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ABSTRACT

The Appalachian Regional Commission/International Business Machine Writing to Read (WTR) program was implemented over a 3-year period in 55 selected rural schools of Appalachia. WTR is a computer-based instructional system designed to develop the writing and reading skills of kindergarten and first-grade students in a lab setting. Project schools were selected because they had low achievement scores and did not have computers. This report reviews the project, evaluates its overall effectiveness, and documents which WTR program activities are continuing beyond the conclusion of the project. An estimated 7,000 students were served in each of the 3 project years. Written documents from previous evaluations show that WTR students performed significantly better than non-WTR students on writing and spelling assessments. Telephone interviews with WTR coordinators and principals found overwhelmingly positive ratings on training, equipment, program implementation, and program effectiveness. Student and parent perceptions were also predominantly favorable. Likewise, the survey of 228 WTR teachers yielded positive opinions concerning training, ease of use, program effectiveness, student reactions, and parent reactions. WTR labs still exist in 42 of the original 55 sites. Continued maintenance of equipment has been a problem at some sites. Appendices contain the phone interview and written teacher questionnaire. (KS)

A Followup Study of the ARC/IBM Writing to Read Project in Kentucky, Virginia, and West Virginia

by

Robert D. Childers
and
Gregory D. Leopold

Submitted to:

Appalachian Regional Commission
1666 Connecticut Avenue, N. W.
Washington, D. C. 20235

FINAL REPORT
ARC Contract No.
92-29 CO-10963-92-I-302-1121

May 28, 1993

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ACKNOWLEDGMENTS

It is unusual for researchers and evaluators to see administrators invite honest investigation of their programs in the absence of some external mandate for such followup. The recognition of the need for the followup that prompted the Appalachian Regional Commission to initiate this study is commendable, as is the Commission's allowing this study to be carried out without any effort to influence the outcomes.

The authors express their sincere appreciation to the following people for their contributions to the successful implementation of the ARC/IBM Writing to Read project. This study could not have been completed successfully without:

- the teachers, aides, and volunteers for their tremendous efforts in implementing the Writing to Read project in their schools;
- the school administrators in all the participating districts for their cooperation and support;
- the Writing to Read district coordinators whose dedication and professionalism made this project possible;
- JoAnne James and Ginny Eager of Forward in the Fifth for the prompt response to our information requests and wonderful support of the project;
- Henry King, ARC Project Coordinator, for his support and guidance;
- Patricia Penn and Mary Farley for their editing expertise—without their assistance we would not have completed the project on schedule; and
- Oralee Kieffer, whose cheerfulness in assisting with the data collection and coordination of the project, and expertise in preparation of this document not only made everyone else's contributions possible, but also enjoyable.

Robert D. Childers
Gregory D. Leopold

SECTION I
INTRODUCTION

The national debate on education continues about a myriad of perceived ills in our nation's schools, including declines in mastery of basic skills, high rates of functional illiteracy, declining graduation standards, rising dropout rates, and shortages of competent teachers, as well as a widening gap between accelerating technological advances and the understanding and competence to use such technology effectively. Nowhere are these concerns better illustrated than in the rural schools of Appalachia.

Those who are skeptical about the potential utility of computer-assisted instruction frequently fail to appreciate the fact that, if implemented properly and used to their full advantage, these programs result in a variety of positive educational outcomes. It was on this assumption that the current followup study was proposed.

The followup study sought to address some common criticisms of previous studies of the Writing to Read (WTR) program. For example, Freyd and Lythe (1990) reviewed 17 WTR studies and found 15 of them dealt with programs that lasted only three to nine months. One-third of the studies were conducted with only one school, and virtually none of them investigated the lasting benefits or major impact of having WTR in their schools over a period of time.

This study provides a comprehensive review of the three-year Appalachian Regional Commission (ARC)/International Business Machine (IBM) Writing to Read project in Kentucky, Virginia, and West Virginia, and provides some insight into the outcomes of educational technology innovations once outside support and technical assistance are withdrawn.

Followup Study Objectives

The current report summarizes activities conducted by the Appalachia Educational Laboratory (AEL) that sought to reach the following objectives:

- to identify, describe, and document the various processes employed in implementing the WTR program;
- to evaluate the project's overall effectiveness; and
- to assess which WTR program activities are continuing beyond the conclusion of the ARC/IBM Writing to Read project.

AEL undertook six tasks during the study to achieve the objec-

tives: 1) reviewing available previous written documents about the project; 2) conducting telephone interviews with each district WTR coordinator and the participating school principal; 3) surveying teachers in each of the participating schools; 4) collecting information from central office personnel, principals, teachers, and students during three on-site visits in selected schools concerning their views of the WTR project; 5) documenting the extent to which the WTR program continued once the project formally ended; and, 6) analyzing formal and informal evaluation data collected by participating districts during the three-year project.

Limitations of the followup study. The original work-plan schedule was from September 1991 to August 1992, which coincided with the school year. However, the project was not funded until February 1992, which made it impossible to construct interview guides, conduct interviews, and develop a teacher questionnaire before the closing of the school year. Therefore, it became necessary to wait until the fall of 1992 to begin data collection in the field.

A second limitation was the lack of available evaluation data on the project. It became apparent early in the followup study that student data were not available in any sites in Kentucky or Virginia for the initial three-year project. The schools in West Virginia were the only schools that had any available evaluation data. In addition, due largely to shortages in time and financial resources and concerns about confidentiality, followup student achievement data were unavailable.

Followup Study Description

Review of written documents. Two annual reports prepared by Forward in the Fifth containing information about the ARC/IBM Writing to Read project in Kentucky were reviewed. Forward in the Fifth is an independent, community-based organization formed for the purpose of improving the quality of education in, and increasing support for, school systems in Kentucky's Fifth Congressional District. Another two annual reports submitted to ARC by AEL on the implementation of WTR in the 13 rural schools in southern West Virginia were also reviewed. An article titled "The Magic of Writing to Read" by Carl Hoffman (1990) provided additional insights and information about the WTR project in Kentucky and West Virginia.

Identification of participating schools. Early in the followup, the executive director of Forward in the Fifth was contacted to assist in identifying the sites of the 40 ARC/IBM Writing to Read labs in Kentucky and the local personnel involved. Identification of the Virginia schools and the West Virginia schools was available from information collected for the two annual reports prepared by AEL during the initial three-year project. This information was imperative for conducting the subsequent interviews with WTR coordinators and principals.

Instrument development. Two primary data collection instruments were developed. The first was a telephone interview protocol to be used with district WTR coordinators and local school principals (see Appendix A). Information collected via this instrument included: number and grade of students who participated in the WTR labs; processes associated with implementation of the WTR program in the local settings; technical problems with equipment; perceptions of opinions from students, parents, and teachers; what happened when the project formally ended; and the major impact and lasting benefits of the project in each district. AEL research specialists reviewed this instrument for content and determined that it identified specific components of importance to the project.

Questionnaires were sent to each of the 55 participating schools....

The second instrument was a three-page questionnaire for teachers who had participated in the WTR lab during all or part of the original three-year project (see Appendix B). Questions were designed to allow for simple responses to selected choices and for open-ended responses. Questionnaires were sent to each of the 55 participating schools with permission and a commitment from each current building level principal. AEL research specialists also reviewed this instrument, and it was revised to assure that the questions assessed the desired information.

Data collection procedures. More than 200 long-distance telephone calls were made to contact district WTR coordinators and local school principals for interviews during the early part of the project. Each coordinator agreed to participate in a 15-20 minute interview. Principals were contacted concerning their opinions of the WTR project and to obtain permission for distribution of the teacher questionnaire. Permission was granted in each of the 55 participating schools. In addition, personal interviews were conducted with AEL and Forward in the Fifth staff concerning facilitation of the initial project.

