The Mississippi Evaluation of

WRITING TO READ®

Executive Summary

The University of Mississippi

"The computer is used to individualize instruction so that children can work at their own pace."

The Mississippi Evaluation Project

In 1989, the State of Mississipi launched a multi-year commitment to teach first grade children to read and write by using IBM's Writing To Read (WTR) Program. The project was made possible through cooperative funding from the Mississippi Legislature and the private sector, the Riordan and Rord Foundations. Of the more than 300 public elementary schools that submitted grant proposals, sixty were randomly awarded IBM Writing To Read programs in the 1989-90 school year which represented the initial phase of the statewide program.

Writing To Read is a language arts computer-based program designed to develop the literacy (writing and reading) skills of young children. The computer is used to individualize instruction so that children can work at their own pace. Instruction is delivered in a laboratory setting using a multi-activity, multi-sensory approach to learning.

The evaluation of the Mississippi WTR program was led by Dr. Jim R. Chambless, Associate Dean and Professor of Educational Leadership, University of Mississippi; Dr. Martha Chambless, Associate Professor of Reading Education, Arkansas State University; and Mrs. Jerilou Moore, Graduate Instructor of Reading Education, University of Mississippi. In addition, twenty-seven Mississippi elementary school principals served as site evaluation co-ordinators and seventy-eight Mississippi first grade teachers assisted in collecting the data.

In order to determine the effectiveness of the WTR program in developing the literacy skills of first grade students, a two-group experimental design was employed. To insure a valid comparison of the effects of the WTR program with current instructional practices, both the experimental and control groups were selected from the same school districts. Since the Mississippi State Department of Education mandates that each school district adopt and implement a basic curriculum that is used by all schools within that district, it can be assumed that all first grade students were exposed to the same curricular content.

The following criteria were used to select the public school districts to be included in the Mississippi WTR evaluation:

1. The WTR school must have another school in the district which did not have a WTR laboratory but had students with the same demographic characteristics.
2. The school district must administer the Stanford Achievement Test (SAT) to all first graders.

Twenty-seven WTR and twenty-seven control schools, which represented twenty-one school districts, met the selection criteria and were included in the WTR evaluation. Examination of the location of the schools indicated that they are geographically representative of the total public school population of Mississippi (see back cover).

A proportionate, stratified

random sampling technique was used to select both the WTR and control subjects. Sociœconomic status (SES), race and sex were the criteria used for assigning students to appropriate strata. The eight strata used for the selection of the first grade student sample are as follows:

1. Low SES White Males
2. High SES White Males
3. Low SES White Females
4. High SES White Females
5. Low SES Black Males
6. High SES Black Males
7. Low SES Black Females
8. High SES Black Females

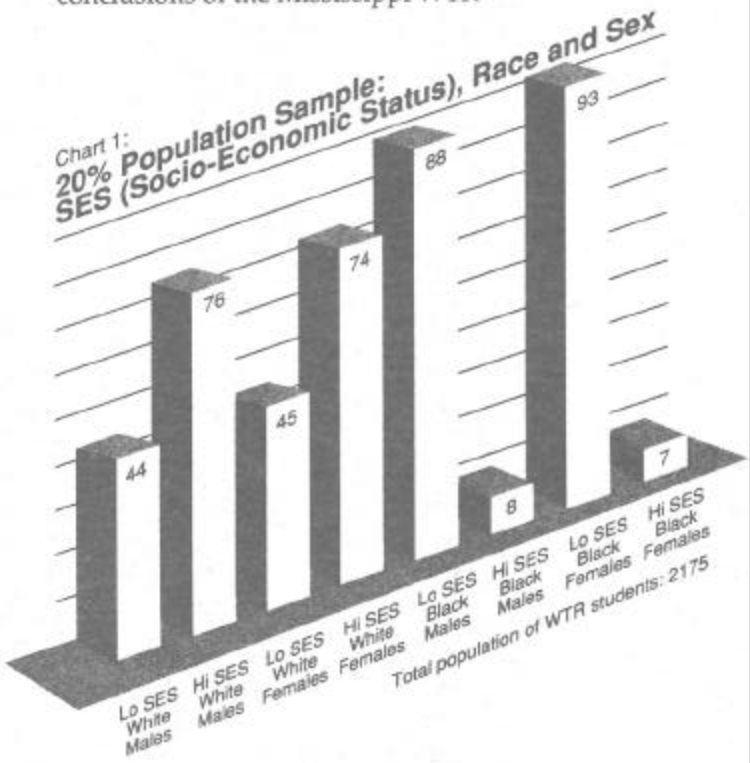
A twenty percent sample of the available population of first grade students was drawn from each strata for both the WTR and control groups. An equal number of subjects was drawn for both the WTR and control groups. The sampling procedure allowed the investigators to examine the effects of the WTR program on low and high SES students as well as on the basis of race and sex (see Chart 1).

