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The Effects of Administrative Uses of Computer Assisted Telecommunications on School Attendance

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The effects of administrative uses of computer assisted telecommunications on school attendance

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THE EFFECTS OF ADMINISTRATIVE USES OF COMPUTER ASSISTED TELECOMMUNICATIONS ON SCHOOL ATTENDANCE

A DISSERTATION

Presented to

The Faculty of the Department of Supervision & Administration

East Tennessee State University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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by

Carroll M. Helm

December 1987

APPROVAL

This is to certify that the Advanced Graduate Committee of

CARROLL MANFORD HELM

met on the

NINETH day of AUGUST, 1987.

The committee read and examined his dissertation, supervised his defense of it in an oral examination, and decided to recommend that his study be submitted to the Graduate Council and the Associate Vice-President for Research and Dean of the Graduate School, in partial fulfillment of the requirements for the degree Doctor of Education in Supervision and Administration.

Chairman, Advanced Graduate Committee

Signed on behalf of the Graduate Council

Associate Vice-President for Research and Dean of the Graduate School

East Tennessee State University
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May 7, 1987

TO: Whom It May Concern

The Institutional Review Board has reviewed the project titled

"The Effects of Administrative Uses of Computer Assisted Telecommunications on School Attendance"

conducted by Mr. Carroll M. Helm, and has concluded that this project does not require Institutional Review Board approval.

If you have any questions concerning this decision, please feel free to contact us at the above address or telephone number.

EAD
Dr. Ernest Daigneault
Chairman, IRB

bm

Abstract

THE ADMINISTRATIVE USE OF COMPUTER ASSISTED TELECOMMUNICATIONS AND ITS EFFECT ON SCHOOL ATTENDANCE

by

Carroll M. Helm

This study examines the administrative uses of the computer in public school administration today. The purpose of the study is to determine if students who were called with a computer assisted dialing device would have a better attendance record than students who were not called.

One hundred and fifty students from three East Tennessee schools were chosen at the beginning of the 1986-1987 school year to serve as the control group, the group which was not to be called. At the end of the 1986-1987 school year another 150 students were selected from the same three schools who had been called with the computer dialing device. Students were compared based on their attendance record for the entire eight-month period.

Using the t test for independent samples, it was determined that students who were called with the computer device had a better attendance record than students who were not called. Boys called with the computer device showed no difference in attendance when compared with girls who were called. Boys who were called showed a significant difference when compared with boys who were not called. Girls who were called showed a significant difference when compared with girls who were not called. Lower socio-economic students called with the computer device showed a significant difference when compared with lower socio-economic students who were not called. Higher socio-economic students called with the computer device showed a significant difference in attendance when compared with lower socio-economic students who were not called. Higher socio-economic students called with the computer device showed a significant difference in attendance when compared with higher socio-economic students who were not called. Black students called with the computer dialing device had a better attendance record than white students who were not called. Black students who were called with the computer device showed no significant difference when compared with black students who were not called. White students called with the computer device showed a significant difference in attendance when compared with white students who were not called. Black students called with the computer device showed a significant difference in attendance when compared

with white students who were also called. Using the F test for analysis of variance it was determined that there were no significant differences in attendance among and within the three groups for students who were called with the computer device and students who were not called.

Conclusions of the study emphasize the need for daily contact with the parents of students who are absent from school. A list of students with excessive absences the previous year should be targeted for a series of interventions to assure consistent school attendance.

DEDICATION

The writer dedicates this dissertation to his father who was able to share many earlier successes but, due to his death, was unable to share this one, and his wife, Linda Davis Helm, and the children who made tremendous sacrifices to allow the writer to pursue his educational goals.

ACKNOWLEDGEMENTS

The writer wishes to express sincere appreciation to everyone who helped make this study possible: to the Hamblen County School System for allowing the program to be implemented in the three schools; to the three principals and secretaries who worked hard to learn and implement the program; to Dr. Charles Burkett, Committee Chairman and director of the dissertation for his guidance, encouragement, assistance and complete support through the study and advanced program; to the other committee members--Dr. Charles Beseda, Dr. Howard Bowers, Dr. Norman Hankins, and Dr. Robert Shepard for their cooperation and consideration; and to all the others who have shared the pain and joy of this experience. Special appreciation is expressed to Melissa Livesay, typist, for her hard work and devotion to the completion of this study.

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CHAPTER 1

Introduction

New York City officials estimate that every percentage point of absenteeism translates into as much as twenty million dollars in lost aid. In Dallas, estimates are that the same percentage point costs the school district an extra one million dollars in state funding.[1] It appears that New York officials were not just counting ADA dollars lost, but the human resource dollars lost as a result of absenteeism. J. B. Conant suggested that youngsters who do not complete their education not only represent a waste of human resources but are a potential threat to society.[2] About ten thousand Washington, D. C. students stay out of school each day, putting the city's absentee rate at twelve percent. This is among the highest in the nation, according to Marilyn Brown, Assistant Superintendent for Student Services.[3]

School absenteeism is a serious problem nationwide but, in many cases, is a symptom of a much more serious problem. With drug abuse, alcoholism, violent crimes and teenage suicide on the rise, truancy is now seen as a "red flag," or

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[1] Craig Savoyo, "The 'Attendance Robot'--A Truant Officer's Best High-Tech Friend," The Christian Science Monitor 2 Oct. 1983, p. 1, col. 4.

[2] J. B. Conant, Slums and Suburbs (New York: McGraw Hill, 1961), p. 3.

[3] Edward D. Sargent, "On the Road to the Street," The Washington Post, 29 April 1985, p. D1, col. 1.

indicator, that students are undergoing some sort of crisis.[4] It is vitally important for school officials to recognize the magnitude of the problem and to take steps to alleviate it or at least reduce the growing numbers. It is also important for the school administrator to distinguish between "absenteeism" and "truancy." Tennent defined truancy as absence from school without proper cause. He suggested that illness or a death in the family were acceptable reasons for absenteeism.[5] School systems must develop more innovative ways to deal with the problem of truancy or be faced with a crisis. The truant is a threat to himself, the school system and society as a whole.[6]

Brimm, Forgerty and Sadler reported that principals cited student absenteeism as one of their primary concerns, along with a feeling that too much administrative effort is allocated to attendance related tasks.[7] The authors cited a need to reduce absenteeism but to do it without adding to the principal's workload.

Wehlage and Rutter concluded that public school officials must do something to reduce the number of dropouts in this country. They suggested that the best place to start

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[4]Sargent, p. D5, col. 1.

[5]D. G. Tennent, "School Non-Attendance and Delinquency," Educational Research, June 1984, p. 16.

[6]Conant, p. 4.

[7]Jack Brimm, John Forgerty, and Kenneth Sadler, "Student Absenteeism: A Survey Report," National Association of Secondary School Principal's Bulletin, Feb. 1978, p. 65.

would be the elimination of truancy.[8] Guthrie declared that each school and its principal, as chief executive officer of the school, should be responsible for controlling the budget and reducing absenteeism. These were critical issues due to state funding formulas.[9]

Several studies have been done which relate truancy and absenteeism to poor academic performance and high dropout rates (Butler 1925, Crider 1929, Kersting 1967 and Rozelle 1968). What have not been available are systematic ways to deal with the truancy problem which still allow the principal to be the instructional leader of the school.

McDonald stated, after a review of the truancy literature, that "most schools could noticeably improve their attendance rate with little additional expense by simply doing a better job of monitoring the attendance of their students and by immediately notifying the parents of absentees."[10]

The Problem

Statement of the Problem

The problem of the study was to determine if selected students who were called using a computer-assisted

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[8]Deborah Burnett Strother, "Dropping Out," Phi Delta Kappan, December 1986, p. 327.

[9]James W. Guthrie, "School Based Management: The Next Needed Reform," Phi Delta Kappan, December 1986, p. 326.

[10]Maurice McDonald, "A Comparison of the Effect of Using Computer Calls and Personal Calls for Improving Pupil Attendance in Public Schools," Dissertation., University of Tennessee, p. 97.

telecommunications device would show a significant difference in school attendance compared with selected students who were not called.

Subproblem I. A subproblem of the study was to determine if there were significant differences in school attendance between related variables such as sex, race, socio-economic status and school attended.

Subproblem II. A second subproblem of the study was to determine the extent of the use of computers in public school administration.

Importance of the Problem

The basic premise underlying this study was that students who are allowed to be absent from school without telephone intervention will continue to be absent, while those students who are called using a computer-assisted program will be affected positively. Administrators are vitally concerned with school attendance since it has been directly related to school success[11] and, in many systems, is the primary method used in determining funding.[12]

If it could be determined through careful experimentation and research that computer-assisted telecommunications could increase the average daily

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[11]Mike Bowler, The Baltimore Sun, 6 Jan. 1985, sec. 1, p. 4, cols. 1-4.

[12]Warren Brooks, Virginian-Pilot, 1 Oct. 1983, sec. 1, p. A7, cols. 1-2.

attendance (ADA), then administrators would have another valuable tool for helping students and the schools.

Public school administrators are faced with the task of maintaining the daily administrative responsibilities of their offices as well as continuing to be the instructional leaders of their schools. If the study could reveal ways to save administrative time, then this would allow the principal to be more involved in the daily instruction of his/her students.

Definitions of Terms Used

Absentee

An absentee is one who is absent from school for various legitimate reasons such as illness, a death in the family or religious observance.

Computer Robot (Also telecommunications device, telephone robot, telephone computer and computer robot)

This term refers specifically to R.I.T.A., a commercially designed robotics device which interfaces with an Apple II-E computer and sends a pre-recorded message at designated intervals to the homes of students who were absent from school. The term is also generic in that it could be used for any number of commercially-produced computer-assisted or stand-alone telecommunications devices.

Control Group

The control group consisted of 150 students from two East Tennessee high schools and one middle school. Fifty

students selected from each school received no telephone intervention.

Experimental Group

The experimental group consisted of 150 students from two East Tennesse high schools and one middle school. The homes of the fifty students from each school received a phone call from the computer robot when the student was absent from school.

Interface

An interface allows the computer to access the telecommunications program and to send the pre-recorded message via modem through a standard telephone line (RITA talks to the computer).

Modem

A modem converts computer data into tone signals for transmission over telephone lines and converts them back (through another computer) to computer data at the other end.

Truant

A truant is one who is deliberately absent from school without any reasonable cause.

Limitations of the Study

The following limitations were imposed upon the study:

1. Eight twenty-day school months of the 1986-1987 school year were used as the experimental period.

2. The study was limited to three schools in Hamblen County, Tennessee with a total target population of three hundred students.

3. Random assignment of subjects within the control and experimental groups was limited to grades 6-12 within the targeted population.

Assumptions

The following assumptions were basic to the development of this study:

1. School attendance is important. This is supported by the fact that many states have compulsory attendance laws.

2. School officials are vitally interested in learning new ways to cope with the truancy problem.

3. If parents are regularly informed of their child's absence from school, most will make an effort to see that their child attends school regularly.

4. The computer robot used in this study compares favorably with other such devices on the market today.

5. The school truancy problem is of such a magnitude as to warrant innovative methods of intervention.

6. Students in the experimental and control groups were assumed to be sufficiently matched since an equal number, chosen at random, were selected from each school.

7. Examination exemptions and points on final averages were alleviated by the Hamblen County Board of Education in the school year prior to the study, resulting in

considerable student apathy toward attendance in the secondary schools. It was assumed that this did not have an effect on the study.

8. The school board endorsed the Adopt-A-School program in summer prior to the study. The program allowed the adoptors to give incentives for good attendance and academic achievement. It was assumed that this did not have an effect on the study.

Hypotheses

Research hypotheses were developed in order to test the relationships between the variables in each problem. It was determined that each hypothesis would be tested at the .05 level of significance. For statistical analysis the hypotheses were stated in the null.

H_1. There will be a significant difference in attendance between students called with the computer device and students not called.

H_2. There will be a significant difference in attendance between boys who were called with the computer device and girls who were called.

H_3. There will be a significant difference in attendance between boys who were called with the computer device and boys who were not called.