More than 200 long-distance telephone calls were made to contact district WTR coordinators and local school principals....

Site visits. To obtain more detailed information, three sites (one each in Kentucky, Virginia, and West Virginia) were selected for in-depth site visits. These visits allowed for observations of currently functioning WTR labs, personal interviews with students and teachers, and opinions of school and district administrators.

In Section II, a brief description of the WTR program and the initial three-year ARC/IBM Writing to Read project is presented. Sections III through VI present results obtained from the various data collection procedures. Both quantitative and qualitative data are reported. Section VII presents conclusions and a summary.

SECTION II
THE ORIGINAL PROJECT

The ARC/IBM Writing to Read project was the result of a collaborative effort between the ARC and IBM. A total of 55 WTR labs (described later in the report) were installed in elementary schools in Kentucky, Virginia, and West Virginia during the 1988-89 school year. IBM donated the computer hardware for the labs; ARC contributed the software, auxiliary materials, and a great deal of technical assistance. Forward in the Fifth provided support and technical assistance for the participating schools in Kentucky, and AEL provided assistance for West Virginia schools.

Writing to Read

Writing to Read is a computer-based instructional system designed to develop the writing and reading skills of kindergarten and first-grade students. It was developed by IBM and Dr. John Henry Martin, and is designed to teach students how to write anything they can say and read anything they can write. According to the program developers, the WTR system helps students:

Writing to Read is a computer-based instructional system designed to develop the writing and reading skills of kindergarten and first-grade students.

- understand how letters form words and words form sentences that express thoughts and ideas;
- recognize and create letters of the alphabet through a variety of multisensory experiences;
- learn to use a consistent, phonemic spelling system;
- discover the joy of language;
- develop their ability to express ideas and to manipulate the English language;
- learn to use the computer as a surrogate guide and tutor; and,
- learn to use the computer as a word processor, thereby enabling them to apply more quickly and easily the concepts they learn.

The program is provided in a separate room called the WTR lab or center. It is recommended that the center be staffed by a fulltime aide. Students and teacher move from their classroom to the center for one hour each day. Each center is organized around five required learning stations as outlined in the teacher's manual (Martin, 1986).

The **Computer Station** is one of the major learning stations in the WTR center. The lab aide directs students' activities at this station. Students proceed through a series of 10 instructional cycles that teach

some basic vocabulary words using a phonemic spelling system. The computer "voice" introduces students to the skills being taught in the instructional cycles. There is a good deal of repetition in the computer activities.

A second learning station is the **Work Journal Station.** The work journals are designed to provide students with additional opportunities to learn the material presented in the 10 instructional cycles. Some of the pages in the work journal are designed to be completed in conjunction with an audiotape. The major activity is to practice the cycle words in a variety of formats.

A third learning station is the **Writing/Typing Station.** In one area of this station, students write their stories by hand, using pencils, markers, crayons, and chalk. In the other areas of the station, students type their stories on a computer using a word processing system. Students are encouraged to read what they have written.

The **Listening Library Station** is the fourth required learning station. Here students listen to stories recorded at a slow pace while following the written text in a corresponding book. This provides students the opportunity to match speech with written language.

The fifth station is the **Make Words Station.** A variety of activities is arranged to have children practice making letters, words, and sentences. They also match letters and sounds using manipulatives and appropriate alphabet materials.

Ten vital practices are associated with the Writing to Read model.

1. Teacher prepares daily assignment sheet.
2. Students participate daily at the computer, work journal, and typing/writing stations.
3. Students listen to stories every day.
4. Students record progress daily.
5. Teacher completes class profile sheet weekly.
6. Students work with partners.
7. Students compose words or stories every day.
8. Management plan allows independent movement from station to station.
9. Students operate and care for equipment and materials.
10. Students take completed work journals home to parents.

Selection of Sites

For sites in all states, several factors were considered in the selection of participating schools. First, schools had to be those where students were typically producing low achievement scores. Second, sites chosen had to be those without computers in their school. Third,

superintendents in each district had to be willing to sign a letter of agreement expressing a desire to participate in the project and their willingness to:

- continue the project for a minimum of three years;
- utilize the computers only for the WTR project;
- provide maintenance for the WTR lab equipment;
- replace all consumable materials for years two and three;
- appoint a district WTR coordinator;
- make administrators, teachers, and aides available for training;
- submit an annual report; and,
- provide a lab aide.

It should be noted that while each of these conditions was proposed, minor modifications were made in some instances. For example, ARC indicated that the regular kindergarten aide could serve in the capacity of the lab aide. Most schools were able to hire fulltime aides and some used kindergarten aides and parent volunteers. In addition, while maintenance after initial receipt of the equipment was the responsibility of each of the schools, the sites did not have to sign a maintenance agreement with IBM. Rather, most participating schools had local or regional school personnel who could maintain the hardware as required in the initial agreements.

Initial Lab Equipment

Each site received the following equipment and materials:

- nine IBM PC Jr computers,
- one IBM printer,
- six cassette players,
- eighteen headsets with adapters,
- a set of listening library books and accompanying cassette tapes, and
- a set of work journals for each kindergarten and first-grade student in the school.

The school districts were responsible for individual story diskettes and paper for the printer.

SECTION III
RESULTS: WRITTEN DOCUMENTS

In the next sections, information is summarized concerning review of available written documents, telephone interviews, the teacher survey instrument, and site visits.

AEL Reports

AEL prepared two evaluation reports on the implementation of the WTR program in the 13 rural elementary schools in southern West Virginia (Childers, 1989; Childers, 1990).

During the first year of the project, kindergarten students' writing and spelling samples in WTR schools were compared to the work of students in non-WTR schools in the same district. Using a standard scoring procedure developed by the Educational Testing Service (ETS), a skilled reading supervisor read and scored all writing samples. The difference between the mean scores of the writing samples of WTR students and non-WTR students was found to be statistically significant in favor of the WTR students.

...kindergarten students' writing and spelling samples in WTR schools were compared to the work of students in non-WTR schools in the same district. The difference between the mean scores ...was found to be statistically significant in favor of the WTR students.

The spelling comparison was a short spelling test consisting of the same 10 words used by ETS in its national evaluation of the WTR instructional system (Murphy & Appel, 1984). Spelling tests were scored by either the classroom teacher or the district coordinator. Again, the difference between mean scores of WTR students and non-WTR students was statistically significant in favor of the WTR students.

In addition to the student assessment, teacher questionnaires developed by ETS were distributed to 74 teachers (48 to WTR teachers and 26 to non-WTR teachers) in the five districts. Results indicated that 77 percent of WTR teachers felt that their students were reading and writing "better" than students in previous years, while most non-WTR kindergarten teachers judged reading (63%) and writing (91%) "about the same" as students in previous years.

An analysis of the data led to these conclusions:

- Successful implementation of the WTR instructional system requires an ongoing inservice program.
- Several schools were able to implement the WTR program successfully by using volunteers in place of the paid lab aide.
- Most of the WTR labs provided an attractive and pleasant learning environment.
- Teachers made a real effort to follow the prescribed WTR model.

- Students enjoyed the WTR lab and had little difficulty in using the equipment and materials at the various stations.
- The WTR program had a positive impact on students' achievement in writing and spelling.
- Parents' reactions to the WTR program were positive.
- Teachers' responses to the WTR program were positive.
- The principals of the participating elementary schools responded positively to the WTR program.
- Many of the participating schools and school systems used the WTR program to develop better school-community relations.