The outcome measures selected for the WTR evaluation were based on what research purports to be the critical factors in reading and writing achievement (literacy skills) of first grade students. They were divided into two parts: portfolio measurements (measurements taken when students complete a complex functional task) and standardized achievement test scores related to literacy skills. Data were collected at the end of the 1989-90 school year.

The school administrators and teachers who were responsible for the implementation of the Mississippi WTR Program were given intensive training and support.

This report presents the major conclusions of the Mississippi WTR evaluation. The products of the evaluation also include documentation of the results.

Chart 1:
20% Population Sample: SES (Socio-Economic Status), Race and Sex



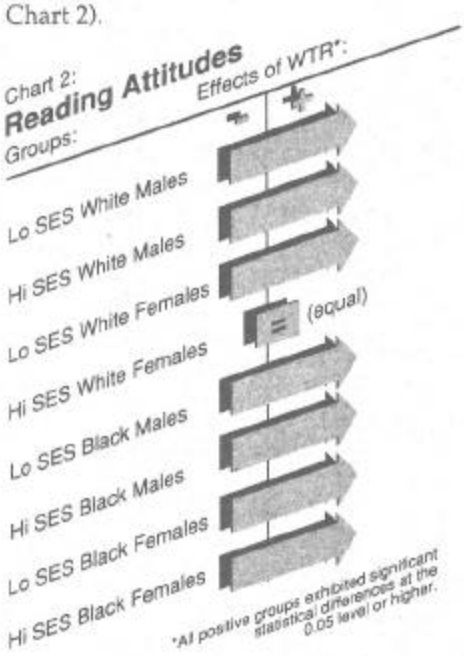
Major Conclusions

Conclusion 1: **Seven of the WTR groups had a significantly more positive attitude toward reading than the control groups. The High SES White Female group was statistically equal to the control group regarding reading attitude.**

In order to assess attitudes toward reading, the San Diego Reading Attitude Inventory was individually administered to students in both the WTR and control groups. Analyses of the data revealed that

seven of the eight WTR groups had a significantly more positive attitude toward reading than did the control groups at the end of the school year (see Chart 2).

Chart 2:
Reading Attitudes



The comparison of the High SES White Female groups did not yield a significantly statistical difference between the WTR and control students. However, there was a small empirical difference between them in favor of the WTR group, and both groups displayed a very favorable attitude toward reading. This result is not surprising since, as a group, these students are among the most highly motivated and the most conforming in public school settings.

"...seven of the eight WTR groups had a significantly more positive attitude toward reading than did the control groups at the end of the school year."

Conclusion 2: WTR first grade students write significantly better than control first grade students receiving traditional instruction.

Writing samples were collected by asking students to respond to a story-starter writing activity. A story-starter writing activity gives students a portion

Chart 3:
Criteria for Writing Levels

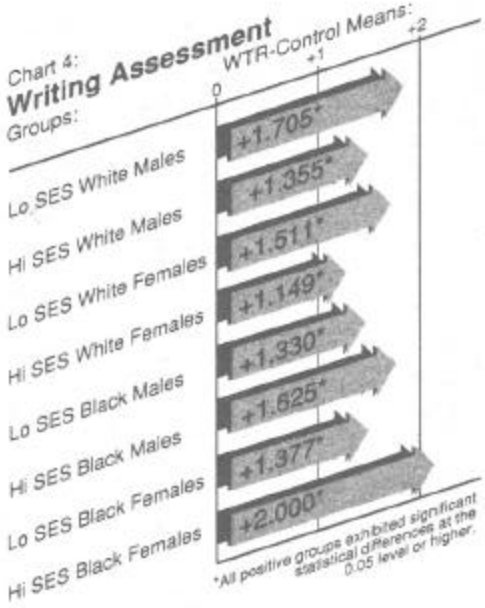
Level 1: Rudimentary Writing
- Writes own name
- Reproduces some words from recall

Level 2: Early Understanding of Sounds and Spelling
- Writes some new words phonetically
- Produces conventionally accepted letters and groups of letters to represent sounds.

