AN INSTRUMENT FOR THE DETECTION OF SEXISM IN ALGEBRA I TEXTBOOKS

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A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1974

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CHAPTER 1

INTRODUCTION

A basic concept of the philosophy of education is that every student should receive the best possible education. The free public school has been established upon this foundation. This is so every student can have an equal opportunity to receive an equal education.

However, there are those that feel that not all students are getting that equal education. During the sixties, publishers of textbooks were forced by the public and educators to revamp many of their textbooks. They did this because many of the textbooks were racist. These books presented, if at all, minority groups in unfavorable stereotypes.

During the seventies, the publishers are again hearing charges of discrimination. This time from an entirely different group. The women of America are now charging that many of today's textbooks are sexist. One such charge was made by Janice Law Trecker in an article which appeared in the Phi Delta Kappan magazine. She said, "Current curricula and textbooks present perhaps the clearest demonstration of sex prejudice in our schools."[1]

Sexism has many varied facets. These facets are described in the following definition that has been developed by a committee on sexism which was sponsored by the Scott, Foresman Publishing Company.

> Sexism refers to all those attitudes and actions which relegate women to a secondary and inferior status in society. Textbooks are sexist if they demean women by using patronizing language, or if they show women only in stereotyped roles

> with less than the full range of human interests, traits, and capabilities.[2]

Having taught mathematics for several years on the secondary level, the investigator noted that there were few girls enrolled in the upper level mathematics classes and that their attitudes were less favorable than boys. Could this be due partly to sexism in the textbooks being used?

The purpose of this paper is to develop an instrument for detecting sexism in textbooks. This instrument will then be used to evaluate a textbook for sexist tendencies. Because of the size and scope of this problem, the instrument has been designed only to evaluate secondary level Algebra I textbooks.

The instrument will consist of a series of tally and listing charts designed to evaluate the number of occurrences and the roles of the two sexes as mention of them appears in the textbook. It was developed to test the following hypothesis.

> The two sexes are equally represented in each of the following instances: illustrations, mention of famous people, mention of famous mathematicians, examples in the explanatory materials, homework exercises, chapter review exercises, set problems, number problems, work problems, age problems, sports problems, money problems, and travel problems.

The listings from the instrument are also used to help examine the content of these problems for instances of sex role stereotyping.

Textbooks will be defined as sexist if the number of the various problems which favor one sex is statistically significant or if the content of the problems shows members of either sex in stereotypic situations.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The study of sexism is a relatively new topic to educators. The concept of sexism has only received widespread notice since about the year 1970. Some research has been done but much is still in progress.

What are the attitudes and abilities of girls in the field of mathematics? At the kindergarten level, Heard found that there was no significant difference between the performance of boys and girls.[3] He used a standardized achievement test and tested the results at the .01 level of probability. Rea and Reys did a similar study.[4] They obtained results that indicate girls are better than the boys on number, geometry, recall, and total score. There were no significant differences on money, vocabulary, pattern identification, and measurement. So girls are at least equal to, if not better than, boys at the kindergarten level.

Does this continue into the upper elementary grades? Capps and Cox did a study on fourth and fifth grade girls.[5] This was a longitudinal study of the percentage of girls who had favorable attitudes in mathematics. They found that this percentage dropped ten points.[6] Suydan and Weaver did an attitudinal study.[7] They discovered boys had more favorable attitudes towards mathematics than did girls.

A trend that has started in elementary school continues into the secondary level. Aiken discovered that for boys both the attitude and achievement was greater in high school and college.[8]

Since girls' attitudes towards mathematics does drop, what could cause this change? Suydan and Weaver state one of the things that can cause a change of attitude is the nature of the subject.[9] What is there about mathematics that could cause this change of attitude? Callahan did a study of attitudes towards mathematics and disdovered that girls have a much stronger dislike for word problems than boys.[10] A possible reason for this is that the sexism that appears in these problems affects the girls' attitudes.