During the final year of the project, ...WTR students performed statistically significantly better than non-WTR students.

During the final year of the project, AEL's evaluation followed a similar design, with writing and spelling assessments conducted. As was the case the first year, WTR students performed statistically significantly better than non-WTR students. Analysis of the data led to conclusions in the second year similar to those in the first year.

Forward in the Fifth Annual Reports

Two annual reports from Forward in the Fifth also were reviewed. The annual reports were for 1987-88 and 1988-89. During the first year, Forward in the Fifth reported receiving many positive reports from teachers, principals, and superintendents. Many commented on the children's enchantment with Writing to Read. They also reported that when children in their schools used WTR, the children's attention span and their interest level increased.

In the 1988-89 annual report, Forward in the Fifth commented that the 40 Writing to Read labs placed in Fifth District schools had served as an unexpected vehicle for improving school/home relationships. Schools reported that programs centered around demonstrations of the computer labs had attracted many parents to schools who had not come to the school previously.

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Appalachia Article

In the winter of 1990, Carl Hoffman wrote an article for the magazine *Appalachia*. He visited two schools, one in West Virginia and one in Kentucky, to obtain comments from Central Office personnel, principals, and teachers. One teacher who had been teaching in the same kindergarten classroom for 16 years reported that the writing makes children think: "I don't write these stories up here for them. They've got to think." A first-grade teacher in Kentucky said:

> Children are not intimidated with writing. Several years ago you could have said, 'Okay write me a story about dinosaurs.' Well, some of them would have sat there and said, 'I

> don't know how to spell dinosaur.' Now they don't do that. When you say 'write me a story,' you may get two or three pages from some kids. It really has caused them to not be intimidated by the thought that someone's going to correct their spelling.

Teachers also reported in the article that third- and fourth-grade teachers have seen an improvement in the spelling of students who participated in WTR. One superintendent was so pleased with the success of the project, the article reports, that he approved $20,000 in additional funds to set up a lab in a fourth elementary school in his district. The superintendent commented:

> We feel we had success with [WTR]....Students were beginning to write, and to develop some self-confidence in their writing skills. Teachers were pleased and principals were pleased. It seemed to have a real positive direction for us so we decided to run with it. After all, if your teachers are satisfied with what they're doing [then] that's the strongest element you've got.

SECTION IV
RESULTS: TELEPHONE INTERVIEWS

Telephone interviews were conducted with local district WTR coordinators and current principals from participating schools. It should be noted that due to numerous personnel changes since the inception of the project in 1988, not all of the original coordinators or principals were interviewed. However, the current principals in each of the 55 schools were contacted, as well as each district's coordinator or other personnel who had been involved in the original project.

Questions associated with numbers of participating students, WTR coordinator roles, project training (both initial and ongoing), equipment, program implementation, project effectiveness, student and parent opinions of the project, and what happened when the project officially ended are summarized below.

Nearly 7,000 students were served in each of the three years of the initial project at the 55 participating schools.

Numbers of Students

While exact figures were available for only the West Virginia schools during the first part of the project, Central Office personnel reported estimates of the number of students (both kindergarten and first-graders) who had participated in the program during the interview. Nearly 7,000 students were served in each of the three years of the initial project at the 55 participating schools.

Training

The initial training session was conducted in Lexington, Kentucky, during August of 1988. More than 200 administrators, principals, teachers, and lab aides attended the training from Kentucky and West Virginia. Staff from the two Virginia schools held their initial training in Atlanta at about the same time. The training was conducted by IBM personnel and classroom teachers who were using the Writing to Read program. Upon completion of the training, each district coordinator received a set of video training tapes and teacher manuals. These coordinators then were responsible for training personnel who were unable to attend the initial training.

About 80 percent of the WTR coordinators and principals had been trained at the initial session in Lexington. Those who had not received initial training at that time were trained locally by personnel who had attended the original training or by IBM trainers.

Nearly two-thirds of the respondents described the initial training in Lexington as "very good/excellent," while the other third reported

"good/fine." Only two respondents rated the training "fair or poor."

Respondents who rated that initial training positively added comments such as:

"It was very motivational."

"It was absolutely wonderful. We couldn't have implemented the project without it."

"Extremely comprehensive. Gave me data driven research to explain to parents."

"We were very excited about it. Teachers felt their concerns were addressed."

"Very practical. It really sold us on the program and gave us lots of resources."

"It [the training] was absolutely wonderful. We couldn't have implemented the project without it."

One of the two respondents who did not rate the initial training favorably indicated that the trainers "didn't like us asking so many questions."

The ongoing training received locally was rated very positively, but not quite as positively as the initial training. One-third of the respondents rated the local training as "very good/excellent," and two-thirds "good/fine." One respondent described the local training as only "satisfactory." Comments about the local training included:

"Not as effective as the initial training. Some teachers resented not getting to go to the initial training and felt they were not trained as well."

"Some of the teachers who did not get their training in Lexington did not seem as comfortable."

"The local training was not as good as Lexington, but after we got some experience, we could anticipate problems better."

"Excellent! Our teachers felt very prepared."

"Very good. We did a lot of local training. We even provided training to other neighboring counties."

Equipment

A number of comments were elicited when respondents were asked about the initial equipment used in the project. Reports ranged from "our computers were in excellent shape" to "we got ours in pieces in the back of a pick-up. I've got the pictures to prove it." It appeared that some respondents were not aware that the computers had been used before until they were received at the school. It became increasingly difficult for the locations to find replacement parts.

Most respondents indicated that they had great difficulty with the

first headphones provided. Nearly every site indicated that they had to replace the headphones early in the project, because they were not of high enough quality or durable enough to be handled all day long by young children. ARC provided additional funds for headphones to be replaced.

Several sites also described adapters for the tape recorders, as well as the tape recorders themselves, as troublesome. Fewer respondents reported problems with software and consumable materials.

ARC provided additional funds for headphones to be replaced. ... IBM repaired or replaced all equipment that was inoperative....

It should be noted that even though a number of problems with equipment were described, both ARC and IBM provided additional resources and helped to insure that each lab was up and running as intended. For example, ARC provided additional funds for new headphones in each site after those initially purchased proved inadequate. IBM repaired or replaced all equipment that was inoperative at the beginning of the project until each lab had a full complement of equipment and materials.

While it appeared that there were a great many initial problems with the equipment, most respondents indicated that the difficulties were eventually overcome, and that the lab ran fairly smoothly from the beginning. Even with the problems, all respondents indicated that having the equipment donated and a functioning lab provided an opportunity they would not have had otherwise.

Some of the comments about the equipment included:

"We had trouble finding replacement parts. It put us in a bind a couple of times at our own cost."

"The headphones and jacks to the tape recorders were problematic. We had to replace them."

"The equipment was used around the clock. The headphones were not sturdy but the hardware was fairly good. No problems we couldn't overcome."

"Headphones had to be replaced real quickly. Hardware was fair, but we were able to get things repaired fairly easily and in a timely fashion."

"No more problems than usual."

"Some trouble with tape recorders. Our computers were new. Only had minor problems throughout. ARC and IBM were very supportive, I don't think we ever had a request of any kind turned down."

"Hardware was great! We were lucky that all our stuff worked. Our building was older so installation was more difficult."

Program Implementation

When interviewers asked if there were any problems associated with implementing the project, the common response was "no." A handful of problems were noted, however. In one school where the teachers had not bought into the project, the program did not run as smoothly. One respondent indicated some difficulty in getting the software running, while another indicated initial problems getting things printed. Teachers in one site wanted to limit the time at each work station. One site had a problem finding the physical space for the lab due to a fire in the school.