Level 3: Beginning Phrases and Sentences
- Shows understanding of relationships between words in a group of words
- Has a sense of the phrase or sentence as a complete unit of discourse

Level 4: Patterns and Sequence of Expressions
- Shows a rudimentary understanding of time and tense
- Shows an understanding of the relationships between phrases and/or sentences in a group of phrases and/or sentences
- Reproduces a simple story

Level 5: Developed Writing
- Presents a piece of writing with an opening and a conclusion
- Employs a recognizable pattern of organization
- Introduces detail as appropriate



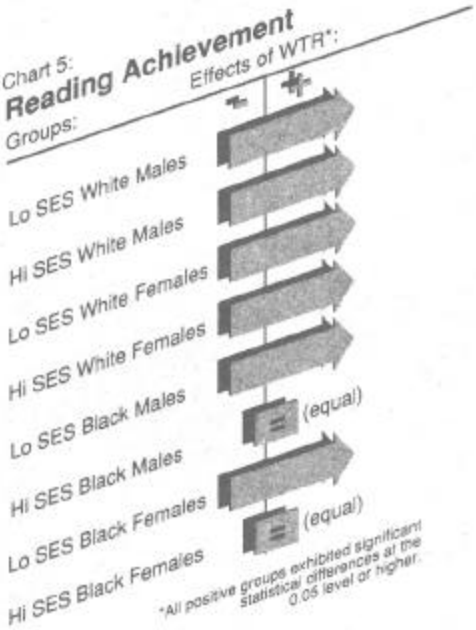
of a lead sentence which they are asked to complete and then develop a story from the information given.

Each writing sample was compared to criteria representing five levels of writing skills. The criteria used for scoring the writing samples are presented in Chart 3. The scoring was done by a procedure developed at Educational Testing Service called "holistic scoring."

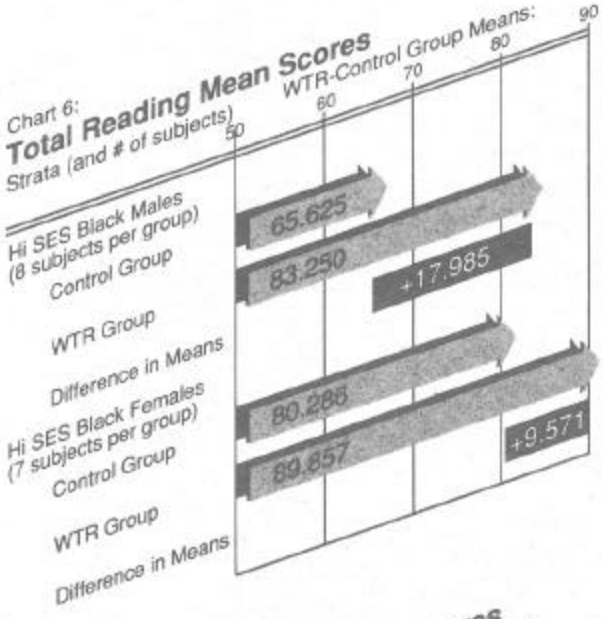
Analyses of the writing samples revealed that the eight WTR groups had a positive mean difference that ranged from 1.149 to 2.0 levels above the control groups that received traditional instruction. Since the writing scores indicate a developmental progression (from 1 to 5), these results are substantial and meaningful to first grade teachers and parents (see Chart 4).

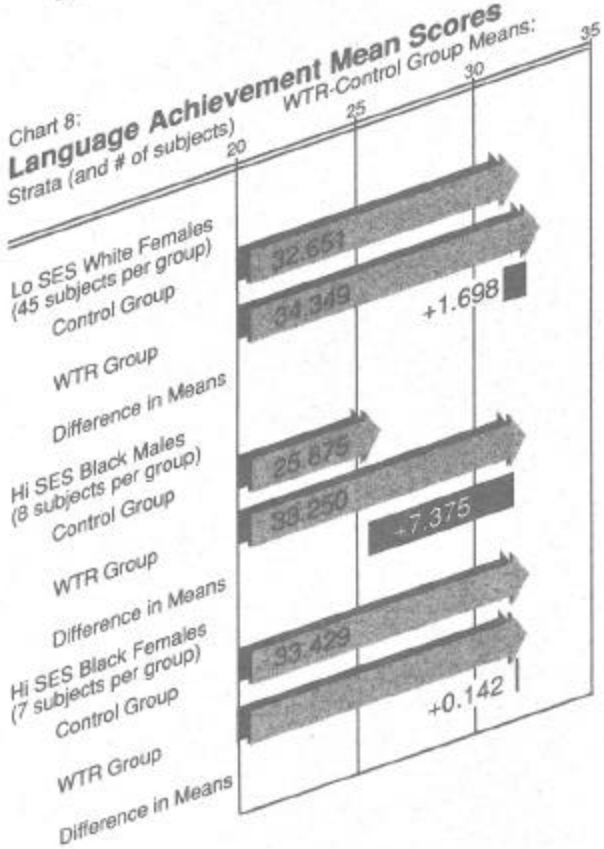
Conclusion 3: **Six of the WTR first grade groups performed significantly better than the control first grade groups on reading achievement. The WTR High SES Black Males and the High SES Black Female groups were statistically equal to the control groups.**