Probably the most extensive study on sexism was conducted by Women on Words and Images (WOW), a task force of the National Organization for Women (NOW).[11] Their publication "Dick and Jane as Victims--Sex Stereotyping in Children's Readers" is one of the most extensive studies yet. WOW evaluated 134 readers from fourteen publishers for their report.[12] Evaluation of these readers was done by placing a statement summarizing the story in the proper column of a worksheet. These worksheets then were compiled for the report.[13] The report concluded that these readers were sexist and that women were being stereotyped as wives and mothers. As a result of this report, WOW took on two tasks.[14] The first task was to inform the publishers of the sexism in their readers, and work with them in developing better readers that are non-sexist. The second was to inform teachers of the situation and help them compensate for the readers they now use.

In the field of mathematics at the secondary level, no research on sexism in textbooks has been done. This conclusion was made after consulting The Readers Guide to Periodical Literature, The Education Index, and The Education Resources Information Center.

CHAPTER 3

TOPICS DEALT WITH BY THE INSTRUMENT

When constructing this instrument, decisions were made as to which topics within the algebra books would be evaluated. Following is a discussion of each of these topics. Included are the reasons for incorporating each topic into the instrument. Also included are pertinent questions that were used in evaluating the results of using the instrument.

Illustrations

This topic was included because of the visual images that these pictures present to the students. This is one area that the Women on Words and Images studied.[15] An old proverb says that a picture is worth a thousand words. If this is the case, then the number of illustrations concerning either or both sexes should have an impact on what the textbooks are saying in regard to sexism.

Another point to consider is the roles portrayed by the men and women in these pictures. The relationships between the people and the activities engaged in by them in the illustrations are also indicators of sexist stereotyping.

A great number of questions can be asked about illustrations that point out sexist stereotyping. Who is pictured most often? Are women portrayed only as wives and mothers? What activities are engaged in by the people in the picture? Who is shown in what jobs? These are just a few that could be asked.

Famous People

This group excludes famous mathematicians who are tabulated separately. This group includes famous personalities such as astronauts, movie stars, writers, scientists, etc. People of this type are included in textbooks to make them more interesting to the students. Publishers do this because young people often emulate such people. However, a negative reaction could occur if one of the sexes is represented by a smaller number of these figures than the other sex. It is possible that as a result the underrepresented sex would have a less favorable attitude towards the textbooks and also the subject matter in that textbook.

Famous Mathematicians

The study of famous mathematicians shares similar qualifications for inclusion as does the study of famous people.[16] However, the number of female mathematicians is much smaller than the number of male mathematicians. Thus it would be unreasonable to expect the number of famous mathematicians of each sex to be equal. This should not be construed to mean that women should be excluded. The contributions of Hypatia and Emmy Noether as algebraists and the other women who also have contributed to the field of mathematics should be included.

Divisions in the Textbooks

The next three topics are divisions in the textbook which should be considered. Examples from the explanatory material, homework exercises, and chapter review exercises contain all of the problems that can be found in a mathematics textbook. Each of these areas should be investigated.

Examples from the explanatory materials. These problems have a hidden significance for the classroom teacher. These examples are given as models of how to work problems of certain types. As a result, many teachers make use of these examples in the daily lesson. If these problems are sexist in nature, then the teacher is compounding the problem by stressing them.

Homework exercises. The logic for including the homework exercises is similar to that for the examples. When a teacher assigns problems that are sexist, the images in the problems are stressed to the students.

Chapter review exercises. For these problems, there is an additional reason to be concerned. These problems are represented as selective of the problems in the chapter. If these problems are sexist, then there exists a case that the supposedly more important problems are forcing sexist concepts on the students.

Set Problems

This is one aspect of the new math that feminists dislike.[17] Whenever a set problem deals with people, sex is almost always a criteria for membership. Classification by sex alone is not that bad, but when sexist stereotypes are also used this creates a bad situation. Grouping usually occurs on the basis of what boys do and what girls look like.[18] "Girls with brown hair" and "boys on the baseball team" are examples of set descriptions which have sex criteria that fall into this category.