H_4. There will be a significant difference in attendance between girls who were called with the computer device and girls who were not called.

H_5. There will be a significant difference in attendance between lower socio-economic level students who were called with the computer device and lower socio-economic level students who were not called.

H_6. There will be a significant difference in attendance between higher socio-economic level students who were called with the computer device and lower socio-economic level students who were not called.

H_7. There will be a significant difference in attendance between higher socio-economic level students who were called with the computer device and higher socio-economic level students who were not called.

H_8. There will be a significant difference in attendance between black students who were called with the computer device and white students who were called.

H_9. There will be a significant difference in attendance between black students who were called with the computer device and black students who were not called.

H_{10}. There will be a significant difference in attendance between white students who were called with the computer device and white students who were not called.

H_{11}. There will be a significant difference in attendance between black students who were called with the computer device and white students who were not called.

H_{12}. There will be a significant difference in school attendance among the three schools for students who were called with the computer device.

H_{13}. There will be a significant difference in school attendance among the three schools for students who were not called.

Procedures

A manual search for related literature was accomplished in the following areas: truancy, absenteeism, telecommunications, computer-assisted robots, robotics and educational administrative applications to the use of the computer. The manual search included books, periodicals, newspaper articles, dissertations, journals, personal calls and visits to various educational institutions for information on the research topic. The search was limited to East Tennessee State University, Johnson City, Tennessee and the University of Tennessee, Knoxville, Tennessee. Letters requesting information were sent to all known manufacturers of computer robotics telephone calling systems. A computer search was accomplished accessing ERIC and six other related databases using the descriptors: attendance, truancy, computer, robotics and telecommunications. The computer search was done at Sherrod Library, East Tennessee State University, Johnson City, Tennessee.

The independent variable in the study was the use of Robotics Telephone Assistant (RITA). The dependent variable was no telephone intervention. Several intervening variables were tested for significance including race, sex, socio-economic level and school attended.

The target population of the study consisted of 300 students from Morristown-Hamblen High School East, Morristown-Hamblen High School West, and Lincoln Heights Middle School. Fifty students were initially selected from each school using a table of random numbers. A random sample is defined by Champion as "a sample drawn in such a way so that each element has an equal and independent chance of being included."[13] All students in each school were given an equal chance of being selected for the study. The fifty students selected were designated as the control group and were not called by the telephone computer device when absent. Every student in the school was assigned a number from one to the last highest number of the total school population. The table of random numbers was then entered and the fifty students were selected from each school. All other students were called by the computer telephone device when absent.

The researcher chose to conduct the study on a simple random sample in order to determine if the experimental procedure was effective for the total school population rather than just for poor attenders. This would give the administrator a broader context with which to evaluate the procedure and its subsequent value to him/her.

The computer-assisted telecommunications device selected for the study was RITA, an acronym for Robotic

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[13] Dean J. Champion, Basic Statistics for Social Research, (New York: Macmillan Publishing Company, Inc., 1981), p. 24.

Telephone Assistant marketed by School Office Software Systems, Durham, North Carolina. RITA is a hardware/software package that interfaces with an Apple II-E computer and can send a recorded message to the homes of parents, day or night. For the study, the three principals used the same announcement. (See Appendix B.) Although the principals used the same written announcement, there was considerable difference in their inflection, tone, and diction. McDonald suggested principals can give either a positive or a negative impression simply by the way in which the message is verbally delivered.[14] This aspect deserves further investigation and will be examined later in the study.

Socio-economic status was determined by whether the student was on the school's free or reduced lunch list. This method has been accepted as a way to identify disadvantaged youngsters for the Chapter I program.

All three schools sent letters to the parents explaining the computer attendance intervention and giving them an opportunity to participate or not to participate. Those parents choosing not to be called by a computer were not called. One parent asked not to be called but, after an explanation by the assistant principal, decided to participate.

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[14]Maurice McDonald, in a personal interview, 24 Jan. 1987.

The recorded messages were sent to the homes, via computer, between the hours of 6:00 pm and 9:00 pm on the evening of the day the student missed school. The computer rang six times for those not answering and called again every thirty minutes. This was repeated three times. The computer called back six times when it detected a busy signal.

The researcher chose the *t* test for independent samples to determine if significant differences existed between hypotheses one through eleven. According to Champion the *t* test is the most powerful procedure to apply whenever all the assumptions have been met.[15] The primary assumptions of the *t* test are randomness, a normal distribution and the interval level of measurement.[16] The *F* test for analysis of variance was chosen to evaluate differences between independent samples which existed in hypotheses twelve and thirteen. This statistic was chosen because it allowed the researcher to compare more than two independent samples. In addition to meeting the three assumptions associated with the *t* test, the data must have had independent samples and homogeneity of variance.[17] The data met this criteria.

Organization of the Study

Chapter I contains an introduction to the study; a statement of the problem; the importance of the problem;

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[15] Champion, p. 168.

[16] Champion, p. 167.

[17] Champion, p. 191.

definitions of terms used; limitations of the study; assumptions, hypotheses and procedures of the study; and organization of the study.

Chapter II contains a review of the related literature and research.

Chapter III describes the methodology utilized in the study.

Chapter IV contains the presentation and analysis of the data.

Chapter V contains the summary, conclusions and recommendations.

CHAPTER 2

Review of Related Literature

Introduction

This chapter is a survey of literature related to the major concerns of the study. According to Katzer and his associates, "the most compelling argument for believing the outcome of an empirical investigation is its agreement with numerous other well-conducted studies."[1] The review of the literature was directed toward three areas: parent notification and its effect on student attendance; computer-assisted telecommunications and its broad applications; and administrative applications of the computer in public school administration.

Parent Notification and Its Effect on Attendance

Butler did one of the first truancy-related studies in the United States in 1925.[2] However, the literature revealed very little research in the area of parent notification of student absenteeism and its effect on subsequent attendance patterns.

One of the first studies dealing with school-parent involvement and its effect on attendance was accomplished by

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[1] Jeffrey Katzer, Kenneth Cook, and Wayne W. Crouch, Evaluating Information: A Guide for Users of Social Research 2nd ed. (London: Addison-Wesley Publications Company, 1982), p. 79.

[2] C. H. Butler. "School Achievement and Attendance," School Review, September, 1925, pp. 450-452.

Rodney Copeland and his associates in 1972. The research was unique in that a school principal's praise was not measured by observing the behavior of the recipient of the praise but by observing the behavior of the recipient's children.[3] Nine students were selected for the study based on past poor attendance performance. Five students were selected for the praised group and each time the student attended class, the parent received a call from the principal praising the parent for their child's attendance. Three students were selected for the call-only group. These parents received two calls during the study period but no praise. The investigators concluded that some student behaviors (in this case attendance) might more easily be controlled by reinforcing parents than by directly reinforcing the students.[4] Copeland and his associates referred to the possibility that similar improvement could have been achieved by having a teacher or other member of the staff make the telephone calls.[5]

Sheats and Dunkleberger were concerned that the principal's varied responsibilities may prohibit the allocation of the necessary time required to call the parents of absentees. They further observed that if it could be found that it was the principal making the calls

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[3]Rodney E. Copeland, et al, "Effects of a School Principal Praising Parents for Student Attendance," Educational Technology, July 1972, p. 57.

[4]Copeland, p. 59.

[5]Copeland, p. 58.

that had the greatest impact on chronically absent students, then necessary time to allow this calling must be found.[6]

Subjects selected for the Sheats-Dunkleberger study were students who missed fifteen or more days of school the year prior to the study. Subjects were randomly assigned to two respective treatment groups resulting in twenty five students being selected for the secretary-contacted group and twenty four in the principal-called group. When a student was absent the parents received a call from either the principal or the secretary depending on what group they were in. The researchers concluded that the procedures employed in their investigation reduced absenteeism by about one third, and that the reduction was not determined by which person made contacts on behalf of the school. They further concluded that their findings should be of importance in any school's effort to improve student attendance.[7] Sheats and Dunkleberger offered the following observation: "clearly, a well-formulated plan of school-initiated contacts to parents of chronically absent students offers the school a vehicle by which an important and significant reduction in absenteeism can be derived."[8]

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[6]Daniel Sheats and Gary E. Dunkleberger, "A Determination of the Principal's Effect in School-Initiated Home Contacts Concerning Attendance of Elementary School Students," Journal of Educational Research, July/August 1979, p. 310.

[7]Sheats and Dunkleberger, p. 311.

[8]Sheats and Dunkleberger, p. 312.

Richard Fiordaliso and his associates studied the effects of feedback in reducing absenteeism among junior high school students involved in a research project aimed at helping students with learning and/or behavior problems.[9] The name of the project was: Preparation Through Responsive Educational Programs, or PREP. Three groups of students were selected. Parents of students in the experimental group received follow-up calls in cases of student absences on a more immediate basis than parents of other absentees. These parents also received positive phone calls and letters when their child improved in attendance. Two comparison groups received no positive feedback.[10]

The first group of subjects were students enrolled in the academic phase of PREP. These students attended individualized reading, math and English classes three periods a day, along with students from regularly scheduled classes. This group served as the experimental group. The second group of subjects were students participating in the social skills component of PREP. They received intensive social skills training one class period per day while attending six other regular school classes. The third group, which served as the no-treatment control group, were students who did not participate in any PREP program or

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[9]Educational Research Service Inc., "School Absenteeism," February 1977, p. 17.

[10]Richard Fiordaliso, Ann Lordeman, James Filipczak, and Robert M. Friedman, "Effects of Feedback on Absenteeism in the Junior High School," The Journal of Educational Research, March/April 1977, p. 182.

activity.[11] Both the social group and academic group improved significantly in attendance in relation to the control group.[12] One important observation by the researchers was that three students in the academic group whose attendance was poor the prior year actually became worse during the study period. It was revealed that not one of these students had a telephone, making it impossible to implement the special procedure.[13] This observation has important implications for the present study since the telephone is the primary tool in initiating parent contact.

Ronald Bittle completed two studies which addressed three important aspects relevant to the current study: communication between the school officials and parents; the use of a common communications tool, the telephone; and the use of a recorded message by school officials. Bittle found that using a telephone answering device increased parent-teacher communication and improved academic performance.[14] The first study (1975) used a recorded message by school officials to keep parents informed of their child's academic performance. If parents wanted to know how their child was doing in certain academic classes they simply telephoned the school and received the feedback. A predetermined code

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[11] Fiordaliso, et al, p. 189.

[12] Fiordaliso, et al, p. 190.

[13] Fiordaliso, et al, p. 190.

[14] Ronald Bittle, "Parent-Teacher Communication Through Recorded Telephone Messages," Journal of Educational Research, March 1975, p. 87.

number was given to the parents so they would be able to identify their child from the other students.

Bittle did a follow-up study in 1977 using the recorded message but instead of academic feedback the parents could receive feedback on their child's attendance in school. The procedure was essentially the same as in the 1975 study.[15]

Bittle used the recorded message to attempt to improve the attendance of thirty seven students considered by the principal to be chronic absentees. The parents of the thirty seven students were sent a letter informing them that during the final six weeks of school they could check daily on their child's attendance at school by calling a special number, and obtaining a recorded message listing the coded numbers of those students reported absent for that day. During the six weeks the recording was available, attendance increased for nineteen of the thirty-seven students as an apparent result of the availability of the recorded message.[16] It should be noted, however, that this was not a controlled study and several other variables, not identified, could have had an effect on the study. Bittle concluded that telephone communication between parents and school administration was an effective way of reducing student absenteeism but that the time required to implement a program requiring ten to fifteen percent of the average

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[15]Ronald Bittle, "Recorded Telephone Messages: A Technique for Reducing Absenteeism," Educational Technology, April/May 1977, p. 50.

[16]Bittle, 1977, p. 50.

school's enrollment would be too time consuming if handled in the same manner as Copeland and associates.[17] Bittle's criticism of the Copeland study appears legitimate but the same could be said of his study. Only thirty-seven out of a total school population of 620 was used in the study. The sample is much larger than Copeland's but it would be rather difficult for seventy-five to one hundred parents to call the same number in the course of a day to get information about a student's absence. Considerable frustration would appear likely.

