economic status and money concepts, and in view of the fact that over seventy-three per cent of the Yakima children tested were in the average or top groupings, it would seem that lower socio-economic areas are likely to be even less well informed. From this it would seem to indicate this might be a problem for further study and possible correction on a state or national basis. One possible direction towards alleviation of the problem would be for teachers and administrators to give more emphasis to the use of money when considering course content in arithmetic areas and curriculum building in general.

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APPENDIX

APPENDIX A

GOUGH'S ITEMS-IN-THE-HOME INDEX

School _____

Room number _____

Do not sign. This is for survey only.

1. Is there an electric or gas refrigerator in your home? Yes No
2. Is there a telephone in your home? Yes No
3. Is there a bathtub in your home? Yes No
4. Is your home heated with a central system, such as by a furnace in the basement?
Yes No
5. Does your family have a car? Yes No
6. Did your mother go to high school? Yes No
7. Did your mother go to a college or university? Yes No
8. Did your father go to high school? Yes No
9. Did your father go to a college or university? Yes No
10. Does your home have a fireplace? Yes No
11. Is there a piano in your home? Yes No
12. Does your family have a servant, such as a cook or maid? Yes No
13. Does your family leave town every year for a vacation? Yes No
14. Does your mother belong to any clubs or organizations such as study, art or
civic clubs? Yes No
15. Does your father belong to any civic, study, service, or political clubs such
as the Lion's Club, Chamber of Commerce, etc.? Yes No
16. Have you ever had private lessons in music, dancing, art, etc., outside of
school? Yes No
17. Do you have your own room at home? Yes No
18. Does your family take a daily newspaper? Yes No
19. Do you belong to any clubs where you pay dues? Yes No
20. Does your family have a radio-phonograph combination? Yes No
21. How many books does your family have? _____

APPENDIX B
TEST OF ECONOMIC CONCEPTS

QUESTIONS TO DEFINE CONCEPTS OF MONEY

1. How much do you think your clothes cost for a year? _____
2. If your father should buy a new Ford car this year, and paid cash, about how much do you think it would cost? _____
3. When you get a new pair of shoes, about how much do they cost? _____
4. Can girls save money by making their own clothes rather than buying them ready made? Yes ___ No ___
5. How much does an average man earn a month? _____
6. If there are four people in a family, about how much should their groceries cost a month? _____
7. Suppose your mother purchased twenty dollars worth of groceries in the store where you usually trade, and she gave the cashier a twenty dollar bill plus a one dollar bill, how much change should she get in return? _____
8. Who gets the money from a box of apples, the producer _____ or consumer _____?
9. Do you think there are more _____ or less _____ ways to make a living now than thirty years ago?
10. How do most people get the money they use, for the things they want and need?

11. When you are sixteen and can get a work permit, how much an hour do you think you should be paid? _____
12. Give the four best answers you can as to why people want to earn money.

13. When would be the cheaper time to buy fresh vegetables at a store, June _____ or January _____?
14. Before the war, choice steak could be purchased for 50 cents a pound. Choice steak now costs approximately twice as much. How much can you get now for one dollar? _____
15. When was the dollar more valuable? Before the war _____? Now _____?
16. Is it ever "good business" to borrow money and go into debt? Yes _____ No _____
17. If money is only a "medium of exchange", would it be of any value to you if you were shipwrecked alone on some island and never expected to see people again? Yes _____ No _____
18. When one uses a time payment plan instead of paying cash for something such as a car, radio, or refrigerator, does it generally cost more _____, less _____, or the same as cash _____?
19. What was the total amount your father paid if he said he had purchased ten shares of General Electric at $46\frac{1}{2}$? _____
20. An advertisement in a paper reads, "Clearance Sale, Everything Marked Down 50%". How much will an article regularly priced at \$10.00 cost during this sale? _____
21. When a person buys a ten dollar article at a ten percent discount, will he pay more than ten dollars _____ or less than ten dollars _____?
22. When a man owns a house and rents it to someone else, is all the rent money profit? Yes _____ No _____
23. When you buy a house, how much should it cost? _____
24. How much does it cost to rent a house? _____

25. Which would you prefer, a check for \$50.00 _____, or five \$10.00 bills _____?
Why? _____
26. Why do some stores refuse to cash checks? _____
27. When someone says, "I got a bad check", does he mean it was poorly written _____,
badly worn _____, or no money in the bank _____?
28. Why do some families pay their bills by check and others cannot?

29. How does one know how many checks he can write? _____
30. If you were to win \$1000.00 on a radio program, what would you do with it?

31. If you put the entire \$1000.00 in our School Savings Envelope and left it for a
year, how much interest would you get? _____
32. If the interest stayed the same, could you always draw out at least \$25.00 a
every year and always have \$1000.00 in the bank? Yes _____ No _____
33. Answer in a few words, "What are taxes?" _____
34. When people pay taxes, for what is the money used? _____
35. If a family is on welfare, who furnishes the money for them to live? _____
36. Where does our City Treasurer get the money to pay our policemen and fireman?

37. When you go swimming in the Lion's or Miller Pool, so you think the money you
pay to get in, pays for all the cost of operating the pool? Yes _____ No _____

38. Who owns the City Hall, the Fire Station, and the County Court House? _____

39. If you carelessly break a window in the school, or damage school property, who really loses the money? _____
40. If you see someone else destroying public property, do you think that the destruction actually costs your family money? Yes _____ No _____
41. Four boys put all their money together and found they had 72 cents which they divided. How much did each receive? _____
42. If you buy 3 dozen apples at 32¢ a dozen, how much change should you get back from \$1.00? _____
43. If 2 pencils cost 5¢ what will be the cost of 2 dozen? _____
44. If a taxi charges 25¢ for the first quarter mile and 5¢ for each quarter mile thereafter, what will the fare cost for a two mile trip? _____
45. Why is it better to pay bills by check than by cash? _____