More than 90 percent of the respondents reported no problems adhering to the guidelines.

Respondents were also asked how closely their schools were able to adhere to the guidelines established by Dr. Martin. More than 90 percent of the respondents reported no problems adhering to the guidelines. The only problems noted were those associated with scheduling the lab. In some instances, each class could not be on the system for the suggested length of time. Individual sites made minor modifications (for example, attending lab four times per week rather than every day) to suit their needs.

Comments concerning the implementation of the project included:

"No problems. It went very smoothly."

"We went by the book. We're still adhering to the guidelines."

"Modified a little the first year and afterward. Didn't put the time in as required so we could meet our needs."

"Adhered to the guidelines closely. Some isolated teachers didn't go, but the kids were the 'first to rat' if they didn't go."

Formal or Informal Evaluations

Participating schools were asked if they had conducted any formal or informal evaluations of the project. The only formal evaluations conducted were those reported by AEL for the West Virginia sites. Those results are discussed elsewhere in this report and will not be repeated here. Although no formal evaluations were conducted in Kentucky or Virginia, many "informal" evaluation comments were made.

"The higher grade teachers feel kids are better able to express themselves having been through WTR."

"We feel like it has had an impact in achievement of kindergartners and first-graders. [Achievement scores] have gone up dramatically,"

"It's easy to see; there is an increased motivation to write."

"Input from teachers seems to indicate that test data over the last four years have gone up about 2.5 NCE's."

"The higher grade teachers feel kids are better able to express themselves having been through WTR."

"My observations?—everything indicates it has helped."

"Emotionally it has been good. When the superintendent asks 'should it be continued?' everyone always says yes and it's supported."

"If you talked to teachers whose students had WTR and those who didn't, the comments from those with WTR were markedly better."

"Teachers' remarks in meetings and staffing. They were able to view more volume of work and an increase in writing and creativity."

"We've seen yearly improvement in writing scores."

...the WTR project gave participating districts in Kentucky a leg up on meeting the requirements of the Kentucky Education Reform Act (KERA).

Overall Effectiveness of the Project

Respondents were asked to rate the overall effectiveness of the project. The reported response was overwhelmingly positive. Not only were the schools pleased with the results they saw in the students, but they also reported a number of other significant unanticipated results. Most respondents indicated an increase in the participation of parents at school and in the interest of local businesses in their school. Several offered open houses in the WTR labs and had impressive attendance. When new equipment or materials were needed, local parent organizations and businesses (e.g., local grocery stores, chambers of commerce, and community clubs) often pitched in and donated time and/or money.

West Virginia sites were ahead with respect to Governor Caperton's computer-based basic skills program.

One of the other significant results was that the WTR project gave participating districts in Kentucky a leg up on meeting the requirements of the Kentucky Education Reform Act (KERA). West Virginia sites were ahead with respect to Governor Caperton's computer-based basic skills program.

A clear pattern of responses was also established with respect to the benefits of children's exposure to computer technology that they would not have otherwise had but for the WTR project. Nearly all of the respondents made this comment.

Many comments illustrate the positive view of the effectiveness of the program. For example:

"Extremely effective. We were honored to be chosen."

"WTR was a peephole into the future of what our schools are going to look like."

"WTR was a peephole into the future of what our schools are going to look like."

"The kids looked forward to being on the computers—and no joystick needed!"

"Great! When you have kindergarten kids using words they never would have before and writing—it's very effective."

"It's no-cure all for all problems, but it's a great enhancement for learning."

"Wonderful! Important for our at-risk children."

"Nothing but favorable comments. Have helped us establish a district-wide program."

"It was a life saver. We needed a lot of help in the area of writing. It was the first big step to writing instruction."

"Excellent. Motivates students at all achievement levels."

"A 9.5 on a scale of 10."

"I never heard a child say 'Do I have to go to the lab?' How many things can you say that about?"

It should be noted that one site did not find the project effective. That respondent rated the overall effectiveness as "a 3 on a scale of 10." This was also the site that rated the initial training in Lexington poorly and had their hardware delivered "in pieces in the back of a pick-up truck."

Student Perceptions

Again, the responses concerning students' opinions were overwhelmingly positive. Many respondents thought that the children would be greatly apprehensive about the lab. Their response was quite the opposite. Children responded very positively to the program and often complained when they were unable to attend lab. A number of superlatives about the children's feelings of WTR were described in the interviews.

"Not intimidated at all! They loved it! They were able to create stories right off."

"They were wild about it! It was very heartening to see their first compositions. It has definitely changed their attitudes about reading and writing."

"As second-graders they were sad that they could no longer go to the lab."

"I never heard a child say 'Do I have to go to the lab?' How many things can you say that about?"

"Many kids would rather be in the lab than anywhere. Many had never listened through headphones before and only saw those things [computers] 'on TV.' "

"As second-graders they were sad that they could no longer go to the lab."

"The children were very proud of themselves to see their work displayed in school."

"They love it and learn a great deal."

"It enabled them to have freedom of expression."

Parent Perceptions

The response from parents was generally positive. Respondents indicated some parents were initially concerned about the spelling process of WTR. However, most noted that parents felt more at ease about the unique spelling process after reading their children's stories and becoming familiar with the lab. Several sites provided information to parents through various organizations and offered open houses or orientations for the parents. Not only were parents able to see their children at work in the lab, but often they were allowed to experience the program for themselves. In sites where this type of orientation was conducted, parents had much less concern about the spelling.

Parents also were very excited that their children were being exposed to computer technology. Many parents indicated that their children would not have had the opportunity to use computers had it not been for the WTR lab. In addition, many parents saw improvements in their children's skills.

Comments representative of parents' views as reported by those interviewed included:

"Very positive responses. Parents received a lot of their children's work. We did parent workshops to explain the program and the terminology."

"We had a WTR parent night. They were very enthused. Had some skeptics about the spelling."

"They were delighted! Parents in the eight other elementary schools were sick because their kids didn't get it. Parents were glad to see kids with the opportunity to use computers."

"No negatives. Everything positive."

"Very good. Had parent meetings. Parents were impressed with the work their kids brought home. It was good PR."

"They were thrilled! The program sells itself."

"The parents loved it! Just the fact that their kids are using computers is great. They [parents] love to come to school to see the computer lab."

"They were very excited because their children were writing. Some made Christmas ornaments out of their children's WTR stories."

"On parents and grandparents day, it [the WTR lab] is the first thing we show them."

"The whole community is positive and supportive of the technology."

"The parents loved it! Just the fact that their kids are using computers is great. They [parents] love to come to school to see the computer lab."

"Very positive. It establishes portfolios for kids to take home."

What Happened When Project Formally Ended

Since the project formally ended after the 1990-91 school year, many things have happened at various sites. The program is running in 42 of the original 55 schools. Five additional sites are still using some of the original equipment and have WTR available, but are not using it in a lab setting. Only eight sites are not using any of the equipment at this time. In one of these sites, a fire destroyed the building and equipment. In another, staff were unable to find replacement parts and the original equipment became inoperable. In the other two sites, equipment had worn out until only a few machines were operable and no funds for repair or replacement were available.

Of the 42 sites still using a WTR lab, nine were able to find appropriations for new equipment. All of the sites still using the system continued to report the same benefits they saw during the original three-year project. In at least six districts that had schools participating in the original project, WTR was expanded to all of the elementary schools in those districts. While several additional factors were associated with this phenomenon, each of the respondents from these districts reported that expansion was in large part due to the success achieved during the original project.

One of the greatest benefits noted by many of the participants was the improvement in children's writing and their active participation in the creative writing process.