Parker and McCoy replicated the Copeland and associates study and came to similar conclusions. They did offer the observation that it is the parents who affect student attendance most, and that school officials should be willing to make consistent contact with the parents, especially of the chronic absentee.[18]

The problem that faced most school principals of not having enough time to call the parents of absentees appears to have been solved by the introduction of the computer to call the parents of absentees. The only extensive study to date which used telephone computers to combat pupil absenteeism was done by Maurice McDonald in 1986. McDonald

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[17]Bittle, 1977, p. 49.

[18]Frank C. Parker and James F. McCoy, "School-Based Intervention for the Modification of Excessive Absenteeism," Psychology in the Schools, January 1977, p. 87.

used a telecommunications program commercially called the Truant for a study in nine Nashville, Tennessee schools.[19]

Three high schools were selected to receive the intervention of a telecommunications device for making daily contact with parents of absent students. Another three high schools were identified to receive the services of attendance personnel to perform the same function and three high schools were selected where the students received no routine intervention. These students served as the control group.[20]

McDonald found that a strong and positive relationship between the variables of parent notification and improved attendance was found to exist.[21] He also found that students receiving computer calls showed a higher rate of attendance than students receiving personal calls or no calls. The researcher concluded that the computer was capable of completing its task more consistently and efficiently than could personnel by virtue of the fact that it was not subject to human limitations such as fatigue, stress, interruptions in the work place, illness and other physical and emotional conditions which impact productivity.[22]

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[19]Maurice McDonald, "A Comparison of the Effect of Using Computer Calls for Improving Pupil Attendance in Public Schools," Dissertation. University of Tennessee, 1986, p. 21.

[20]McDonald, p. 15.

[21]McDonald, p. 98.

[22]McDonald, p. 99.

Another very important question was answered by McDonald's study. What would the public's response be to being called by a telephone computer? The overwhelming results of a parent questionnaire expressed a very positive parent response. The favorable public response was attributed to an ill-informed parent population prior to the study. The messages sent home were about their child's welfare even though it was a computer delivering the message, and the parents seemed to appreciate the school's effort to be cost-effective in regard to attendance, allowing for more time for other educational concerns.[23]

It should be stressed that, although Bittle had two elements present in his study, the telephone and the recorded message, they were not used in the same manner as in McDonald's study. The parents who participated in the Bittle study had to call the school to obtain the recorded message. The parents of students in the McDonald study received the recorded message at home on the evening their child missed school. The computer delivered the message and the parents' only involvement was to listen to the message.

Since the literature revealed few formal studies on the effect of telecommunications on school attendance, the researcher examined the extent of the use of computer robotics and automatic telephone dialers in use for various applications at the time of the study.

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[23]McDonald, p. 100.

Computer-Assisted Telecommunications

One of the first industries to take advantage of automated telecommunications was the insurance industry. According to Larry McCall, an autodialing computer is effective, efficient, easy to use and increases profitability.[24] The R. B. Reynolds Insurance Agency of Houston, Texas used the Telecorp System 606v autodialer to establish leads for the sale of insurance and to recruit new insurance agents. The System 606 distinguishes between a business and a residence, and it works continuously--after hours and on weekends. McCall related that some people view autodialers as impersonal intrusions, but they are considerably less expensive and more efficient than using people. Autodialers quickly establish the level of interest in a product and move on.[25]

According to David Wallace, a unit manager for Surety Insurance Company, the use of his $5000.00 Comtel 5000 telemarketing system reduced the number of cold calls made and generated more sales leads than he could handle.[26] Paul Dolan, Vice President and Marketing Manager for Shearson/American Express, indicated that the average return for direct mail was three percent, while the return on

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[24]Larry McCall, "Hello This Is a Computer Speaking," Managers Magazine, November 1985, p. 14.

[25]McCall, p. 16.

[26]Liz Murphy, "Telemarketing Scripts: Take It From the Top," Sales and Marketing Management, June 4, 1984, p. 37.

telemarketing with a Comtel 5000 averaged ten percent.[27] The implications for school attendance seem rather evident. Schools have traditionally sent letters home to parents when their child missed a certain number of days. It would appear that the same results could be possible using a telecommunications device rather than direct mail.

Insurance companies are not the only ones who have used computer-assisted telecommunications for marketing purposes. Marketers in a variety of businesses have used an automatic phone robot to generate sales leads, promote services, make announcements, conduct small scale surveys and improve customer service.[28] Reggie Jackson, who marketed the Telsol Electronic System, said that his system could do the work of six full time workers.[29] Jackson continued by saying that telephone messages are more effective if the messages are carefully worded, the taped voice is cheerful and the message is pretested.[30]

Rather than investing in their own equipment, several businesses including insurance companies, restaurants and health spas have used time-sharing telecommunications companies.[31] These companies provided for customer

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[27]Murphy, p. 38.

[28]Bernie Whalen, "Marketers Use Automatic Phone Robot to Conduct Surveys, Promote Services," Marketing News, November 27, 1981, p. 1.

[29]Whalen, p. 2.

[30]Whalen, p. 2.

[31]Dana L. Webster, "Time Sharing Firms Allow Telemarketing on As-Needed Basis/Telemarket Programs Must

convenience by sharing time on an automatic dialing computer to market a particular product or service.

Business Week reported that as early as 1978 telephone solicitors were placing over seven million calls daily and selling twenty eight million dollars worth of products ranging from swimming pools to life insurance.[32] Taylor reported that, although autodialers were still very popular, personal telemarketing was highly profitable.[33] MCI Communications Center for Telemarketing Activities employed as many as nine hundred on its telemarketing sales force offering very lucrative bonuses for top sellers.[34]

Gregory pointed out that, since the advent of the automatic sequential dialing devices, junk calls have gained widespread attention.[35] Most of the dialers are equipped to dial eighty to one hundred numbers an hour. The earlier models were usually set to dial every number in an exchange. Because of the early abuse of the automatic dialing devices, Federal laws strictly prohibit this type of activity. All modems are given an FCC identification number and the owners

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Offer 800 Numbers," Marketing News, November 9, 1984, p. 28.

[32]Editor, "A Revolt Against Junk Calls," Business Week, February 1978, p. 26.

[33]Thayer C. Taylor, "MCI Mixes Computers and Motivation," Sales and Marketing Management, June 1984, p. 42.

[34]Taylor, p. 46.

[35]Lon B. Gregory, "Junk Calls--How Much a Problem," Telephone Engineer and Management, June 1979, p. 99.

are required to notify their local telephone company when they activate the device.

A modem converts computer data into tone signals for transmission over telephone lines and converts them back through another modem to computer data at the receiving end. The term modem is a contraction of modulator/demodulator. Modulating a signal is the process of making audible tones out of computer digital signals. Demodulating is converting audible tones back into digital signals.[36] Modems are the communication link from the computer to the telephone lines and are capable of two-way communication (full duplex). There are numerous brands of modems on the market today. Most are formatted in an ASCII (American Standard Code for Information Interchange) format which allows the modem to communicate with a variety of models. ASCII is a type of language or code a system uses for data transfer.[37]

P C Magazine listed several of the more popular modems. The list included the Everex, Evercom II; Hayes, Smartmodem 2400B, 1200 and 1200B; Prometheus, Pro-modem 1200 and 1200B; and the Toshiba 1200 B Laptop modem.[38] Apple Computer Incorporated listed the Apple Modem 300 and Apple Modem 1200.[39] Novation was the maker of the Apple Cat II Modem.[40]

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[36]Apple Catt II Communications System Owners Manual, p. 19.

[37]Apple Catt II, p 16.

[38]P C Magazine, May 26,. 1987, p. 228.

[39]Stephen J. Shaw, "Apple to Offer Private-Label Modems," Mini-Micro Systems, April 1984, p. 42.

Computer telecommunications is a technological industry which seem to be gaining in popularity every day. Financial World reported that thirty-six Wall Street research directors and money managers agreed that the future belonged to high technology, and of the high tech industries, they like the telecommunications industry the best.[41] Many analysts believe that International Business Machines (IBM) and American Telephone and Telegraph (AT&T) will slug it out for industry dominance.[42]

Administrative Applications of the Computer in Public School Administration Today

After examining the extent of the use of computer-assisted telecommunications in general, the researcher investigated the use of automatic dialers with school attendance in particular. The review of related literature concluded with an investigation of the use of the computer for various public school administrative tasks.

Tony McGinty in 1985 identified several computer automatic dialers which school administrators were using to track student absenteeism.[43] McGinty stated:

> Administrators are using dialers to get messages to parents quickly--everything from when report cards are coming home to the date

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[40] Apple Cat II Communications System Owners Manual.

[41] Steve Taub, "Picking Tomorrow's Winners," Financial World, June 15, 1982, p. 97.

[42] Taub, p. 97.

[43] Tony McGinty, "Tracking Truants with Automatic Dialers," Electronic Learning, January 1985, p. 24.

> of the next PTA meeting. But administrators agree, the most effective use of these systems is in contacting parents of absent students. Across the country school systems using dialing systems report they are effective in improving average daily attendance.[44]

There were a wide variety of automatic dialers in commercial use in the telemarketing industry. They came in various sizes and price ranges. McGinty identified several which were used for attendance purposes: the Dynapro and Dynatel by Computer Dynamics Corporation; the prospector by Creative Marketing Concepts; Talking Computer by Intelecom; the Melita 3000 series by Melita Electronic Labs; the Truant by Microlog Corporation; the Explorer III by RIKA Communications; and Robotic Telephone Assistant by School Office Software Systems.[45] The researcher was able to identify two other systems which were used specifically for attendance and other school administrative tasks: Officer Alex marketed by Graham Communications and the CBC 8000 marketed by Comtel Broadcasting Corporation. Costs of the dialers ranged from a low of $950 to a high of $9995. The systems varied in the number of messages they could deliver from as few as one to as many as ninety nine. Multiple message systems allowed administrators to tailor the information they sent.[46] Pena reported that most systems document the number called, calls answered and unanswered,

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[44]McGinty, p. 24.

[45]McGinty, p. 26.

[46]McGinty, p. 26.

redials, busy signals and unanswered numbers and is capable of recording parent response.[47]

Reports from across the country indicated that the dialers have had a tremendous positive effect on increasing school attendance. Cleaton reported attendance at Taft High School in New York City increased ten percentage points using a dialer called the Telsol Automatic Dialer.[48]

At DuSable High School in Chicago, attendance rose to 86.4 percent from 78.8 percent. In the same city, Tilden High School on the South Side saw an increase of attendance from 80.5 percent to 85.8 percent using the computer robot.[49]

Hartwell reported that one Florida school had a fifty-nine percent reduction in truancy during the first three months of using a computer dialing system; a California school reduced absences by fifty-two percent, saving more than $36,000 in school revenue during a three month period; and at an Alabama school, truancy dropped from an average of 116 absences a day to eighty-six a day (25.8 percent).[50]

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[47]Roel M. Pena, "Increased Attendance with a Computerized Truant Officer," School Business Affairs, October 1985, p. 40.

[48]Stephanie Cleaton, "Computers to be Used to Snitch on Students Who Play Hooky," New York Voice, 10 September 1983.

[49]"Schools Using Robots Against Absenteeism," The New York Times, 18 February 1986.

[50]Graham Hartwell, "Computerized Phone System Successfully Reduced Truancy," School Business Affairs, May 1984, p. 26.

Arlington High School in Virginia reported a forty-five percent decrease in unexcused absences since school officials began using computers to combat absenteeism.[51] Hollywood, Florida reported an increase in attendance from eighty-seven percent in August 1983 to ninety-six percent in January of 1984.[52]

It appeared that those school systems which used the automatic telephone computer robots were very pleased with the results. Most spoke of the many advantages of using a computer dialing device as opposed to using school personnel. Time saved seemed to be the biggest advantage over using school personnel to make calls. Systems faced with rising costs and shrinking budgets looked for viable alternatives to the use of people to perform routine administrative tasks.