Number Problems

Problems of this type deal with an unknown number and the student is supposed to find that number. The prime reason for examining this type of exercise is to determine if both sexes are credited with enough intelligence to be the person in the exercise who poses the problem. If one of the sexes should dominate problems of this type, then the other sex may be given the impression that they are not smart enough to think of an original problem.

Work Problems

These problems give an excellent opportunity to compare the sexes on their abilities to perform certain tasks. In problems of this type, the question as to which is the faster or slower of the sexes should be examined.

This is a perfect situation to check for sexist stereotyping. Are only males used in heavy work situations? Do the work problems involving girls use only household chores such as sewing, cooking, or washing? Do girls ever work faster? These questions do a good job of indicating stereotyping.

Sports Problems

Sports participation is an area that has traditionally been male dominated. During the last few years, this once male-dominated area now has been entered by numerous females. To determine if the textbook follows the old traditional sexist concept that males participate while females watch or if it has adopted the more modern concept that both sexes can compete is a must. Special interest should also be paid to the nature of the sports in which each participates.

Money Problems

The people who earn and spend money are usually the dominant figures in problems of this type. Sexist textbooks will have men spending money for business activities and women spending money for the home. The men will also be portrayed as spending larger amounts than women. Women will have smaller incomes than men. These are some of the examples of sexist thinking involving money that prompted the addition of money problems to the list of topics to be evaluated.

Travel Problems

Problems of this type are included in the list because many times they are definitely sexist. Travel problems are usually very male-oriented. Many textbooks seem to stress the sexist idea that a woman's place is in the home; therefore, they do not travel.

Business trips are taken by men, not women. Women are passengers, not drivers. Women only drive when someone needs to be taken somewhere. Men drive for recreation purposes, women do not. These are some of the examples of sexist stereotyping that the instrument checks.

Age Problems

These problems were included for two reasons. First, a large number of problems which involve people's ages do occur in textbooks. The second reason is to illustrate certain social taboos in our culture: women do not tell their ages; men marry women that are younger. Because of these taboos very few age problems involve adult women or instances where women are older than men.

Additional Topics

Three more areas of consideration need to be included. The first is to establish a classification for those problems that do not fit anywhere else. The other two areas are not types of problems, but rather, deal with the content of the problems.

Miscellaneous problems. This group of problems is for those that are not classified in any of the other preceeding groups. This listing should be recorded for a male-female comparison, as well as for detecting any large group of problems that have not been classified.

Family units. The stereotypic family unit involves either a father-son or mother-daughter combination. In most cases, these combinations are engaged in stereotyped activities. Father and son are building a model boat. Mother and daughter are baking cookies. These are just two of the possible examples.

Job information. Information concerning the occupations of the various people throughout the textbook should be tabulated. This information can be used to determine if the textbook shows a sexist orientation of who is employed in the various occupations.

APPLICATION OF THE INSTRUMENT

The final form of the evaluation instrument appears in Appendix B. It consists of two major parts. The first part is an explanation of the use of the instrument. The second part is the instrument itself. Because of the nature of the material being worked with and also because

of the type of information desired, two methods of gathering information were selected for use in the instrument.

The first method was to make use of tally charts. These were used for tabulating how many problems of each type existed.

The second method was to make use of listings of particular information about specific types of problems. These listings include lists of names, incomes, occupations, and modes of transportation.

This evaluation instrument was tested on the textbook that the investigator has been using for his Algebra I classes.[I]

METHOD OF ANALYSIS OF RESULTS

The data from the use of the instrument was evaluated by using two methods. The first was to take the information from the tally charts and find the chi-square value for the data for a goodness of fit to equal distribution. From this point, all references to chi-square values will be for a goodness of fit to equal distribution.

The other method was to take the information from the listings and to examine it for sexist stereotyping. The questions raised in the first part of this chapter were the basis of the evaluation for stereotyping.

[I]James R. Smart, Henry Rogalsky, and William K. Ruehmann, Algebra I (Boston: Ginn and Co., 1971).

CHAPTER 4

RESULTS OF USING THE INSTRUMENT

Data from using the instrument is evaluated in this chapter. Tabulation of those results and the conclusions drawn are contained in the following materials.