The Stanford Achievement Test (SAT) was used to measure reading achievement. The SAT was administered at the end of the 1989-90 school year. The Total Reading Score, composed of subtests which measure word study skills, word reading and reading comprehension, was used for the statistical analyses. Six of the WTR groups performed significantly better than the control groups on the total Reading Score of the SAT at the end of the school year (see Chart 5).

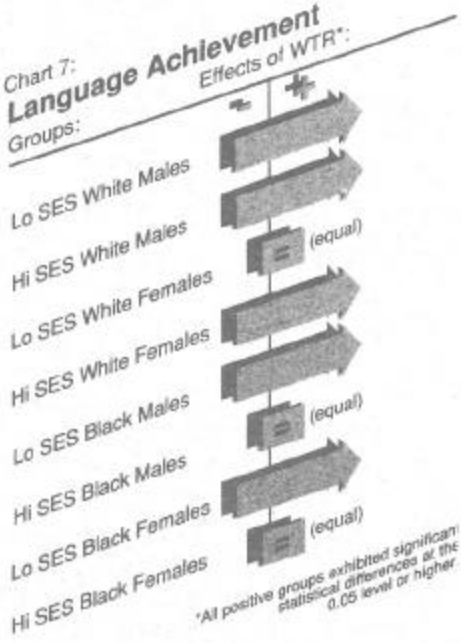


The High SES Black Male and the High SES Black Female groups did <u>not</u> show a significant statistical difference between the WTR and control subjects. This would be due to the small number of subjects in each group since there was a large empirical difference in favor of the WTR groups. The maximum score which can be obtained on the Total Reading section is 106 points (see Chart 6 on following page).





Conclusion 4: **Five of the WTR first grade groups performed significantly better than the control groups on language achievement. The WTR Low SES White Females, High SES Black Males, and High SES Black Females were statistically equal to the control groups.**



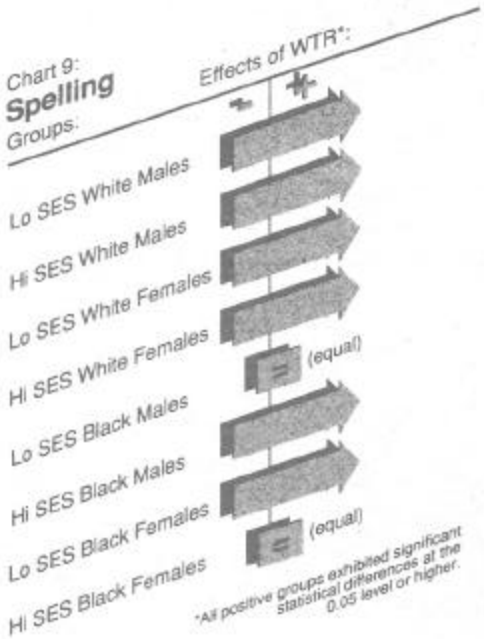
Language achievement, as measured by the SAT, includes subtests which measure capitalization, punctuation, applied grammar, language espression, and study skills. Five of the WTR groups performed significantly better than the control groups on the Language Achievement section the the SAT at the end of the school year (see Chart 7 above).