Hartwell commented that parents were generally receptive to the use of the computer robots because they were usually unaware of their child's absence and were appreciative of being notified. Others applauded the school's concern about a community problem and the positive steps many school systems were taking to combat the problem of truancy.[53]

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[51] Nancy Scannel, "Computer Calls Cut Truancies by 45 Percent," The Washington Post, 6 June 1984.

[52] "Big Mouth Really High Tech Snitch," Palm Beach Post Times, 24 January 1984.

[53] Hartwell, p. 26.

With the growing numbers of single parent families and the increase of working mothers, school officials found it difficult to reach parents during the day. Inman reported that principals in Hollywood, Florida were staying after school to call students who were absent. With the use of the computer robot the calls were made at night, and school officials were able to leave school at their appointed hour of departure.[54] A higher success rate in terms of making contact with the parents was also observed by Roseanne Belslto, an assistant principal at McAuthur High School in Hollywood, Florida.[55]

The reports generated by the computer robots were a source of documentation in case parents refused to acknowledge that they had been notified of their child's absence from school.[56] This becomes important when school officials must take the chronic truant to court and must document steps taken to handle the problem prior to court intervention.

The research revealed one glaring weakness of the computer robots: the student may wait at home and answer the phone when the robot calls. Many school officials responded to this disadvantage by saying that at least some

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[54]Virginia Inman, "Parents of Truant Kids Can Expect Calls from a Persistent Big Mouth," The Wall Street Journal, 23 January 1984, p. 25.

[55]Inman, p. 25.

[56]Carol Csomay, "Big Mouth Tattles on Truant Kids," Boca Raton News, 30 January 1984, p. 1a.

energy must be expended to answer the phone, and the student must wait the full three hours, not knowing when the robot would call.

It was found that the more creative school personnel were using their robots for various other purposes such as announcements, wake up calls and announcing community events.

From the research, computer-assisted telecommunications appeared to have gained wide-spread acceptance with a broad section of the school community. The use of the computer robot was found not just in large metropolitan areas but in small communities as well. [57]

The computer robot was only one of the many tools which the effective school administrator possessed in order to deal with the various administrative tasks which were required each day. The research revealed that computers were being used for a variety of administrative functions. As a conclusion to the review of related literature several of the uses of computers in school administration were discussed.

Harrison did a study to determine the extent of administrative applications of electronic data processing in selected Texas public school districts. He found that fifty and four-tenths percent of the school districts surveyed reported using electronic data processing. The five most

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[57] Grant Wilson, "McMinn High School Computer Tracks Truant Kids," The Daily Post-Athenian, 11 April 1986, p. 1a.

frequently used administrative applications of electronic data processing were: general accounting, accounts payable, cafeteria accounting, budget preparation, and payroll. The majority of the inhouse computer systems used equipment manufactured by IBM.[58] One of Harrison's most relevant conclusions was that school districts with small central office staffs needed more time-effective methods of handling school finance and related administrative tasks to allow staff members to be utilized in other areas.[59]

Phi Delta Kappan reported that one of the several projects on the drawing board for CCSSO included a project exploring the uses of technology in educating at-risk students.[60] At risk students were identified as students who had a record of poor school attendance.

An Association for Supervision and Curriculum Development survey sampled 571 high school principals to determine the extent of the use of computers in their particular schools.[61] The findings showed that more than three-fourths (eighty-seven percent) used computers for compiling class lists, eighty-three percent for scheduling

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[58]Guy T. Harrison, Jr., "A Survey of Administrative Applications of Electronic Data Processing in the Public Schools of Texas," Dissertation Abstracts International, XXXXV, 1984, p. 3496.

[59]Harrison, p. 3496.

[60]Editor, "New President of School Chiefs Outlines Plan to Focus on At-Risk Youth," Phi Delta Kappan, January 1987, p. 407.

[61]Editor,"Principals Reveal Technology Needs, Trends in ASCD Survey," School TechNews, November/December 1986. p. 3.

classes, seventy-six percent for word processing and seventy-five percent for recording grades. Seventy-two percent used computers for student attendance, but only thirty-two percent used them for sending and receiving messages.[62] The thirty-two percent using the computer to send and receive messages appeared to be a rather large number. The 571 high school principals who participated in the survey were said to comprise a representative sample but the geographic representation is unknown. The reader should not be overly optimistic as to the use of autodialers in public school administration in light of these findings alone.

A recent article by Andrew Barbour in Electronic Learning did not mention autodialers as an administrative use of the computer. Barbour did identify several technological issues that are of apparent importance to the practicing public school administrator. In a survey sent to two thousand subscribers of Electronic Learning, Barbour attempted to answer questions such as: What role do computers play in administration? Why do administrators use computers? What tasks do administrators perform on the computer? What are the computer systems that administrators use?[63] All of the 350 respondents to the survey reported

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[62]Editor, p. 3.

[63]Andrew Barbour, "Office Romance: Why Administrators Are Hooked on Technology," Electronic Learning, April 1987, p. 19.

Barbour, administrators appeared reluctant to use the same computer for both instructional and administrative purposes. Only fourteen percent of computers used for administration doubled as instructional computers, and fifty-seven percent of the administrators said that none of their computers were used in instruction at all.[65]

Fifty-four percent of the respondents said that computers saved them time. Administrators reported that the time saved allowed them to employ fewer people and to spend longer periods of time on more meaningful duties.[66] Thirty-one percent of administrators cited the ease with which stored information can be accessed and the variety of ways in which it can be arranged. The accuracy of the information and reports generated by the computer were cited as being particularly valuable by seventeen percent of the administrators.[67]

The most common use of computers revealed in Barbour's survey was for student/personnel record keeping. Computers were used for attendance the second most often with thirty-three percent of the administrators saying that computers were used for that purpose. Inventory, class scheduling, budgeting, test scoring and desktop publishing were the

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[65]Barbour, p. 19.

[66]Barbour, p. 20

[67]Barbour, p. 20.

other uses of the computer for administrative purposes revealed by the survey.[68]

Seventy-one percent of the computers used in administration were stand-alone models with twelve percent configured in area networks. The overwhelming majority of administrators used the Apple II series (seventy-three percent), eleven percent used the Macintosh, and the remainder used an MS-Dos system.[69]

Lori Holland and Carolyn Rude-Parkins suggested that the principal is the key to computer awareness in his school and should take the lead in the utilization of computer-based technology.[70] According to John Naisbitt in Megatrends, as stated in Principal magazine, January 1986, wherever high tech is introduced there must be a counter-balancing human response. Naisbitt suggested that the proper inservice activities can reduce the fear associated with the use of computers.[71]

Crawford offered the following as basic steps for the administrator to follow before purchasing a computer:

1. Decide which administrative functions involve tasks that should be computerized and in what order of priority.

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[68]Barbour, p. 21.

[69]Barbour, p. 21.

[70]Lori Holland and Carolyn Rude-Parkins, "Principals and Computers: Getting Started Together," Principal, January 1986. p. 20.

[71]Holland and Rude-Parkins, p. 21.

2. Identify the microcomputer software (programs) that best computerize these tasks.

3. Select the hardware (microcomputer equipment) that runs the selected software.[72]

Crawford reported that the selection of a computer for administrative use should receive as much consideration as the selection of a new member of the administrative team.[73] He further stated that "microcomputers do not solve problems for principals. They perform tasks. These tasks may be part of the solution, but the overall solution also includes tasks performed manually as well as possibly by other equipment."[74]

Deborah Bloch and Michael J. Neill suggested that when an automated process is selected as a means of solving a problem it is seldom done with a view to overall system design. The result in factories, schools, and offices is numerous islands of automation, each of which represents a solution to a problem but is unrelated to other applications in the system.[75]

Bloch and Neill divided computer applications by administrators into stages. Stage I included what was

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[72]Chase W. Crawford, "Administrative Uses of Microcomputers, Part I: Needs Evaluation," National Secondary School Principal's Bulletin, March 1985, p. 70.

[73]Crawford, p. 71.

[74]Crawford, p. 72.

[75]Deborah Perimutter Bloch and Michael J. Neill, "Integrating Computer Applications for Pupil Personnel Services," Educational Technology, January 1987, p. 20.

currently being used such as mark reporting, career information systems, and attendance accounting through the use of computer. Stage II included the more sophisticated methods of integrating various computer components to handle numerous pupil personnel functions such as scheduling, integrated attendance packages (including a computer dialing device), counseling and security systems.[76]

Kerry Leichtman suggested that the more advanced computer user could take advantage of the abundance of online databases.[77] These were information retrieval systems which were accessed by the use of modems. Some of the more popular databases listed by Leichtman were NewsNet, Dialog, Mead Data Central, Orbit and BRS.[78]

Schack proposed that local computer bulletin boards could be useful for various functions such as online conferencing between teacher and student, electronic mail, general interest bulletins and media selection from schools to a central media display.[79]

Bluhm summarized why computers are so important to the management of schools with the following statement:

> The management and operation of today's schools have become increasingly difficult. Economic and social factors have affected

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[76]Bloch and Neill, p. 22.

[77]Kerry Leichtman, "Making Online Databases Useful," Computers & Electronics, February 1985, p. 54.

[78]Leichtman, p. 54.

[79]Markham B. Schack, "The Electronic Link," Media & Methods, January/February 1987, p. 10.

> schools adversely. Rising costs, dwindling enrollments, demands for accountability of staff and programs, and constant demands from regulating agencies for information and reports have compounded administrators' responsibilities. Confronted with the tasks of keeping schools operating within the boundaries of goals and expectations, administrators have turned to computer technology and computer-based information systems.[80]

Bluhm's book, Administrative Uses of Computers in the Schools, outlined four broad areas for computer use in the schools:

1. Managing the administrative office
2. Managing the educational program
3. Managing the business operations
4. Managing the instructional program.[81]

Bluhm also included an extensive list of computer software to implement each broad area.

The Tennessee State Department of Education funded the Administrative Software Clearing House on the campus of Memphis State University first in 1983. The Clearing House was an excellent source for evaluating administrative software. Computer programs in the areas of attendance, business management, classroom management, databases, grade reporting, integrated software, library management, personnel management, property management, scheduling,

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[80]Harry P. Bluhm, Administrative Uses of Computers in the Schools, (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1987), p. 4.

[81]Bluhm, p. 4.

spreadsheets and word processing were evaluated by the Clearing House.[82]

Summary

The review of related literature produced only one exhaustive study regarding the use of computer-assisted telecommunications for school attendance. This study concluded that the use of a computer calling device could affect school attendance dramatically. The study also showed that eighty-five percent of the parents surveyed were favorable to such intervention and that school administrators could save thousands of dollars by implementing such a procedure.

Other studies concluded that daily parent notification was an important factor in reducing the number of student absences. The literature did not support the assumption that the principal made a greater impact on parents by calling them than did clerical or support staff.

The use of computer-assisted telecommunications has been used by numerous industries including insurance companies, spas, hotels, department stores and numerous other marketing enterprises.

The technology used to employ the telemarketing medium was in full force as late as 1978. Schools did not begin to use the automatic callers until the 1980s. The review of

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[82]Thomas C. Valesky, Frank W. Markus, and Theodore J. Myers, Administrative Software Evaluations For Schools, Department of Educational Administration and Supervision, Memphis State University, 1986.

the literature did not reveal the first school or school system to use an automatic dialer.

The automatic dialers or computer robots used a communication medium called a modem, which converted computer data into signals that could be sent over a standard telephone line. The technology in this area has increased in sophistication almost daily since the mid 1970s. The literature revealed several types of modems that have been marketed in the recent past. Most modems will interface with various computers but a few will only work with either an Apple version or MS-DOS computer system.

Automatic dialers or computer robots have been used successfully in several schools across the country. One school reported as much as a fifty-nine percent increase in attendance using an automatic dialer.

Schools first began to use computers in the area of instruction. The Apple computer has dominated this area. IBM most recently re-introduced the P C Junior for an instructional program called "Right to Read." This program utilized the computer to establish the basic elements necessary for reading skill acquisition in kindergarten.