Major Impact and Lasting Benefits

It was clear from the interviews that a number of lasting benefits accrued from this project. Respondents were overwhelmingly positive concerning their participation; while some problems were reported (most notably equipment problems), none were too great to overcome. Though there were a myriad of responses as to the major impact of the project in individual districts, four major benefits clearly were reported.

One of the greatest benefits noted by many of the participants was the improvement in children's writing and their active participation in the creative writing process. Stories from individual students provided the evidence for measures of success. Many respondents indicated they never thought children at that age could produce such work.

Second, it was reported that students, parents, teachers, and administrators almost unanimously agreed that the access to technology was a great benefit. Many said there would never have been an opportunity for the children to use computers had it not been for this project.

Third, many respondents thought the project had been a helpful prelude to the Kentucky Education Reform Act (KERA) in Kentucky and Governor Caperton's computer-based basic skills program initiative in West Virginia. Several of the districts felt they had an advantage over other schools because of their participation in the project.

Fourth, and possibly most important, it was clear from the interviews that local school personnel saw an increase in self-esteem and confidence in the students who participated in the project. The program enhanced children's ability to work with others, brought shy students out of their shell, and provided many proud moments when children displayed their work at school, in local papers, and at home to family and friends. Respondents indicated that student creativity was fostered during the project, and that their confidence and enthusiasm about writing was greater than previous students who had not been part of WTR.

SECTION V
RESULTS: SURVEY INSTRUMENT

AEL evaluators sent teacher questionnaires to each of the 55 participating schools. Principals estimated numbers of questionnaires needed at the time they agreed to participate in the followup study. Based on principals' estimates, 300 questionnaires were sent to teachers. After a reasonable period of time, a followup reminder letter was sent to those principals from whom questionnaires had not been received. A third contact, a followup phone call, was made to each of the schools where responses had yet to be collected. Finally, one last note was forwarded to the remaining schools requesting that any completed questionnaires be forwarded. Questionnaires were returned from 228 teachers who had participated in the project for at least one of the initial three years. Responses from five schools were not obtained. In one of these schools the principal indicated that his staff were "too busy" to complete the task. In another, no teachers who had been part of the initial project were still at the school. In yet another, the school had water leaks and had not been in session to complete the task.

Questionnaires were returned from 228 teachers who had participated in the project....

Demographic Summaries

The number of completed surveys from teachers at any one participating school ranged from one to 13. Completed questionnaires were received from 174 teachers in Kentucky, 10 in Virginia, and 44 in West Virginia. The mean number of years teaching was 13.01, indicating that respondents were veteran teachers who probably had not had a great deal of exposure to computers until the WTR project.

Results of Questionnaire Items

Several items on the teacher questionnaire required "checkmark" responses to category choices. The results are presented in the following tables.

Table 1 presents results from the item concerning training the

teachers received. An overwhelming majority (80.6%) of teachers rated training "good" or "excellent."

TABLE 1
How would you rate the training you received?

Response	Percent
Excellent	37.2
Good	40.1
Average	13.8
Fair	5.0
Poor	3.7

Teachers were asked how easy the WTR program was to use. Table 2 presents the responses to this question. More than 75 percent found it very easy or easy to use. Less than 6 percent of those responding found the WTR program difficult to use.

TABLE 2

How easy was it for you as a teacher to use the Writing to Read Program?

Response	Percent
Very Easy	32.1
Easy	40.7
Neither Easy Nor Difficult	20.8
Difficult	5.4
Very Difficult	0.5

Problems with equipment were noted by teachers in another item on the questionnaire. Table 3 presents information on the percentage of

teachers who experienced a problem with the various components. Data from the teachers' survey clearly corroborate that from the principals/coordinators with regard to equipment, especially headphones.

TABLE 3

Did you experience problems with any of the following? Check (√) all that apply.

Response	Percent
Computer Hardware	34.8
Printers	16.3
Training	8.8
Headphones	42.7
Software	15.4
Tape Players	26.4
Other	6.6

Table 4 reports teacher responses about their attitude toward Writing to Read. Nearly 90 percent of the teachers liked the program.

TABLE 4

How did you feel about Writing to Read?

Response	Percent
Liked It Very Much	48.2
Liked It	41.7
Disliked It	3.9
Disliked It Very Much	0.9
Not Sure	5.3

Teachers were also asked to rate the Writing to Read project's

overall effectiveness. Table 5 indicates that more than 85 percent of respondents reported finding the project "effective" or "very effective."

TABLE 5

How would you rate the Writing to Read project's overall effectiveness?

Response	Percent
Very Effective	42.1
Effective	44.7
Ineffective	2.2
Very Ineffective	0.4
Not Sure	10.5

Table 6 describes students' reactions to the WTR lab experience. From the results presented, it appears that students were overwhelmingly positive about Writing to Read based on teachers' perceptions.

TABLE 6

How did your students react to the Writing to Read lab experience?

Response	Percent
Very Positive	53.3
Positive	38.7
Neutral	7.4
Negative	0.0
Very Negative	0.4

Teachers were also asked about the feedback they received from parents about Writing to Read. Fully 80 percent of the parents gave

positive feedback to teachers about the program. These results are presented in Table 7. Less than 3 percent received negative feedback.

TABLE 7

What kind of feedback did you have from parents about the Writing to Read project?

Response	Percent
Very Positive	33.6
Positive	47.1
Have Had No Feedback	16.6
Negative	2.2
Very Negative	0.4

Summary of Open-ended Responses from Teacher Questionnaire

A number of responses from teachers concerned the lasting benefit or major impact of the project, as well as the strengths and weaknesses of the project. These are summarized below.

Not every teacher responded to the open-ended questions. Those who did described the following as the lasting impact/major benefit/strength of the program. First, the two most frequently noted responses were: 1) the project encouraged and stimulated students to write; and 2) the project gave students an exposure to technology they might not have had otherwise. More than 85 teachers responded with each of these comments. The next most frequently noted responses (coming from more than 35 teachers) were that the project: 1) increased student creativity; 2) reinforced learning phonics; and 3) helped students better enjoy reading and writing. Responses from 20-25 teachers indicated that the project: 1) increased student self-confidence; 2) enhanced students' abilities to work together; 3) allowed students to better express themselves; 4) made students better readers; and 5) provided the students a risk-free environment in which to learn. Other comments from fewer than five teachers each indicated that the project: 1) made students think on their own; 2) allowed individual instruction; 3) encouraged shy students to perform; and 4) provided students with hands-on experiences.

...the project encouraged and stimulated students to write and...gave students an exposure to technology they might not have had otherwise.

Weaknesses were noted by fewer than 10 teachers. These included concerns about: inventive spelling, problems with equipment, lack of computers, students becoming bored with the activities, and time the lab took away from the classroom. By and large, teachers made few negative comments about the project.

SECTION VI
RESULTS: SITE VISITS

Three schools were chosen for site visits: one in Kentucky, one in Virginia, and one in West Virginia. These schools were not chosen to represent a typical participating school, but rather as examples of where the project had a major impact. In fact, the sites' districts have expanded WTR to all elementary schools in the districts, largely due to the schools' participation in the original project.

Prior to conducting the site visits, interviews were conducted with AEL and Forward in the Fifth personnel to gather information on how the project was facilitated by each group (AEL in West Virginia and Forward in the Fifth in Kentucky), and background information about each site. Information was collected concerning the initial distribution of equipment and materials, additional training opportunities, and general coordinating activities provided by each organization.