The Low SES White Female, the High SES Black Male, and the High SES Black Female groups did not show a significant statistical difference between the WTR and control groups. However, there was a positive empirical mean difference in favor of

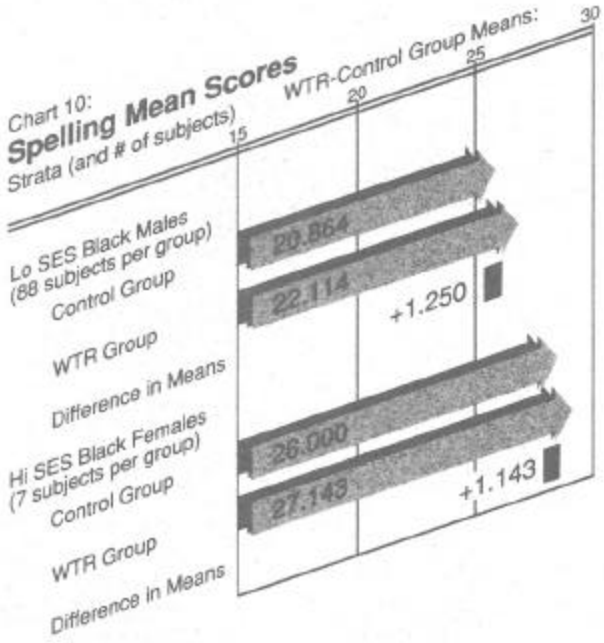
the WTR groups. The maximum score that a student can obtain on the Language Achievement section of the SAT is 44 points (see Chart 8).

Conclusion 5: **Six of the WTR first grade groups performed significantly better than the control groups in spelling. The WTR Low SES Black Males and the High SES Black Females were statistically equal to the control groups.**

Spelling, as measured by the SAT, is composed of sub-tests which measure sight words, phonetic principles and structural principles. Six of the WTR groups performed significantly better than the control groups on spelling at the end of the school year (see Chart 9).



The Low SES Black Male and High SES Black Female groups did not show a significant statistical difference between the WTR and control subjects. However, there was an empirical mean difference between the WTR and control groups in favor of the WTR groups. The maximum score possible on the Spelling section of the SAT is 30 points (see Chart 10).

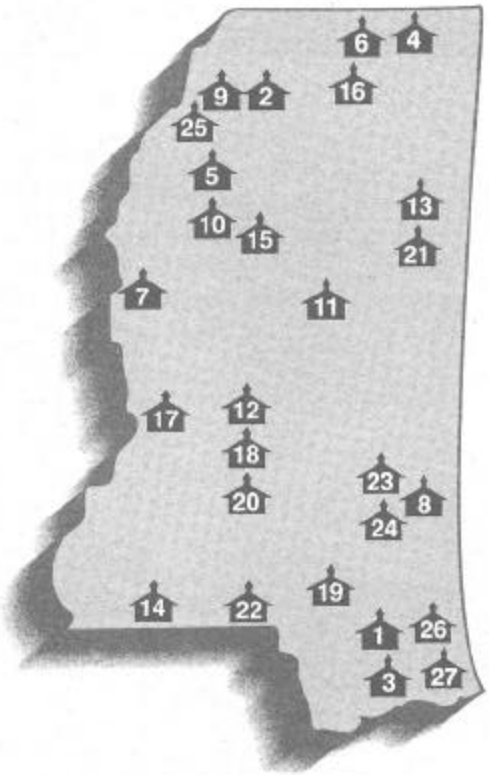


WTR Evaluation Summary

First grade children who participated in the Mississippi WTR program during the 1989-90 school year made greater gains in literacy skills (writing and reading) than comparable first grade children who received traditional instruction. The outcome measures used in the evaluation project reflect that the use of the WTR program enhanced the development of essential literacy skills for first graders regardless of socioeconomic status, race or sex.

The efforts of the school administrators and teachers in the classrooms have been translated into increased literacy skills for WTR first grade children.

"...the WTR program enhanced the development of essential literacy skills for first graders regardless of socioeconomic status, race or sex."



Geographical Locations of WTR Evaluation Schools in Mississippi

1 Anniston Avenue Elementary School
2 Batesville Elementary School
3 Bayou View Elementary School
4 Biggersville Elementary School
5 Black Bayou Elementary School
6 Chalybeate Elementary School
7 Chambers Attendance Center
8 Clara Attendance Center
9 Crowder Junior High School
10 Dickerson Elementary School
11 Fair Elementary School
12 Florence Elementary School
13 Franklin Academy Elementary School
14 Gloster Elementary School
15 Hathorn Elementary School
16 Ingomar Attendance Center
17 Jett Elementary School
18 Northside Elementary School
19 Purvis Elementary School
20 Richland Elementary School
21 Sale Elementary School
22 Salem Attendance Center
23 Sandersville Elementary School
24 Sharon Elementary School
25 Southside Elementary School
26 Vancleave Elementary School
27 West Elementary School