The literature revealed that school systems have used the computer for various tasks in the area of school administration. Most central offices used an IBM, AT&T or other MS-DOS system for system-level tasks. Many large systems utilized mainframe computers with the capacity to network with local area schools. Most individual school

units used the Apple computers for instruction and limited administrative tasks. MS-DOS PC appeared to be more popular for administration. School business accounting, attendance, student data, word processing, testing and scheduling were the predominant areas where computers were utilized in the schools.

CHAPTER 3

Methods and Procedures

In order to develop a foundation for the study, a review of related literature was conducted at East Tennessee State University, Johnson City, Tennessee; University of Tennessee, Knoxville, Tennessee; and Carson-Newman College, Jefferson City, Tennessee. The Education Index, Current Index to Journals in Education, Dissertation Abstracts International, and the card catalog were utilized in identifying relevant sources to be reviewed. ERIC and six other databases were accessed through a computer search.

Seven letters were sent to various manufacturers of computer automatic dialers in seven different states, soliciting information on their particular products (See Appendix A). The device chosen for the study was the Robotic Telephone Assistant manufactured by School Office Software Systems of Durham, North Carolina. Robotic Telephone Assistant (called RITA by the manufacturer) was chosen because of its low price and ability to interface with an Apple II-E computer which all three schools selected for the study already had in operation. RITA had the ability to dial a list of up to 180 names, redial busy signals and no-answers, and produce an accurate report of students who were called.

Subsequent procedures were implemented to complete the study. A sample was taken from three East Tennessee

schools. Data were collected on students in the experimental and control groups for a period of eight twenty-day school months. Data were analyzed using a computer program designed to be used with the Apple computer.

The Sample

Participants for the study were selected from two high schools and one middle school in Hamblen County, Tennessee. Fifty students were selected from each school to serve in the control group. These students were chosen at the beginning of the school year using a simple random sample technique. Each school was asked to produce a student list which contained all students. This list was generated by accessing the Tennessee School Register computer database. The list was numbered from one to the last highest number of students contained in that particular school. A table of random numbers was then entered and the fifty students were chosen. These fifty students were the control group and were not called by the computer robotics device.

A letter was sent to all the parents in each school explaining that the school was testing a computer dialing device and that cooperation was needed. Parents who wished not to be called with the device were given that option (See Appendix B).

The computer devices were tested and then put into operation in the first school month of the 1986-87 school

year. A call list was generated each day from the absentee list generated by the Tennessee School Register program.

The secretaries or student workers were asked to key in the students who were absent on a particular day. The device self-activated at 6:00 PM and continued dialing until every student's home was reached. When the phone was answered at the home of the absent child, a pre-recorded message from the principal would be heard by whoever answered the phone (see Appendix B for a sample message by the principal).

At the end of the eighth school month, a second sample for the experimental group was drawn. The same procedure was followed for this group as the control group. One hundred-fifty students, fifty from each school, were selected for the experimental group. These students had been called for the full eight months by the computer dialing device.

Data Collection

Data collection took place after the eighth school month of the 1986-1987 school year. A computer-generated record of each student's attendance was taken from the Tennessee School Register program. The two data screens contained all the information necessary to make the analysis except the free and reduced lunch data. This information was provided by a separate list. A report was generated from the computer telecommunications program which summarized the daily activity by the automatic calling

device. This information was used to determine what percentage of students called were actually reached by the computer dialing device.

Data Analysis

The purpose of the study was to determine if a computer-assisted telecommunications program would have a significant impact on school attendance. Several related variables such as race, sex, socio-economic level and school attended were also tested for significance. The following hypotheses, stated in the null, were tested for significance at the .05 level:

1. There will be no significant difference in attendance between students called with the computer device and students not called.

2. There will be no significant difference in attendance between boys who were called with the computer device and girls who were called.

3. There will be no significant difference in attendance between boys who were called with the computer device and boys who were not called.

4. There will be no significant difference in attendance between girls who were called with the computer device and girls who were not called.

5. There will be no significant difference in attendance between lower socio-economic level students who were called with the computer device and lower socio-economic students who were not called.

6. There will be no significant difference in attendance between higher socio-economic students who were called with the computer device and lower socio-economic level students who were not called.

7. There will be no significant difference in attendance between higher socio-economic level students who were called with the computer device and higher socio-economic students who were not called.

8. There will be no significant difference in attendance between black students who were called with the computer device and white students who were called.

9. There will be no significant difference in attendance between black students who were called with the computer device and black students who were not called.

10. There will be no significant difference in attendance between white students who were called with the computer device and white students who were not called.

11. There will be no significant difference in attendance between black students who were called with the computer device and white students who were not called.

12. There will be no significant difference in attendance among the three schools for students who were called with the computer device.

13. There will be no significant difference in attendance among the three schools for students who were not called.

Data were analyzed using a computer program developed to be used on an Apple computer. The *t* test for independent samples was used to analyze hypotheses one through eleven. The F test for analysis of variance was used to analyze hypotheses twelve and thirteen.

Data were arranged into frequency distribution tables and then submitted to the computer for statistical analysis. The computer program generated the N for each independent sample, the mean, standard deviation and *t* value. The degrees of freedom were determined by the following formula: $(N_1-1)+(N_2-1)$. Table A-5 of Champion's Basic Statistics for Social Research was then entered at the proper degrees of freedom point. The .05 level was used to determine if there was a significant difference in the comparative means.

The one-way analysis of variance was used to test significant differences between the means of two or more samples in hypotheses twelve and thirteen. This statistic measured between-group and within-group variation. A similar method was used as the *t* test for independent samples. Tables were constructed and significant differences were noted with the * sign.

CHAPTER 4

Presentation of Data and Analysis of Findings

Introduction

Data were arranged into frequency distribution tables and analyzed using a computer program designed for use by an Apple computer (See Appendices C-O). A table for each hypothesis was presented in this chapter with a narrative discussion of the results following each table. Following each set of tables, a bar graph was constructed to illustrate graphically the differences in mean scores and standard deviations of the comparative groups.

The original sample of 300 students was reduced as a result of student fluctuations throughout the eight month study period. Only students who were enrolled for the full eight months were retained for the study.

Presentation of Data

Hypothesis 1: There will be no significant difference in attendance between students who were called with the computer device and students not called.

Using a t test for independent samples the following results were obtained: Students called with the computer device had an N of 147, a mean of 7.80 and a standard deviation of 6.55. Students not called had an N of 127, a mean of 11.18 and a standard deviation of 11.69. The difference in means between the two groups was 3.38.

Table 1

Comparison of Attendance of Students Who Were Called with the Computer Device with Students Who Were Not Called

Group	N	Mean	Standard Deviation	Difference
Called	147	7.80	6.55	3.38*
Not Called	127	11.18	11.69	

$t = -3.0009$ d.f. = 272 $P < .05$
*Difference significant at .05 level.
Need t value of 1.645 for significance.

A t value of 1.645 was required to be significant at the .05 level. A t value of -3.0009 was observed which was statistically significant requiring the null hypothesis to be rejected.

Hypothesis 2: There will be no significant difference in attendance between boys who were called with the computer device and girls who were called.

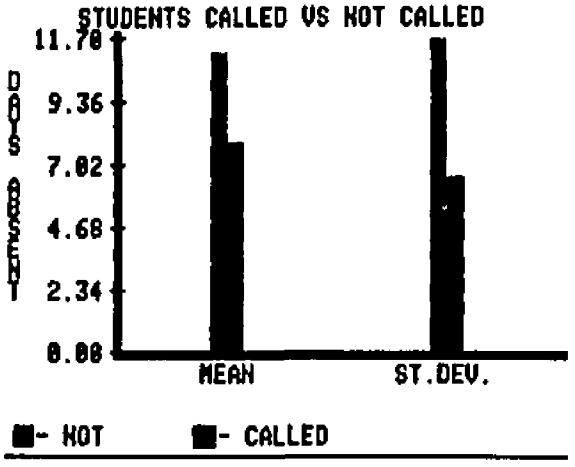
Table 2

Comparison of Attendance of Boys Who Were Called With The Computer Device And Girls Who Were Called

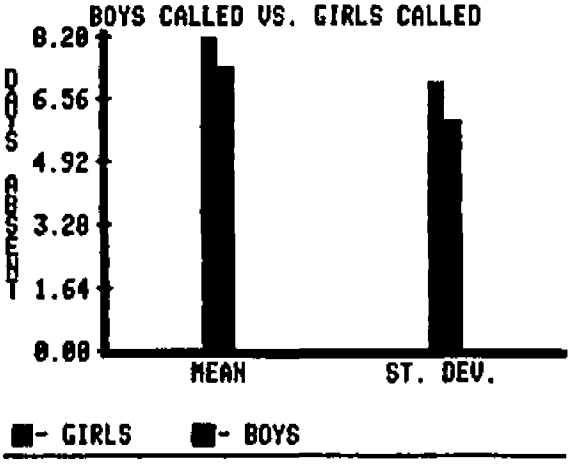
Group	N	Mean	Standard Deviation	Difference
Boys Called	78	7.44	5.99	.75
Girls Called	68	8.19	7.01	

$t = .7019$ d.f. = 144
*Difference significant at .05 level.
Need t value of 1.645 for significance.

Hypothesis 1: Comparison of attendance of students who were called with the computer device with students who were not called



Hypothesis 2: Comparison of attendance of boys who were called with the computer device and girls who were called



Using a t test for independent samples the following results were obtained: Boys who were called with the computer device had an N of 78, a mean of 7.44 and a standard deviation of 5.99. Girls called with the computer device had an N of 68, a mean of 8.19 and a standard deviation of 7.01. The difference in means between the two groups was .75. A t value of 1.645 was required to be significant at the .05 level. A t value of .7019 was observed which was not statistically significant at the .05 level. Therefore, null hypothesis two failed to be rejected.

Hypothesis 3: There will be no significant difference in attendance between boys who were called with the computer device and boys who were not called.

Table 3

Comparison of Attendance of Boys Who Were Called With The Computer Device With Boys Who Were Not Called

Group	N	Mean	Standard Deviation	Difference
Boys Called	78	7.44	5.99	2.17*
Boys Not Called	66	9.61	8.30	

t = -1.8176 d.f. = 142 P < .05
*Difference significant at the .05 level.
Need a t value of 1.645 for significance at the .05 level.

Using a t test for independent samples the following results were obtained: Boys called with the computer device had an N of 78, a mean of 7.44 and a standard deviation of

5.99. Boys not called had an N of 66, a mean of 9.61 and a standard deviation of 8.30. The difference in means between the two groups was 2.17. A t value of 1.645 was required for significance at the .05 level. A t value of -1.8176 was observed which was statistically significant requiring the null hypothesis to be rejected.

Hypothesis 4: There will be no significant difference in attendance between girls who were called with the computer device and girls who were not called.

Table 4

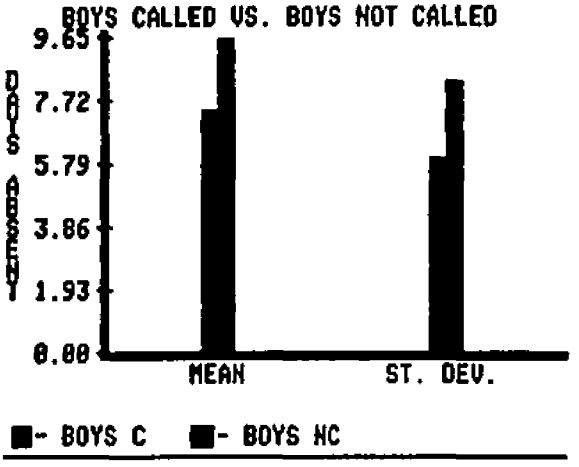
Comparison Of Attendance of Girls Who Were Called With The Computer Device With Girls Who Were Not Called

Group	N	Mean	Standard Deviation	Difference
Girls Called	68	8.34	7.03	3.68*
Girls Not Called	60	12.02	11.75	

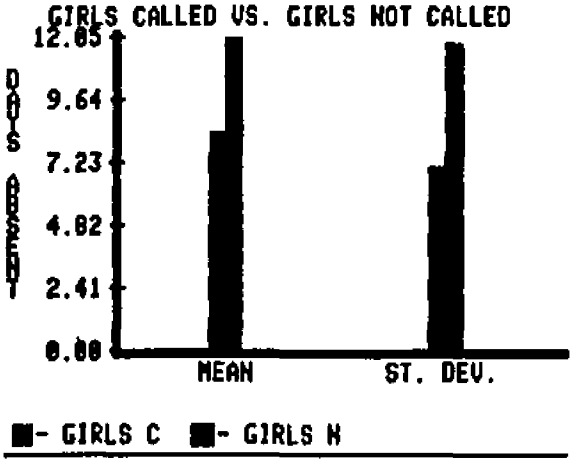
t = -2.1784 d.f. = 126 P < .05
*Significant at the .05 level.
Need a t value of 1.645 for significance at the .05 level.