Site A

Site description. One site visited was located in Kentucky. The county in which this school is located is a rural area in southeast Kentucky, where agriculture is the primary source of income for most residents. The school district has a total of four elementary schools and prides itself on taking a leadership role and being proactive in the KERA movement. AEL staff were escorted to the school by the district's technology coordinator, who also provided additional information about the project in her district.

Site A's enrollment is approximately 750 in grades K-8 with four kindergarten and four first-grade classes. The school has been recently built on the site of the former school, which housed the initial project during the first years. The school is modern looking with evidence of school pride noted throughout the halls.

Observations of lab. The WTR lab is currently housed in a classroom on the first floor. The equipment is the same as was received at the beginning of the project. It appeared in remarkably good repair. Each work station was identified by a sign hanging from the ceiling, and many examples of students' work hung on the walls. Sight words and other information about the WTR were displayed appropriately in the classroom. This particular school employs a fulltime aide and has done so since the beginning of the project.

Teacher interviews. The original fulltime aide and two teachers were interviewed during the site visit. The original lab aide indicated

that she thought the project "was a wonderful program. The kids really learned in there." Several school personnel, including the district technology coordinator, principal, teachers, and current lab aide, indicated that a great deal of the credit for the success of the WTR lab in this school should be given to the original lab aide. They said her organization, enthusiasm, and concern for making the program a success were of utmost importance for the success of the lab.

Each of the teachers interviewed had been at this particular school since the beginning of the project, with one of them having attended the original training in Lexington. The first-grade teacher suggested that she was amazed that first-grade students who used the WTR lab did not complain about having to write when they got to the first grade. She indicated that for WTR to be successful, a school must have supportive teachers and said that some of the older teachers exhibited less buy-in. Parents' and children's responses were very favorable. Each Friday, students read their stories over a microphone set up in the WTR lab. "Students just love this part," she said. Students also share ideas and comments about each others' stories during this activity.

...first-grade students who used the WTR lab did not complain about having to write when they got to the first grade.

The only negative comment noted by this teacher was that some of the second-grade teachers complained that students were not spelling as well due to the inventive spelling of the WTR program. The teacher pointed out quickly, however, that the words the students were misspelling were much more difficult words than they had been trying previously at the second-grade level.

The other teacher interviewed said that students really enjoyed the lab and were not afraid of the computers. She noted that a truly successful program needed a fulltime aide who was knowledgeable, which this school had been fortunate to have throughout the use of the WTR lab. She reported that she never thought kindergarten children were capable of writing as they were in her classes. Overall, she was very positive about the program.

Each Friday, students read their stories over a microphone set up in the WTR lab.

One fourth-grade teacher, who had previously been a kindergarten teacher and had used the WTR lab, was interviewed. She reported that her fourth-grade students who had used WTR clearly were better writers than students she had previously who had not used WTR. She noted that she couldn't tell if they were better readers or not.

All teachers interviewed at this school felt that an advantage of the lab setting was that it helped students learn to work together. In this particular lab, they added a "pre-writing station" where students added drawings to their stories or "edited" their work. Teachers reported that this added station was a good opportunity for students to discuss their work with their peers and to share ideas about their stories.

Student interviews. Several kindergarten and first-grade students, along with two fourth-grade students, were interviewed at this school. The kindergarten and first-graders liked "everything" about the lab. One student reported that she "loved" the lab and she

liked that she could "write any story we want and learn how to spell." Another student reported that she liked to read her stories to other students and parents on Friday. None of the kindergarten or first-graders could think of anything they didn't like about the lab.

The fourth-grade students were also very positive about their experience in the WTR lab. They both suggested that they were better spellers and writers because of their experience with the WTR lab. They reported enjoying the listening lab and being able to share their stories with their families. One of the fourth-grade students indicated that the only thing she didn't like was how the silent letters were in small print on the computers when learning the sounds of certain words. She said, "I wish they would have spelled it right with all the letters the same size."

They reported enjoying the listening lab and being able to share their stories with their families.

Site B

Site description. One site visit was made to a school in Virginia located in a very rural area. The majority of jobs in this area are industrial; there is no mining in this county. Parental support and involvement are said to be very high in this district. All five elementary schools in this district now have Writing to Read labs.

This county's largest elementary school was chosen for the site visit. It was one of two original schools in the ARC/IBM project. The district's curriculum supervisor escorted AEL staff to the school and provided information about the project in his district.

Site B's enrollment is approximately 450-500, with children attending in grades K-6. There are two kindergarten and two first-grade classes.

Observations of lab. The WTR lab has been housed in the same room since the beginning of the project. The room has adequate space and lighting. The lab's physical environment was very positive with examples of work, sight words, and information about appropriate care of computers and computer equipment displayed throughout. Home-made seat covers also served as backpacks on the back of each chair. As students moved from station to station they put their folders in the cover leaving table space uncluttered. The same lab aide has been employed at this site since the beginning of the project. This person apparently was well-liked and appreciated by all involved in the program. A novel approach in this particular lab was that of having fifth- and sixth-grade students who were members of the Honor Society serve as volunteers.

A novel approach in this particular lab was that of having fifth- and sixth-grade students who were members of the Honor Society serve as volunteers.

Teacher interviews. One of the teachers interviewed had been a kindergarten teacher during the first two years of the project, but now was serving in the capacity of a second-grade teacher. She indicated that she thought the project was a very successful one and that the lab aide was "just wonderful." She also indicated that she saw significant

improvement in kindergartners' willingness to write and read for those who experienced the WTR lab over those who had not. Now, as a second-grade teacher, she sometimes uses the lab to help those in her class who are having difficulties. She suggested that students in the fourth and fifth grades who had been through the WTR lab were better readers than students before them who did not have the lab experience in kindergarten and first grade.

Another teacher interviewed noted that students were not intimidated by the computers at all and "they loved going to the lab." She said the students are attentive in the lab and enjoy the various stations. She also said that students using the WTR lab seemed more willing to read and write.

...students were not intimidated by the computers at all and "they loved going to the lab."

One fourth-grade teacher was interviewed and asked if her fourth-grade class appeared to read or write differently than previous fourth-grade classes. She indicated that she did not see a big difference in the fourth graders' writing ability, but that their reading and spelling appeared to be on target for this age group. Although she did not have a great deal of experience with the WTR lab, she thought that it was a very useful program.

Student interviews. Randomly selected kindergarten, first-grade, and fourth-grade students were interviewed at this school. Each of the kindergarten and first-graders thought the lab was "fun" and a good learning experience. They liked each of the stations and did not voice any negatives about the project. They liked writing stories and "typing them in."

Two fourth-grade students were interviewed. They recalled positive experiences about the lab from their kindergarten and first-grade years. They indicated that they thought the lab helped them to write better and that working in the lab made them better readers. One of the students worked in the lab as an Honor Society volunteer and thought the lab was helpful to the kindergartners and first-grade students. She had a younger brother who "really likes the lab."

Site C

Site description. One site visit was made to a school in West Virginia. The school is located in an area of rich coal fields, where miners were paid wages higher than those paid school teachers. Most mining jobs are gone now, and with no alternative industries in the county, unemployment rates have climbed and remain high. Due to decreased school enrollment, consolidation was necessary, dividing communities in the county.

One of this county's three participating elementary schools was chosen for a site visit. Information collected during the coordinator's interview about the continued successful use of the program, and the county's plight described above, made this elementary school an

appropriate choice for a hands-on look at the project. AEL staff were escorted to the school by the district's elementary supervisor, who also provided information about the project in his district.

Site C's enrollment is approximately 280 children in grades K-6, with two kindergarten and two first-grade classes.