EVALUATION OF THE QUANTITIES OF THE PROBLEMS

This section determines if the number of problems of each type favors either of the sexes. Table I shows how many of each type of problem appeared in the textbook. Also shown on this table is the chi-square value for each set of data. The chi-square value is given for the miscellaneous problems and total number of problems which are not part of the original hypothesis. The total number of problems is the sum of the figures of the examples, homework exercises, and chapter review exercises.

TABLE I

TABULATION TABLE FOR CHI-SQUARE

Type of Problems	Number Involving Males	Number Involving Females	Total Number of Problems	Chi^2 Values for Data
Illustrations	4	0	4	4.000[b]
Famous People	3	0	3	3.000[a]
Famous Mathematicians	15	0	15	15.000[c]
Examples	14	4	18	5.556[c]
Homework Exercises	70	20	90	27.778[c]
Chapter Review Exercises	15	0	15	15.000[c]
Set Problems	2	2	4	0.000
Number Problems	8	4	12	1.333
Work Problems	11	5	16	2.250
Sports Problems	11	1	12	8.333[c]
Money Problems	13	5	18	3.556[a]
Travel Problems	27	0	27	27.000[c]
Age Problems	13	6	19	2.579
Miscellaneous Problems	17	3	20	9.800[c]
Total Number of Problems	99	24	123	42.312[c]

a: null hypothesis rejected at alpha = .10

b: null hypothesis rejected at alpha = .05

c: null hypothesis rejected at alpha = .01

TABLE II

HYPOTHESIS REJECTION AT VARIOUS LEVELS

	Reject Null Hypothesis at .01	Reject Null Hypothesis at .05	Reject Null Hypothesis at .10	Reject Null Hypothesis Data Favors
Male Favored	8	1	2	4
Female Favored	0	0	0	0

Table II showed how the summary result of testing each of the original sub-hypotheses using the chi-square test of goodness of fit to equal distribution. According to the number of times the original null hypothesis was rejected, this textbook is sexist. It must be realized that this deals with the number (how many) of problems. The content of the problems now has to be examined.

EVALUATION OF PROBLEM CONTENT

Now the problems must be examined to see if the content of the problems is sexist. A look will be taken at the language, sex roles, and illustrations to see if the people in the text are sex role stereotyped.

Illustrations

This book has very few pictures. Of the five that were in the book, all of them dealt with males. They showed photographs of a boy trying to walk a guy wire, of a boy sitting in a classroom, of a man

driving a bus, and a group of men sitting on park benches. An illustration shows two baseball players.

Since the illustrations do not picture any females and since the males are participating in male stereotyped roles in most instances, it can be concluded that the illustrations in this book are sexist.

Famous People

There are three references to famous people in this book. Two of them are of John Glenn and the other is of Omar Khayyam. Using the same reasoning as we did for the illustrations we can conclude that this topic too is sexist.

Famous Mathematicians

The only woman to be mentioned in this is Constance Reid who co-authored a book about mathematics. Some of the fourteen men who were mentioned seventeen times were Bertrand Russell, Patrick Suppes, Blaire Passal, and Pythagorus. Rene Descartes was mentioned on three separate occasions. Even though this outcome was expected to be heavier in favor of males, this is a sexist situation because the accomplishments of women have been ignored.

Divisions in the Textbook

Although these problems were covered in the section on the chi-square test, special note should be taken of the ratio of males to females in these problems. For the examples it was better than 3 to 1; for the homework exercises it was 7 to 2; for the chapter review exercises it was 15 to 0; and for the total number it was 4 to 1.

Set Problems

The four set problems that separated men and women can be categorized as sexist. The sets involving females stressed physical attributes and looks, while the sets involving males involved membership on various athletic teams. These criterion definitely emphasize sexist stereotyping.

Number Problems

Eight boys and four girls were credited with the intelligence to think up an original problem of this type. Girls have been credited with possessing the intelligence, so the conclusion must be made that the only sexist bias in these problems is numerical.