Using a t test for independent samples the following results were obtained: Girls who were called with the computer device had an N of 68, a mean of 8.34 and a standard deviation of 7.03. Girls not called had an N of 60, a mean of 12.02 and a standard deviation of 11.75. The difference in means was 3.68. A t value of 1.645 was required to be significant at the .05 level. A t value of

Hypothesis 3: Comparison of attendance of boys who were called with the computer device with boys who were not called



Hypothesis 4: Comparison of attendance of girls who were called with the computer device with girls who were not called



-2.1784 was observed which was statistically significant requiring the null hypothesis to be rejected.

Hypothesis 5: There will be no significant difference in attendance between lower socio-economic level students who were called with the computer device and lower socio-economic level students who were not called.

Table 5

Comparison of Attendance of Low Socio-Economic Students Called With The Computer Device With Low Socio-Economic Students Not Called

Group	N	Mean	Standard Deviation	Difference
Low SE Called	37	7.97	9.14	6.06*
Low SE Not Called	32	14.03	16.38	

t = 1.9300 d.f. = 67 P < .05
*Significant at the .05 level.
Need a t value of 1.671 for significance at the .05 level.

Using the t test for independent samples the following results were obtained: The N for low socio-economic students called was 37 with a mean of 7.97 and a standard deviation of 9.14. The N for the low socio-economic students not called was 32 with a mean of 14.03 and a standard deviation of 16.38. A t value of 1.9300 was observed with 1.671 being needed for significance at the .05 level. A difference in means of 6.06 was obtained. Since the t value exceeded 1.671 the null hypothesis was rejected.

Hypothesis 6: There will be no significant difference in attendance between high socio-economic students who were

called with the computer device and low socio-economic students not called.

Table 6

Comparison Of Attendance of High Socio-Economic Students Called With The Computer Device With Low Socio-Economic Students Not Called

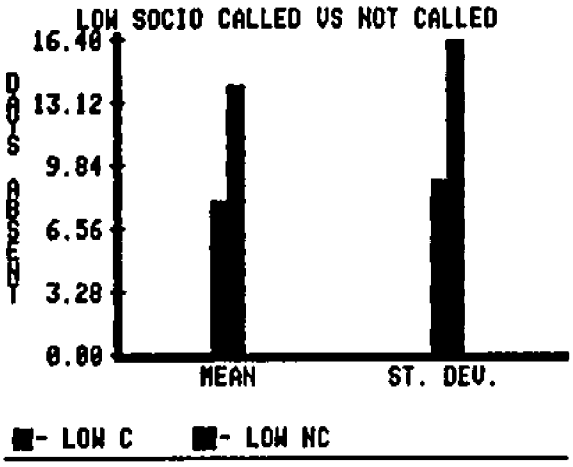
Group	N	Mean	Standard Deviation	Difference
High SE Called	110	7.84	6.04	6.19*
Low SE Not Called	32	14.03	16.38	

t = 3.2903 d.f. = 140 $P < .05$
*Difference significant at the .05 level.
Need t value of 1.645 for significance.

Using a t test for independent samples the following results were obtained: High socio-economic students called with the computer device had an N of 110, a mean of 7.84 and a standard deviation of 6.04. Low socio-economic students not called had an N of 32, a mean of 14.03 and a standard deviation of 16.38. The difference in means between the groups was 6.19. A t value of 1.645 was required to be significant at the .05 level. A t value of 3.2903 was observed which was statistically significant requiring the null hypothesis to be rejected.

Hypothesis 7: There will be no significant difference in attendance between high socio-economic students called with the computer device and high socio-economic students not called.

Hypothesis 5: Comparison of attendance of low socio-economic students called with the computer device with low socio-economic students not called



Hypothesis 6: Comparison of attendance of high socio-economic students called with the computer device with low socio-economic students not called

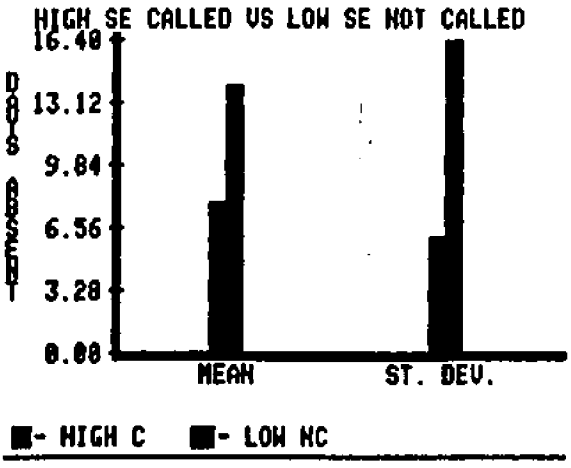


Table 7

Comparison of Attendance of High Socio-Economic Students Called With The Computer Device And High Socio-Economic Students Not Called

Group	N	Mean	Standard Deviation	Difference
High SE Called	110	7.84	6.04	2.38*
High SE Not Called	95	10.22	9.54	

t = 2.1667 d.f. = 203 $P < .05$
*Difference significant at the .05 level.
Need a t value of 1.645 for significance.

Using a t test for independent samples the following results were obtained: High socio-economic students called with the computer device had an N of 110, a mean of 7.84 and a standard deviation of 6.04. High socio-economic students not called had an N of 95, a mean of 10.22 and a standard deviation of 9.54. The difference in means between the two groups was 2.38. A t value of 1.645 was required for significance at the .05 level. A t value of 2.1667 was observed which was statistically significant requiring the null hypothesis to be rejected.

Hypothesis 8: There will be no significant difference in attendance between black students who were called with the computer device and white students who were called.

Using a t test for independent samples the following results were obtained: Black students called with the computer device had an N of 21, a mean of 4.00 and a standard deviation of 4.04.

Table 8

Comparison Of Attendance of Black Students Called With The Computer Device With White Students Who Were Called

Group	N	Mean	Standard Deviation	Difference
Black Called	21	4.00	4.04	4.16*
White Called	124	8.16	6.57	

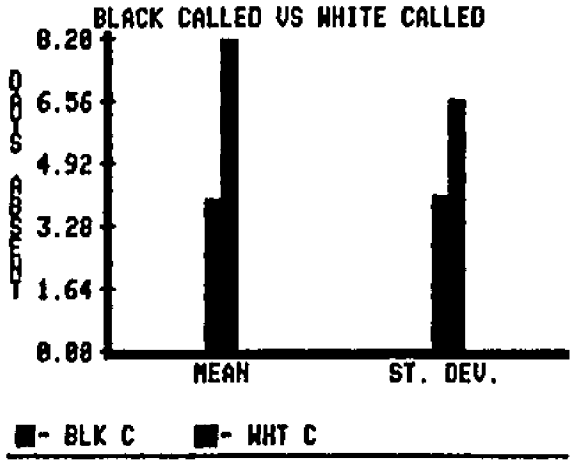
t = 2.8103 d.f. = 143 $P < .05$
*Difference significant at the .05 level.
Need a t of 1.645 to reject the null.

White students called with the computer device had an N of 124, a mean of 8.16 and a standard deviation of 6.57. The difference in means between the two groups was 4.16. A t value of 1.645 was required to be significant at the .05 level. A t value of 2.8103 was observed which was statistically significant and required the null hypothesis to be rejected.

Hypothesis 9: There will be no significant difference in attendance between black students who were called with the computer device and black students who were not called.

Using a t test for independent samples the following results were obtained: Black students called with the computer device had an N of 21, a mean of 4.00 and a standard deviation of 4.04. Black students not called had an N of 9, a mean of 10.00 and a standard deviation of 21.08.

Hypothesis 7: Comparison of attendance of high socio-economic students called with the computer device and high socio-economic students not called



Hypothesis 8: Comparison of attendance of black students called with the computer device with white students who were called

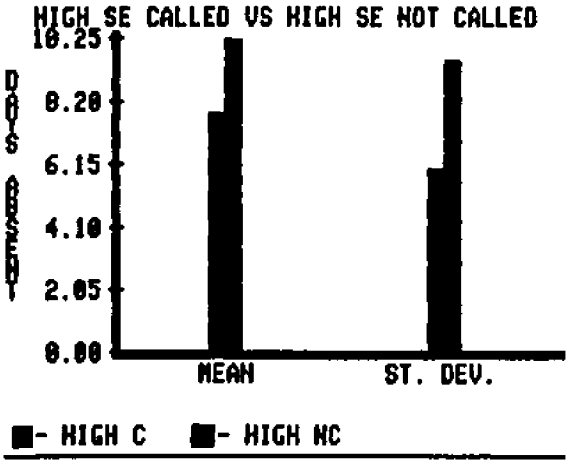


Table 9

Comparison Of Attendance of Black Students Called With The Computer Device With Black Students Not Called

Group	N	Mean	Standard Deviation	Difference
Black Called	21	4.00	4.04	6.00
Black Not Called	9	10.00	21.08	

t = 1.2790 d.f. = 28 $P < .05$
*Difference significant at the .05 level.
Need a t value of 1.71 to reject the null.

The difference in means between the two groups was 6.00. A t value of 1.71 was required to be significant at the .05 level. A t value of 1.2790 was observed; therefore, null hypothesis nine failed to be rejected.

Hypothesis 10: There will be no significant difference in attendance between white students who were called with the computer device and white students not called.

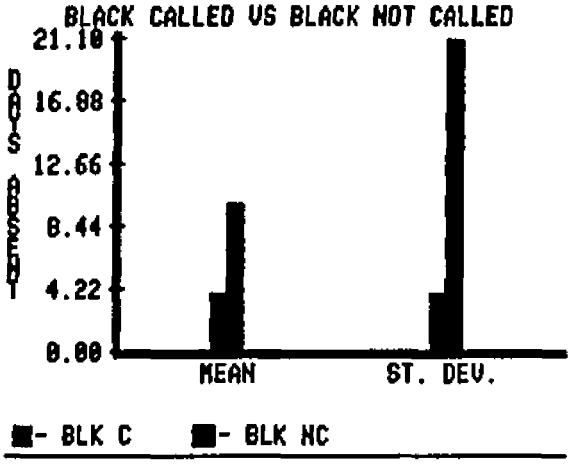
Table 10

Comparison Of Attendance of White Students Called With The Computer Device With White Students Not Called

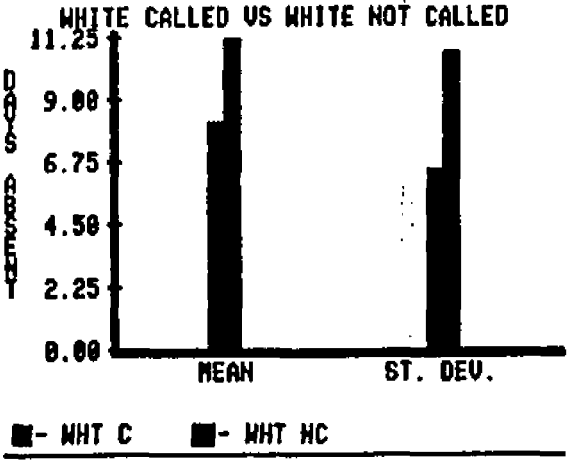
Group	N	Mean	Standard Deviation	Difference
White Called	126	8.23	6.54	1.99*
White Not Called	119	11.22	10.77	

t = 2.6414 d.f. = 243 $P < .05$
*Difference significant at the .05 level.
Required a t of 1.645 to reject the null hypothesis.