Observations of lab. The WTR lab has been housed in the same room since the beginning of the project. It is noteworthy that several teachers and parent volunteers converted former storage space into this lab, which is bright, colorful, clean, and well-kept. The physical environment of the WTR provides a comfortable learning setting for children at this site. Volunteers and regular kindergarten aides serve as WTR lab aides.

Teacher interviews. Each of the teachers interviewed had been at this school since the beginning of the project. They were overwhelmingly positive in their comments about the project. One teacher indicated that she was "a hard sell" and "very skeptical at first." Once she saw the students at the work stations and the students were thinking on their own, she became the program's biggest supporter, she indicated.

One teacher indicated that she was "a hard sell" and "very skeptical at first." Once she saw the students at the work stations and the students were thinking on their own, she became the program's biggest supporter....

The other teacher interviewed noted that students were not intimidated by the computers at all and they loved going to the lab. She noted that she tries to integrate what they are working on in lab with what is being taught in the classroom. In fact, she had a copy of all the sight words also located in her classroom. This teacher also reported that first-grade students she had using the Writing to Read lab were markedly better at writing than her previous first-grade students who had not been exposed to WTR.

One fourth-grade teacher was interviewed and asked if his fourth-grade class appeared to read or write differently than previous fourth-grade classes. (This fourth-grade class was the kindergarten class during the first year of the project). He said that he has noted quite a difference in the reading ability of this class.

Student interviews. Several kindergarten, first-grade, and fourth-grade students were interviewed at this school. The kindergarten and first-graders unanimously thought the lab was a positive experience. They liked working with computers, writing stories on "whatever we want," and listening at the listening lab. Of the eight students interviewed, none made negative comments or noted problems.

Fourth-grade students who were interviewed were equally as positive. They were able to recall specific stories they had written and indicated they still had their "journals of stories" at home. They enjoyed having their parents read their stories at home and having their work displayed at school. Each also suggested they thought they were better spellers because of being in the Writing to Read program. Two of those interviewed also indicated they liked the individual attention from the teacher.

SECTION VII
CONCLUSIONS AND SUMMARY

Although there were some minor problems noted throughout the project, it should be concluded that the ARC/IBM Writing to Read project in Kentucky, West Virginia, and Virginia was an overwhelming success. Many positive outcomes were noted by students, teachers, parents, and school administrators alike. The following conclusions are presented based on the data collected during the followup study.

...the ARC/IBM Writing to Read project in Kentucky, West Virginia, and Virginia was an overwhelming success.

Conclusions

Conclusion #1: Virtually all participants of the ARC/IBM Writing to Read project thought it was a very positive experience.

Reports from students, teachers, principals, and parents indicated that the Writing to Read project was a success. From the smiles on students' faces when talking about their stories to the comments from teachers about thinking first-graders could not write, all were glad they had the opportunity to participate.

Conclusion #2: Successful implementation of the Writing to Read instructional system is enhanced by utilizing a fulltime aide.

A majority of teachers suggested that it was necessary to have a fulltime aide in the lab. The aide did not have to be paid; a volunteer could serve well also.

Conclusion #3: Successful implementation of the Writing to Read instructional system requires hands-on training and an ongoing inservice program.

Throughout the data-collection process, it became evident that training was a crucial component of successful implementation. From the positive ratings of training provided during this project, it appears that training needs were more than adequately met.

Conclusion #4: Students were overwhelmingly positive about the Writing to Read program and exhibited no difficulties in using the equipment or materials at the various stations.

Without a doubt, students loved the Writing to Read program. Many people assume that children will be intimidated by technology; the followup study points to that as an invalid assumption. In fact, the opposite is true. Teachers reported that students "jumped right in" to using the computers, and no student who was interviewed indicated any apprehension about using Writing to Read.

Conclusion #5: The Writing to Read program appears to have had a positive effect on students' writing, reading, and spelling in the participating project schools.

Results from AEL's annual reports of the West Virginia schools, and interview data from all sites, suggest that students' writing, reading, and spelling improved as a result of having participated in the Writing to Read project. Though a good deal of the data arise from informal observations, the overwhelming consensus is that improvement was observable.

Conclusion #6: Teachers' responses to the Writing to Read project were generally very positive.

Most teachers gave very favorable responses to questions concerning the Writing to Read project. Three concerns were most frequently noted: not having a lab aide, the inventive spelling, and trouble with equipment. Given that two of these concerns (availability of lab aide and equipment problems) are not in the control of the teacher, and the concerns about the inventive spelling was noted by a small proportion of the teachers, it appears that teachers feel there are few things to be displeased about with respect to the project.

Conclusion #7: Parents' responses to the Writing to Read project were overwhelmingly positive.

Teachers, principals, and coordinators all reported that parents were extremely pleased with the Writing to Read project. A number of schools have included parents as part of the program and have offered several opportunities for parents to view and/or participate in the Writing to Read project. Several sites raised additional funds to supplement lab needs through parental efforts. In addition, the value of children sharing their stories with their parents cannot be measured in a simple way.

Conclusion #8: Principals' responses to the Writing to Read project were very positive.

Given that most educational innovations, especially those that are technology related, produce more work for educators (and in particular, principals), it would seem that principals may be a skeptical group. Not so with the principals associated with this project. There was nearly unanimous agreement among principals that this was a useful, productive, and successful program. Each saw great benefits ranging from increased writing by students, enhanced teacher development in the area of technology, and unique community support.

Conclusion #9: This project exposed students to technology that they might never have had otherwise.

Because of the economic condition of the communities in which participating schools are located, opportunities for technological innovations are limited. In nearly every site, teachers and administra-

tors noted the tremendous opportunity this project afforded their students. Educators are aware that technology is the wave of the future; those without opportunity will be a step behind. This project allowed participating schools to stay in stride and, in some cases, forge ahead of the technology revolution.

Conclusion #10: Many serendipitous benefits were acknowledged by participants of the project.

Several unexpected benefits were noted by personnel involved with the project. For example, the increased community relations established as a result of the la[illegible] were a great improvement in schools. In some, the project brought parents to school for the first time. In others, businesses donated unsolicited time and resources to assist schools.

In some [schools], the project brought parents to school for the first time.

The project also provided the participating schools a preview of what to expect from components of KERA and the Governor's technology initiative in West Virginia. The project served as a testing ground for some of the recent developments in educational reform.

One of the most appreciated and unexpected results was the increase in the ability of young students to work together as a result of the project. Many teachers reported observing an increase in students' interpersonal skills and self-esteem due to the group work associated with the project.

Conclusion #11: The many benefits of this collaborative effort were seen long after the project formally ended.

Two years after the project formally ended, benefits were still easy to see. Fourth-grade students could remember stories they had written as kindergartners; parents had become active participants in their child's education; teachers who had been skeptical of technology had become supporters of reform; kids who don't usually get a chance, got a chance.

Two years after the project formally ended...fourth-grade students could remember stories they had written as kindergartners....

Conclusion #12: An effort such as this one is well received by students, teachers, administrators, and the general community at large.

Collaborative efforts of this magnitude are few and far between in education. Everyone who had comments about this project, even those whose views were not always favorable, reported being pleased their school had been selected and had the opportunity to participate in the project.

Summary

This report summarizes activities conducted by AEL and describes the various processes employed by participating schools in implementing the WTR program; assesses Writing to Read program activities that continued beyond the conclusion of the ARC/IBM Writing to Read project; and evaluates the project's overall effectiveness. Opinions, anecdotes, and other information were collected from hundreds of

students, teachers, principals, and central office personnel in the 55 participating schools.