Work Problems

There were eighteen work problems with eleven being male only, five being female only, and two problems having both sexes. The two work problems that had both sexes had one problem where each sex worked faster. Considering only the content of these problems they are non-sexist.

Sports Problems

Sports problems were dominated by males. There were eleven male only problems as compared to only one female only problem. There were two problems which involved both sexes. Girls bowled and swam. The boys did those two sports and also participated in golf, baseball, canoeing, parachuting, bicycling, hiking and volleyball. Because there were far more boys who participated in more different and varied sports, these sports problems are sexist.

Money Problems

Money problems in this book follow a general sexist stereotype pattern. The instances of money being spent for business favor men four to zero. Spending money for any reason is seven cases for the men to two for the women.

Earnings favor the men with three problems to the women's one. Two of these are boys who work after school. The other is a prime example of sexism. This is a problem in which a man and his wife are both receiving paychecks. When his is compared to hers the book states, "Mr. Dalton earns at least five dollars more than twice his wife's income each week."[19]

Travel Problems

Twenty-seven travel problems involved males only. There were no women only problems. The women were involved in only two problems that had both sexes. The two problems which involved women were: a slow woman driver and two women trying to decide how much each should pay on a taxi fare.[20,21]

Eight males traveled for business reasons, twelve men traveled for pleasure, and nine more traveled for unspecified reasons. Eighteen times they were drivers and six times they were passengers. Men also traveled by car, canoe, bus, bicycle, taxi, subway and plane.

These travel problems are sexist.

Age Problems

Of the twenty-three age problems only four involved both sexes. Of these three of the four had men older than women. Only one problem in the book had a female older than a male and that was a girl older

than her baby brother. No adult women were used in any of these problems. The number of problems that had men as compared to the number of problems that contained women was 13 to 6. The female roles are badly stereotyped.

Miscellaneous Problems

These problems almost all fell into the category of stereotyping. Examples include a boy eating pizza, girls talking on phone, and a man building a fence. The only problem of the twenty that did not seem to fall into a stereotyped category was a boy taking a timed typing test.

Family Units

Of these problems there are three father-son, two brother-brother, two husband-wife, and one mother-son relationships illustrated. The only one which does not seem stereotyped is the mother-son problem. However, this problem portrays the mother in an unfavorable situation.[22] She sends her son to the post office to buy some stamps, except she forgets to tell him how many of the two types to get. The father and son problems involve figuring their ages and weights. The two brothers are involved in a work problem. One husband and wife, that have already been discussed, were comparing wages. The other husband and wife problem was a work problem which dealt with painting their living room. These problems all follow stereotyped roles.

Job Information

In the chart there were twenty-one different occupations that were engaged in by men. For women there were three. They were working

in a laundry, as a seamstress, and as a key punch operator. The men's jobs were entirely outside the home, while two of the three for the women were. Some of the examples of male occupations were gardner, astronaut, grocery store owner, and pilot. Men definitely had the more interesting and varied occupations.

SUMMARY

The textbook was evaluated in two areas. The first area was concerned with the quantities of the different problems that appeared. A chi-square test was applied and the null hypothesis was rejected in eleven of fifteen types of problems, and since the data for the other four types of problems favor the males, one cannot but conclude that when quantity is considered, this book is sexist.

When quality of content is considered, sex role stereotyping must be considered. The instrument when studied for this concept, showed that nine of the areas that should be considered illustrate sexism in one manner or the other. This means that the content of the textbook is sexist.

Since this textbook has failed on both counts of sexism that have been considered, the only conclusion we can make is that the textbook is sexist.

Another conclusion that can be made is that the instrument can detect sexism in a textbook, and it is a useful instrument for this.

CHAPTER 5

SUMMARY

Sexism in textbooks is a topic of importance in education. Sexism and sexist stereotyping should be avoided. Research has indicated that girls have poorer attitudes towards mathematics than boys.

Other research which was conducted by Women on Words and Images has been published as "Dick and Jane as Victims--Sex Stereotyping in Children's Readers."