Hypothesis 9: Comparison of attendance of black students called with the computer device with black students not called



Hypothesis 10: Comparison of attendance of white students called with the computer device with white students not called



Using a t test for independent samples the following results were obtained: White students called with the computer device had an N of 126, a mean of 8.23 and a standard deviation of 6.54. White students not called had an N of 119, a mean of 11.22 and a standard deviation of 10.77. The difference in means between the two groups was 1.99. A t value of 1.645 was required to reject the null hypothesis. A t value of 2.6414 was observed which was statistically significant and required the null hypothesis to be rejected.

Hypothesis 11: There will be no significant difference in attendance between black students called with the computer device and white students who were not called.

Table 11

Comparison Of Attendance of Black Students Called With The Computer Device With White Students Not Called

Group	N	Mean	Standard Deviation	Difference
Black Called	21	4.00	4.04	7.22*
White Not Called	119	11.22	10.77	

t = 3.0263 d.f. = 138 P < .05
*Difference significant at the .05 level.
Requires a t of 1.645 to reject the null.

Using a t test for independent samples the following results were obtained: Black students called with the computer device had an N of 21, a mean of 4.00 and a standard deviation of 4.04. White students not called had

an N of 119, a mean of 11.22 and a standard deviation of 10.77. The difference in means between the two groups was 7.22. A t value of 1.645 was required to reject the null. A t value of 3.0263 was observed which was statistically significant and required the null hypothesis to be rejected.

Hypothesis 12: There will be no significant difference in attendance among the three schools for students who were called with the computer device.

Table 12

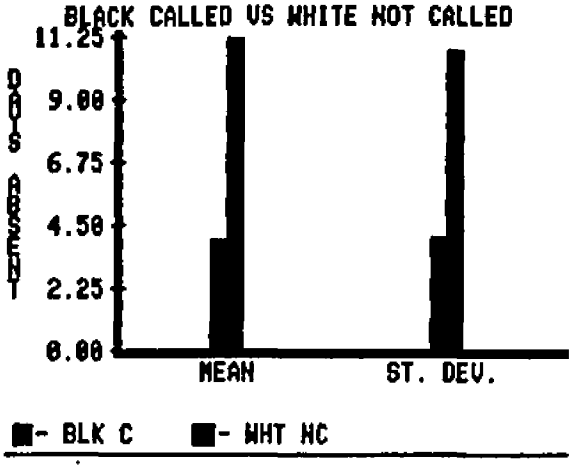
Analysis of Variance For Schools Called With The Computer Device

Source of Variation	SS	df[a]	MS	Fobs
Among groups	216.68	2	108.34	2.57
Within groups	6113.07	145	42.16	
Total	6329.75	147		

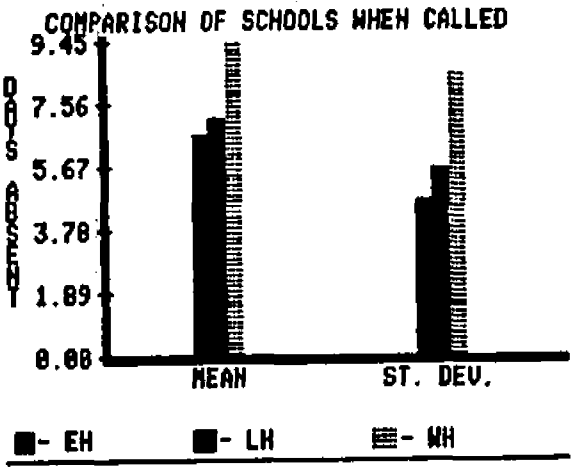
*F value significant at the .05 level.
Required to be significant at the .05 level = 3.07.

Using the F test for analysis of variance to determine whether significant differences existed between groups the following results were obtained: The sum of the squared scores for among groups was 216.68 and the sum of the squared scores within groups was 6113.07. The total of the squared scores was 6329.75. The degrees of freedom for among groups was determined by the following formula: N-1 (3-1=2). The degrees of freedom for within groups was 145 and a total degrees of freedom of 147. The mean squared for among groups was 108.34 and 42.16 for within groups. An

Hypothesis 11: Comparison of attendance of black students called with the computer device with white students not called



Hypothesis 12: Comparison of schools called with the computer device



observed F value of 2.57 was reported. Since an F value of 3.07 was required for significance at the .05 level, null hypothesis twelve failed to be rejected.

Hypothesis 13: There will be no significant difference in attendance among the three schools for students who were not called.

Table 13

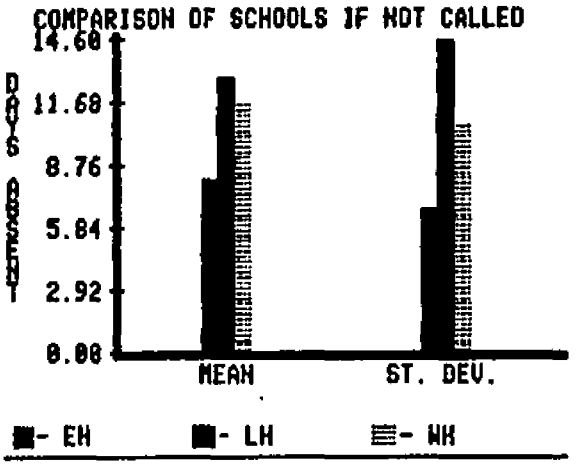
Analysis of Variance For Schools Not Called With The Computer Device

Source of Variation	SS	df[a]	MS	Fobs
Among Groups	547.93	2	273.97	2.16
Within Groups	15698.05	124	126.60	
Total	16245.98	126		

*F value significant at the .05 level.
Required to be significant at the .05 level = 3.09.

Using the F test for analysis of variance to determine whether significant difference existed between groups the following results were obtained: The sum of the squared scores for among groups was 547.93 and the sum of the squared scores for within groups was 15698.05. The degrees of freedom for among groups was determined by the following formula: N-1 (3-1=2). The degrees of freedom for within groups was 124 with a total of 126. The mean squared for among groups was 273.97 and 126.60 for within groups. An observed F value of 2.16 was reported. Since an F value of

Hypothesis 13: Comparison of schools not called with the computer device



3.09 was required for significance at the .05 level, null hypothesis thirteen failed to be rejected.

Summary

The analysis of the data was accomplished by using the *t* test for independent samples for hypotheses one through eleven. The *F* test from analysis of variance was used for hypotheses twelve and thirteen.

A statistically significant difference in the comparative means was observed for hypotheses 1, students called and students not called; 3, boys called and boys not called; 4, girls called and girls not called; 5, low socio-economic students called and low socio-economic students not called; 6, high socio-economic students called and low socio-economic students not called; 7, high socio-economic students called and high socio-economic students not called; 8, black students called and white students called; 10, white students called and white students not called; and 11, black students called and white students not called. No significant difference was found in hypotheses 2, girls called and boys called; 9, black students called and black students not called; 13, comparison of schools called; and 13, comparison of schools not called. These null hypotheses, therefore, failed to be rejected.

As a result of the review of the related literature, it was found that computers were used extensively for various purposes in public school administration. Computer robots or automatic dialers were being used in several states with

varying degrees of success. One school reported a fifty-nine percent increase in attendance as a result of the use of an automatic dialer. Automatic dialers ranged in price from $950 to $9995. They employed a device called a modem which transmitted computer data through standard telephone lines. Creative principals were using the automatic dialers as electronic mail, to make announcements and to act as a "wake up" call for tardy students. One glaring weakness of the dialer was that students who were absent could wait on the automatic call and the parents would remain uninformed.

Computers were being used for various public school administrative tasks. Attendance accounting, student scheduling, word processing, student data storage, test results analysis and school business accounting were a few of the many functions which were aided by the computer.

CHAPTER 5

Summary, Conclusions, and Recommendations

Summary

The problem of the study was to determine if students who were called with an automatic computer dialing device would have better attendance than students who were not called by the device. Variables such as race, sex, socio-economic status and school attended were examined to determine if significant relationships existed between students in these categories who were called and students who were not called. An extensive review of the literature was done to examine the extent of the use of the computer in public school administration.

A review of the literature produced only one extensive study dealing with the use of an automatic computer dialer and its impact on school attendance. McDonald found that a strong and positive relationship existed between the variables of parent notification and school attendance.[1] He concluded that the computer dialer was the most effective way to notify parents of their child's absence. Copeland, Sheats and Dunkleberger, and Fiordaliso all concluded that a well formulated plan of parent notification could reduce absenteeism significantly. Bittle was the first to use a recorded message to notify parents of their child's absence.

[1]Maurice McDonald, "A Comparison of the Effect of Using Computer Calls for Improving Pupil Attendance in Public Schools," Dissertation. University of Tennessee, 1986, p. 21.

His design required the parent to call the school to receive a recorded message regarding their child's absence. Bittle concluded that telephone communication was a more effective way of reducing absenteeism, but a faster method than his would be required. The research did not support the assumption that the principal himself/herself should be the one to initiate the telephone communication.

Automatic dialers were being used in states from Texas to California to New York to Florida and various states in between. Schools were not the first to use automatic dialers as various businesses and industries were using computerized telecommunications as early as the late 1970s. Schools which used the automatic dialers reported significant increases in attendance as a result of their use.

Computers were used in public school administration for various purposes. Student data manipulation was the primary use of the computer. Attendance accounting, word processing, scheduling, school business accounting, inventory and test scoring were other popular uses of the computer.

To determine if the expectations of the researcher were correct the data were analyzed using a t test for independent samples and the F test for analysis of variance. It was determined that a significant difference existed between the variables in hypotheses 1, 3, 4 , 5, 6, 7, 8, 10 and 11 causing the null hypotheses to be rejected. In

hypotheses 2, 9, 12, and 13, no significant difference was found between the variables causing the researcher to fail to reject the null hypothesis in each instance.

Students who were called with the computer device had an overall better attendance record than students who were not called (H_o1). A mean difference of 3.38 days between those groups was observed. From the data it appeared that the computer dialing device had a significant impact on student attendance.

When comparing boys who were called with the computer device with girls who were called, no significant difference between the two were observed. It appeared that use of the computer device had an equal impact on boys as well as girls. However, when boys who were called with the computer device were compared with boys who were not called (H_o3), a significant difference was found to exist. The same was true of girls who were called with the computer device when compared with girls who were not called (H_o4). There was a significant difference in attendance. It appeared that gender made no difference.

A mean difference of 6.06 days was observed between lower socio-economic students who were called with the computer device and lower socio-economic students not called. Lower socio-economic students not called reported the highest mean score of any of the comparative groups. It was concluded that use of the computer dialing device had a significant impact on this group of students.

The greatest difference in mean scores occurred when higher socio-economic students called were compared with lower socio-economic students not called. A difference of 6.19 was observed. It should be noted, however, that the Ns for these groups were disproportionate, which could have had an effect on the overall difference.

Again in Ho7 there was a significant difference in attendance between higher socio-economic students who were called with the computer device and higher socio-economic students not called.

Black students who were called with the computer device reported the best overall attendance of any group during the study period with a mean score of 4.00 days missed (Ho8). Black students attended, overall, better than the white students with one exception. A deviant score of 65 days missed was reported for one black female (not called). Had this student been in the experimental groups and called with the computer device a possible reduction in days missed could have been achieved.

There was no statistically significant difference in attendance between black students who were called with the computer device and black students who were not called (Ho9). Black students not called had a low N of 9 with a deviant score of 65 days missed. This caused the mean difference to be 10.00 and the standard deviation to be 21.08 which was extremely large.

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There was no statistically significant difference in attendance between black students who were called with the computer device and black students who were not called (Ho9). Black students not called had a low N of 9 with a deviant score of 65 days missed. This caused the mean difference to be 10.00 and the standard deviation to be 21.08 which was extremely large.

When comparing white students called with white students not called there was a significant difference at the .05 level. It should be noted that not one of the hypotheses found significant at the .05 level was found to be significant at the .01 level.