More than 7,000 students in poor, rural schools in Kentucky, West Virginia, and Virginia were afforded an opportunity to experience technology they might not have otherwise had. Though minor modifications were made in some schools (mostly due to space or a large number of students), all sites were able to implement the Writing to Read program according to the guidelines and 10 vital practices developed by Dr. Martin throughout the three-year project. Scores of teachers, lab aides, and principals were trained initially with extensive local training offered for the duration of the project. Many schools were able to hire fulltime lab aides, while others utilized already employed kindergarten aides or parent volunteers.

More than 7,000 students in poor, rural schools in Kentucky, West Virginia, and Virginia were afforded an opportunity to experience technology they might not have otherwise had.

Some sites had initial problems with equipment, but the problems were promptly addressed by ARC and IBM. Continued maintenance was a problem in some sites, but by and large, all sites were able to keep the labs functioning appropriately during the three-year project. In fact, many sites are still using the initial equipment to this day in their schools.

Writing to Read labs still exist in 42 of the original 55 sites. Five additional sites still use some of the original equipment and have WTR available to students, but not in the lab settings. Several districts were able to expand the Writing to Read program to all elementary schools in their districts, in large part due to the success of the initial ARC/IBM project.

Writing to Read labs still exist in 42 of the original 55 sites.

No single measure is powerful enough to determine the overall effectiveness of this program. However, through a number of different measures—including interviews with students, teachers, principals, and WTR coordinators, surveys completed by teachers, and in-depth case studies—sufficient data have been collected to suggest that the project was an overwhelming success. This report attempts to present both the strengths and weaknesses of the project; it is clear that the benefits experienced by those who participated far outweigh any problems or drawbacks. The project was a great success.

SECTION VIII
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APPENDIX A

WRITING TO READ COORDINATOR PHONE INTERVIEW

SCHOOL DISTRICT_____

SCHOOL_____

WTR COORDINATOR_____

COORDINATOR POSITION_____

SCHOOL PRINCIPAL (during project)_____

CURRENT SCHOOL PRINCIPAL_____

1. Were both K and 1st grade using the Writing to Read program at the beginning of the project? What is the total number of students that have used the Writing to Read program in K or 1st grade during the years of the ARC/IBM Writing to Read project?

	1988-89	1989-90	1990-91
K	_____	_____	_____
1st	_____	_____	_____

2. What was your role as the Writing to Read coordinator?

Did your school(s) hire a lab aide for the project?

3. Did you receive your initial training in Lexington, Ky., at the beginning of the project?

If not, from whom did you receive training?

Who attending the initial training in Lexington from your school?

4. Was there any on-going training available after the initial training? How did new people to the project get trained?

5. Did you experience any problems with any of the training? If so, what types of problems and with which training?

6. How would you rate the training you received?

   How would you rate the training conducted for new people to the project?

7. What did the majority of teachers in your school think about the ARC/IBM Writing to Read project?

8. How did you feel about the ARC/IBM Writing to Read project?

9. How close was your school able to adhere to the implementation guidelines established by Dr. Martin who developed the Writing to Read program?

10. How would you rate the Writing to Read project's overall effectiveness?

11. Have there been any formal or informal evaluations done of the effectiveness of the ARC/IBM Writing to Read project in (school)?

12. What were your perceptions of the kind of feedback teachers had from parents about the Writing to Read project?

13. What were your perceptions of the kind of feedback teachers had from students about the Writing to Read project?

14. Did your schools experience problems with any of the equipment? If so, what types of problems?

15. Did your schools experience any problems with the implementation (process) of the project? If so, what were they?

16. What happened when the project officially ended in the school(s)?

17. What do you see as the major impact or lasting benefits of the Writing to Read project in your school?

18. What were the strengths and weaknesses of the ARC/IBM Writing to Read project?

19. Is there anything else you would like to tell us about the writing to read project that we did not think to ask?

APPENDIX B

Memorandum

AEL INCORPORATED

TO: TEACHERS INVOLVED IN ARC/IBM WRITING TO READ PROJECT

FROM: Robert D. Childers/Gregory D. Leopold

DATE:

SUBJECT: Teachers' Opinions of the ARC/IBM Writing to Read Project

The Appalachia Regional Commission (ARC) has asked the Appalachia Educational Laboratory (AEL) to document what people thought of the ARC/IBM Writing to Read project which was conducted during the 1988-89, 1989-90, and 1990-91 academic years. Forward in the Fifth facilitated the project in Kentucky while AEL served West Virginia. We are interested in <u>your</u> views as the teachers involved with the project during those three years.

The purpose of this questionnaire is <u>not</u> to make judgments about your effectiveness as a teacher or the effectiveness of your school. Rather, it is to collect general information about your views of the implementation and effectiveness of the ARC/IBM Writing to Read project, to find out what happened when the project ended, to determine if there were any lasting benefits of the project, and if so, what they were.

It is not necessary to put your name on the questionnaire. Your responses will be completely anonymous, so we hope you will feel free to answer each question candidly.

Thank you for your participation in this study.

PLEASE MARK OR WRITE YOUR RESPONSE TO EACH STATEMENT OR QUESTION DIRECTLY ON THE QUESTIONNAIRE. PLEASE COMPLETE AND RETURN TO YOUR PRINCIPAL OR THE PERSON DESIGNATED TO COLLECT THE QUESTIONNAIRES. THANKS AGAIN FOR YOUR HELP.

TEACHER QUESTIONNAIRE

1. Name (optional) _____

2. School _____

3. Grade presently teaching _____

4. Years of teaching experience including this year _____

5. The ARC/IBM Writing to Read project officially began with the 1988-1989 school year and was to last three years. During which years were you involved? Please check (√) below.

____ 1988-89 ____ 1989-90 ____ 1990-91

6. What grade(s) did you teach while participating in the project?

_____

7. Are you presently using Writing to Read with your classes?

_____ Yes _____ No

If yes, please describe how.

8. Did you receive your initial training in Lexington, KY, at the beginning of the project?

_____ Yes _____ No

If no, from whom did you receive training?

_____ Local Writing to Read Coordinator
_____ Teachers in my school
_____ Others (specify) _____

9. How would you rate the training you received?

_____ Excellent
_____ Good
_____ Average
_____ Fair
_____ Poor

10. Did you receive any inservice training after the project began?

_____ Yes _____ No

If yes, please describe.

11. How easy was it for you as a teacher to use the Writing to Read program?

_____ Very easy
_____ Easy
_____ Neither easy nor difficult
_____ Difficult
_____ Very Difficult

12. Did you experience problems with any of the following? Check (√) all that apply.

_____ Computer hardware
_____ Printers
_____ Training
_____ Other (please specify) _____
_____ Headphones
_____ Software
_____ Tape players

Please explain or describe.

13. How did you feel about Writing to Read?

_____ Liked it very much
_____ Liked it
_____ Not sure
_____ Disliked it
_____ Disliked it very much

14. How would you rate the Writing to Read project's overall effectiveness?

_____ Very effective
_____ Effective
_____ Not sure
_____ Ineffective
_____ Very ineffective

15. How did your students react to the Writing to Read lab experience?

_____ Very positive
_____ Positive
_____ Neutral
_____ Negative
_____ Very negative

16. What kind of feedback did you have from parents about the Writing to Read project?

_____ Very positive
_____ Positive
_____ Have had no feedback
_____ Negative
_____ Very negative

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17. What do you see as the major impact or lasting benefits of the Writing to Read project in your school?

18. What were the strengths and weaknesses of the ARC/IBM Writing to Read project?

19. Did participation in the Writing to Read project have any positive or negative effects on you personally or professionally?

_____ Yes _____ No

If yes, please describe.

20. Is there anything else you would like to tell us about the Writing to Read project that we did not think to ask?