The purpose of this report was the development of an instrument for determining sexism in Algebra I books. The explanatory material and the word problems were the main areas of investigation. Topics that were examined in this are illustrations, mention of famous people, mention of famous mathematicians, examples, homework exercises, chapter review exercises, set problems, number problems, work problems, age problems, sports problems, money problems, and travel problems.

The instrument consisted of a series of tally and listing charts. It was used to test an Algebra I book. A chi-square test of goodness of fit to equal distribution was run on the data.

Conclusions were drawn that the instrument was good for the purpose it was designed, and that the textbook was sexist and encouraged stereotyping.

RECOMMENDATIONS

1. The field of mathematics has many areas and divisions. As a result, many of these areas have not been examined for sexism. Proper study of these areas for sexism and sexist stereotyping need to be made. Using the instrument that has been developed in this paper as a guide, other instruments should be developed for studying these areas. Much work has yet to be done.

2. Authors of textbooks should use the instrument given here or a variation of it to examine their works so that future textbooks will not suffer the same shortcoming.

3. A tool for evaluating Algebra I textbooks for sexism has been developed. This instrument should be put to use by evaluating other textbooks. Using this instrument in this manner will allow the user to determine what textbooks are non-sexist. This will be a useful aid in selecting textbooks for the classroom.

APPENDIX A

FOOTNOTES

[1]Janice Law Trecker, "Sex Stereotyping in the Secondary School Curriculum," Phi Delta Kappan LV (October, 1973), 110.

[2]Sexism in Textbooks Committee of Women, Guidelines for Improving the Image of Women in Textbooks, 1972, p. 1.

[3]I. M. Heard, "Mathematical Concepts and Abilities Possessed by Kindergarten Entrants," The Arithmetic Teacher XVII (April, 1970), 341.

[4]R. E. Rea and R. E. Reys, "Mathematical Competencies of Entering Kindergarteners," The Arithmetic Teacher XVII (January, 1970), 70.

[5]L. R. Capps and L. S. Cox, "Attitude towards Arithmetic at the Fourth- and Fifth-Grade Levels," The Arithmetic Teacher XVI (March, 1969), 219.

[6]Ibid.

[7]Marilyn N. Suydan and Fred J. Weaver, Attitudes and Interests Set A, Using Research: Key to Elementary School Mathematics, U. S. Educational Resources Information Center, ERIC Document ED 038 283, August, 1970.

[8]Lewis R. Aiken, Jr., Sex Differences in Attitudes and Achievement in Mathematics, U. S. Educational Resources Information Center, ERIC Document ED 049 922, August, 1971.

[9]Suydan, loc. cit.

[10]W. J. Callahan, "Adolescent Attitudes towards Mathematics," The Mathematics Teacher LXIV (December, 1971), 754.

[11]Women on Words and Images, Dick and Jane as Victims--Sex Stereotyping in Children's Readers, 1972, p. 5.

[12]Ibid., pp. 4-5.

[13]Cynthis Eaton and Carol Jacobs, "Princeton: Changing the Textbooks," American Education IX (June, 1973), 27.

[14]Women, op. cit., p. 57.

[15]Marsha Federbush, "The Sex Problem of School Mathematics Books," And Jill Came Tumbling After--Sexism in American Education, ed. Judith Stacey, Susan Bereaud, and Joan Daniels (New York: Dell Publishing Co., Inc., 1974), p. 180.

[16]Ibid., pp. 180-181.

[17]Ibid., p. 181.

[18]James R. Smart, Henry Rogalsky, and William K. Ruehmann, Algebra I (Boston: Ginn and Company, 1971), p. 284.

[19]Ibid., p. 193.

[20]Ibid., p. 267.

[21]Ibid., p. 187.

APPENDIX B

INTRODUCTION

The following tables were developed as an instrument to determine if Algebra I textbooks are sexist. The remainder of this text will be used to explain these tables and the charts which they contain.

USE OF THE INSTRUMENT

All of the tables from number one to number fifteen have as their first chart a tally chart for determining the number of problems or occurrences of a particular type.

Table 1

In the fourth line of the first chart, a comparison should be made between the relative sizes of the figures in the pictures. Sexist illustrations will have one sex continually larger than the other. To indicate this, instead of using tally marks use "ML" or "FL" to indicate if the males are larger or if the females are larger.

The second chart of this table will be used to help determine if the roles that the males or females are pictured in are stereotyped. Are women pictured only as mothers or wives? Are fathers pictured only with sons? These activities and relationships are only a couple of the many that indicate sexist thinking.

Tables 2 and 3

These two tables have as their second charts a listing of the names of the famous people and mathematicians involved in the problems. Famous mathematicians should be expected to be dominated by men.

Table 5

When tabulating this table all oral exercises and any other problems at the end of a section in a chapter should be tallied in with the homework exercises.

Table 9

This table for work problems is not to be confused with what is wanted for the job information table. Work problems involve two people who perform a task at different rates. The problem usually is to find one or the other's rates or the time for both to do the task together.

In the line concerning the involvement of both sexes, a comparison should be made of which sex works faster. By using "MF" or "FF" instead of the tally marks, an indication as to whether the males are faster or the females are faster can be made.

Table 10

The second chart of this table is for determining in what sports each of the sexes participates. A listing of the name of the sport should be made in the proper column.

Table 11

The second chart has two lines for expenditures for home. The first line which is subtitled "Rent and Utilities"covers those expenditures which fall under the aspect of management. Whereas, the second line, subtitled "Household Goods," covers more common expenses like groceries, small household items, and incidentals. The rest of this

chart is for answering questions like, "Who spends money for business reasons?"

The third chart is for determining if there is equity in salaries for the sexes. Problems which involve income should have the amounts of these incomes recorded for use to determine the average yearly salary for each sex.

Table 12

On the second chart the first line is entitled "Family". This line is for helping to decide who runs the "family taxi service". Who travels for business reasons? Who drives for recreational purposes? These are some of the questions that this chart is supposed to answer.

The third chart is for recording the mode of transportation in each problem.

Table 13

In each word problem which has at least two people, a comparison can be made of their ages. The results of this comparison should be marked on the second chart.

Table 14

This table is for tabulating those problems that are not included in any of the other main groups. Examples of these problems which should be listed on the second chart are weight problems, calorie counting problems, gas mileage problems, and area problems. Several pages of these problems might appear in the textbook so additional pages of the second chart of this table might be needed. Should any particular type of problem consistantly appear in this chart, a separate table should be prepared for it.

Table 15

Marking the first chart with an "F-S" for father-son, "M-D" for mother-daughter, etc., would help determine what family roles are most prevalent. What activities engaged in, such as "son and father are building a model boat" or "mother and daughter are baking cookies" should be tabulated on the second chart.

Table 16

This set of charts is for determining who does what jobs and where they are done. The only jobs that should be recorded on this table are those for which the people would be salaried. Small tasks should not be included.

Who works at home? Who works outside the home? Who does the most interesting and varied types of jobs? These facts should be recorded on the two charts. The second chart will also help you discover any unusual jobs as well as any stereotyped jobs that exist.

ADDITIONAL INFORMATION

There is one additional chart that should be kept. It is an annotated listing of those problems that are definitely sexist. This listing can be used to provide examples.

Some problems will fall into several different categories at the same time. All aspects of each problem should be recorded.

THIS BOOK CONTAINS NUMEROUS PAGES WITH DIAGRAMS THAT ARE CROOKED COMPARED TO THE REST OF THE INFORMATION ON THE PAGE.

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Table 1. Illustrations

Number of Illustrations Involving People	
Number of Illustrations Involving Males Only	
Number of Illustrations Involving Females Only	
Number of Illustrations Involving Both Sexes	

Male	Female	Job or Activity Engaged In

Table 2. Problems, Examples, and Activities Involving Famous People

Number of Occurrences of This Type	
Number of Occurrences Involving Males Only	
Number of Occurrences Involving Females Only	
Number of Occurrences Involving Both Sexes	

Names of Males Involved	Names of Females Involved

Table 3. Problems, Examples, and Activities Involving the History of Mathematics and Famous Mathematicians

Number of Occurrences of This Type	
Number of Occurrences Involving Males Only	
Number of Occurrences Involving Females Only	
Number of Occurrences Involving Both Sexes	

Names of Males Involved	Names of Females Involved

Table 4. Examples from the Explanatory Material

Number of Problems Involving People	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 5. Homework Exercises

Number of Problems Involving People	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 6. Chapter Review Exercises

Number of Problems Involving People	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 7. Set Problems

Number of Problems Involving People	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 8. Number Problems

Number of Problems Involving People	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 9. Work Problems

Number of Problems of this Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 10. Sports Problems

Number of Problems of This Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Types of Sports Engaged In by Males	Types of Sports Engaged In by Females

Table 11. Money Problems

Number of Problems of This Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

	Male	Female
Spent for Home (Rent and Utilities)		
Spent for Home (Household Goods)		
Spent for Business		
Spent for Other Reasons		
Savings		
Earnings		
Interest Paid		
Interest Earned		
How Many Coins?		

Amounts of Male Incomes	Amounts of Female Incomes

Table 12. Travel Problems

Number of Problems of This Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

	Male	Female
Family		
Business		
Pleasure		
Unspecified		
Driver		
Passenger		

Mode of Transportation Used by Males	Mode of Transportation Used by Females

Table 13. Age Problems

Number of Problems of This Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Number of Problems Where Males are Older than Males	
Number of Problems Where Females are Older than Females	
Number of Problems Where Males are Older than Females	
Number of Problems Where Females are Older than Males	

Table 14. Miscellaneous Problems

Number of Problems of This Type	
Number of Problems Involving Males Only	
Number of Problems Involving Females Only	
Number of Problems Involving Both Sexes	

Table 14. Miscellaneous Problems (cont.)

Male	Female	Type of Problem

Table 15. Problems Involving Family Units

Number of Problems of This Type
Number of Problems Involving Males Only
Number of Problems Involving Females Only
Number of Problems Involving Both Sexes

Relationship Involved	Type of Activity Engaged In

Table 16. Job Information

	Male	Female
Work at Home		
Work Outside Home		

Types of Jobs Held by Males	Types of Jobs Held by Females

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AN INSTRUMENT FOR THE DETECTION OF SEXISM IN ALGEBRA I TEXTBOOKS

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AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

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1974

Sexism is a topic that is starting to get some educator's attention. Investigation into the subject of sexism in textbooks is becoming a topic of interest to teachers and publishers.

A group called Women on Words and Images did a study for sexism in children's readers. Their report, Dick and Jane as Victims--Sex Stereotyping in Children's Readers, was the first on sexist textbooks. Their conclusion was that most readers were sexist and that they stereotyped women in dull wife and mother roles.

The purpose of this paper was to develop an instrument for the evaluation of Algebra I textbooks for sexism. The instrument that was used consisted of a set of tables. These tables were composed of two types of charts, tally and listing.

The tally charts were for examining to see if the sexes were equally distributed over the textbook in the areas of illustrations, mention of famous people and famous mathematicians, examples, homework exercises, chapter review exercises, set problems, number problems, work problems, age problems, sports problems, money problems, and travel problems. The listing charts were for checking the content of the various problems for sexism. Some areas that were listed were names, modes of transportation, types of jobs, and incomes.

This instrument was then used for the evaluation of an Algebra I textbook. Once the data was compiled, various tests were made to determine if the textbook was sexist. A chi-square test for goodness of fit to equal distribution was run on the data from the tally charts. As a result of checking this, the textbook was declared sexist in the aspect that more males appeared in problems than females.

As to the content of the textbook, it was studied for sexist stereotyping according to a number of questions that had been raised in the paper. As a result, the textbook was declared sexist in that it was stereotyping females.

Recommendations were made that other investigators use this instrument for evaluating other Algebra I textbooks, that other investigators use this instrument as a guideline for constructing other instruments for other areas, and that authors use this instrument or one similar to check the textbooks they write for sexism.