Black students who were called with the computer device reported a significant difference in attendance compared with white students not called. The difference was of particular note since a statistically significant difference was already found between black students called and white students not called.

Neither hypothesis twelve nor thirteen was found to be significant using the F test for analysis of variance. It could be concluded there was not sufficient variance among and within groups to be considered significant at the .05 level. Regardless of race, sex, or socio-economic level students called with the computer device attended school more regularly than students not called.

Conclusions

Based on the data the following conclusions are drawn:

1. Students who are called with a computer dialing device attend school more regularly than students who are not called.

2. Boys and girls who are called with a computer dialing device attend school equally as well.

3. Boys who are called with a computer dialing device attend school more regularly than boys who are not called.

4. Girls who are called with a computer dialing device attend school more regularly than girls who are not called.

5. Students who are on the free or reduced lunch list attend school more regularly if called with the computer dialing device than if not called.

6. Students not on the free or reduced lunch list attend school more regularly if called with the computer device than students on the free and reduced lunch list that are not called.

7. Students not on the free and reduced list attend school more regularly if called by the computer device than if they are not called.

8. Black students who are called with the computer device attend school more regularly than white students who are also called.

9. Black students called with the computer device and black students not called with the computer device attend school equally as well.

10. White students called with the computer dialing device attend school more regularly than white students who are not called.

11. Black students called with the computer dialing device attend school more regularly than white students who were not called.

12. Students in the three schools were affected equally by the computer dialing device.

13. Students not called with the computer device were affected equally within and among the schools.

14. The computer dialing device saved both the principal and secretary time which they normally would have used calling the homes of absent students.

Implications

Robotic Telephone Assistant (R.I.T.A.) appeared to have had a significant difference on attendance in Hamblen County, Tennessee. For school systems that are similar to Hamblen County it would appear that similar results could be obtained.

Although significant differences were obtained using the computer dialing device, it would appear that greater gains could have been made if all students in the experimental group were actually called by the computer. Analysis of the year end print out of the percentage of students actually contacted showed that the highest percentage receiving the calls was seventy-eight percent. One school made contact with only fifty-eight percent of the students in the experimental group.

The principals making the recorded messages, although saying virtually the same thing, could have had either a positive or negative effect on the parents contacted. It would appear that the more positive the tone of the message, the better the response would be from the parents.

Recommendations

The following recommendations were made as a result of the study:

1. In order to confirm the findings of the study, continued monitoring of the effect of the computer dialing device should be done.

2. Since it was observed that students who were called with the computer device continued to miss after being called, the principal should make periodic "live calls" to the parents of those students.

3. The two high schools only called the parents of students not notifying the school of the reason for their child's absence. Better results could possibly be obtained if all students who missed school were called by the dialing device. Parents could be informed that the call was simply a follow-up of their call to the school.

4. The school system should consider purchasing the dialing devices for other schools, especially the other three middle schools.

5. Parental attitudes toward the dialing device should be obtained through a parent attitude questionnaire.

6. Principals should re-record the messages going home to parents, paying particular attention to conveying positive tone and precise diction in the messages.

7. A list of the poorest attenders in the 1986-1987 school year should be made. Careful attention should be

given to these students, making sure their parents are contacted every day the students miss school.

8. A cost analysis should be done to determine if significant savings were made in personnel time due to the use of the computer dialing device.

9. A cost analysis should be done to determine average daily attendance gained by using the computer dialing device. Schools concerned with the cost of the dialing device may actually be losing money by not employing the use of the dialing device.

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APPENDICES

APPENDIX A

Letter to Computer Dialing Companies

East Tennessee State University
College of Education
Department of Supervision and Administration • Box 19000A • Johnson City, Tennessee 37614-0002 • (615) 929-4415, 4430

2/19/87

Computer Dynamics Corp.
3754 Hawkins, NE
Alburquerque, New Mexico 87109

Dear Sirs:

I am presently involved in a dissertation study to determine the effectiveness of computer assisted telecommunications as it relates to school attendance. From the literature I was able to secure your name and address as a distributor of a telecommunications device. It would be very valuable for the study if you could send any information which you feel would be helpful. Such things as where you have your device installed, statistics on performance, or any other item which could prove helpful. Your company name will be mentioned in the final draft of the dissertation.

Thank you advance for your help and assistance in this project.

Sincerely,

Carroll M. Helm

Carroll M. Helm, Doctoral Candidate
East Tennessee State University

APPENDIX B

Sample Letter to Parents Regarding RITA and Sample Recorded Message

Dear Parent:

I am writing you regarding a matter that is very important to you, your child and us--your child's attendance at George Washington High School.

In the past when a student was absent we ...

In order to improve our communication with you we are going to take a new (or supplement that) approach. Beginning October 1, when your child misses a class during the day, we will call your home phone number that night. We will call at night since many homes do not have a parent home during the day. The call will be made by an automatic device that plays a recorded message.

A typical message might be:

> "Hello, this is a recorded message from Pat Miller, principal of George Washington High School. Our records show that your child missed class today. Please discuss this with your child and call our attendance officer, Peggy Andrews, tomorrow at 555-7834..."

A few parents may object to being called by a machine. However we have considered it carefully and see definite benefits to everyone involved that we want you to consider:

> We use this approach to request a personal contact with you, not to replace it.
>
> We believe we can significantly improve attendance with this approach and thereby give our students more classs time and hence a better education.
>
> We can call you at home, rather than at work.
>
> We will save money by reducing staff time and mailing expense. Moreover, our state aid increases when our attendance increases.
>
> We believe that you will appreciate leaning about a school problem your child might be having as soon as possible, so you can take steps to keep the situation from becoming serious.

Normally we will make these calls between 6:00pm and 9:00pm.

APPENDIX C

Frequency Distributions for Students Who Were Called with the Computer Device with Students Who Were Not Called

APPENDIX C

FREQUENCY DISTRIBUTION FOR STUDENTS CALLED WITH THE COMPUTER DEVICE AND FOR STUDENTS NOT CALLED (NUMBER OF DAYS ABSENT)

	STUDENTS CALLED	STUDENTS NOT CALLED
INTERVAL	F	F
0--5	47	63
6--10	27	47
11--15	22	26
16--20	14	4
21--25	5	2
26--30	5	3
31--35	2	0
36--40	0	2
41--45	1	0
46--50	1	0
51--55	1	0
56--60	1	0
61--65	1	0
N=	127	147

APPENDIX D

Frequency Distributions for Boys Who Were Called with the Computer Device and Girls Who Were Called

APPENDIX D

FREQUENCY DISTRIBUTION FOR BOYS CALLED WITH THE COMPUTER DEVICE AND FOR GIRLS CALLED WITH THE COMPUTER DEVICE

	GIRLS CALLED	BOYS CALLED
INTERVAL	F	F
0--5	26	37
6--10	24	21
11--15	14	12
16--20	1	5
21--25	1	1
26--30	0	2
31--35	0	0
36--40	2	0
41--45	0	0
46--50	0	0
51--55	0	0
56--60	0	0
61--65	0	0
N=	68	78

APPENDIX E

Frequency Distributions for Boys Who Were Called with the Computer Device with Boys Who Were Not Called

APPENDIX E

FREQUENCY DISTRIBUTION FOR BOYS CALLED WITH THE COMPUTER DEVICE AND FOR BOYS NOT CALLED

	BOYS CALLED	BOYS NOT CALLED
INTERVAL	F	F
0--5	37	26
6--10	21	11
11--15	12	16
16--20	5	7
21--25	1	2
26--30	2	3
31--35	0	2
36--40	0	0
41--45	0	0
46--50	0	0
51--55	0	0
56--60	0	0
61--65	0	0
N=	78	66

APPENDIX F

Frequency Distributions for Girls Who Were Called with the Computer Device with Girls Who Were Not Called

APPENDIX F

FREQUENCY DISTRIBUTION FOR GIRLS CALLED WITH THE COMPUTER DEVICE AND GIRLS NOT CALLED

	GIRLS CALLED	GIRLS NOT CALLED
INTERVAL	F	F
0--5	26	20
6--10	24	16
11--15	14	7
16--20	1	8
21--25	1	2
26--30	0	3
31--35	0	1
36--40	2	0
41--45	0	1
46--50	0	1
51--55	0	1
56--60	0	0
61--65	0	0
N=	68	60

APPENDIX G

Frequency Distributions for Low Socio-Economic Students Called with the Computer Device with Low Socio-Economic Students Not Called

APPENDIX G

FREQUENCY DISTRIBUTION FOR LOW SOCIO CALLED WITH THE COMPUTER DEVICE AND FOR LOW SOCIO-ECONOMIC STUDENTS NOT CALLED

	LOW SE CALLED	LOW SE NOT CALLED
INTERVAL	F	F
0--5	17	14
6--10	12	4
11--15	5	5
16--20	0	4
21--25	0	2
26--30	2	0
31--35	0	0
36--40	0	0
41--45	0	1
46--50	1	0
51--55	0	1
56--60	0	0
61--65	0	1
N=	37	32

APPENDIX H

Frequency Distributions for High Socio-Economic Students Called with the Computer Device with Low Socio-Economic Students Not Called

APPENDIX H

FREQUENCY DISTRIBUTION FOR HIGH SOCIO CALLED WITH THE COMPUTER DEVICE AND FOR LOW SOCIO-ECONOMIC STUDENTS NOT CALLED

	HIGH SE CALLED	LOW SE NOT CALLED
INTERVAL	F	F
0--5	46	14
6--10	35	4
11--15	22	5
16--20	3	4
21--25	2	2
26--30	1	0
31--35	0	0
36--40	1	0
41--45	0	1
46--50	0	0
51--55	0	1
56--60	0	0
61--65	0	1
N=	110	32

APPENDIX I

Frequency Distributions for High Socio-Economic Students Called with the Computer Device and High Socio-Economic Students Not Called

APPENDIX I

FREQUENCY DISTRIBUTION FOR HIGH SOCIO CALLED WITH THE COMPUTER DEVICE AND FOR HIGH SOCIO-ECONOMIC STUDENTS NOT CALLED

	HIGH SE CALLED	HIGH SE NOT CALLED
INTERVAL	F	F
0--5	46	33
6--10	35	23
11--15	22	18
16--20	3	11
21--25	2	2
26--30	1	5
31--35	0	2
36--40	1	0
41--45	0	0
46--50	0	0
51--55	0	0
56--60	0	1
61--65	0	0
N=	110	95

APPENDIX J

Frequency Distributions for Black Students Called with the Computer Device with White Students Who Were Called

APPENDIX J

FREQUENCY DISTRIBUTION FOR BLACK STUDENTS CALLED WITH THE COMPUTER DEVICE AND FOR WHITE STUDENTS CALLED

	BLACK CALLED	WHITE CALLED
INTERVAL	F	F
0--5	14	50
6--10	5	42
11--15	2	24
16--20	0	4
21--25	0	2
26--30	0	2
31--35	0	0
36--40	0	2
41--45	0	0
46--50	0	0
51--55	0	0
56--60	0	0
61--65	0	0
N=	21	126

APPENDIX K

Frequency Distributions for Black Students Called with the Computer Device with Black Students Not Called

APPENDIX K

FREQUENCY DISTRIBUTION FOR BLACK STUDENTS CALLED WITH THE COMPUTER DEVICE AND FOR BLACK STUDENTS NOT CALLED

	BLACK CALLED	BLACK NOT CALLED
INTERVAL	F	F
0--5	14	7
6--10	5	0
11--15	2	1
16--20	0	0
21--25	0	0
26--30	0	0
31--35	0	0
36--40	0	0
41--45	0	0
46--50	0	0
51--55	0	0
56--60	0	0
61--65	0	1
N=	21	9

APPENDIX L

Frequency Distributions for White Students Called with the Computer Device with White Students Not Called

APPENDIX L

FREQUENCY DISTRIBUTION FOR WHITE STUDENTS CALLED WITH THE COMPUTER DEVICE AND FOR WHITE STUDENTS NOT CALLED

	WHITE CALLED	WHITE NOT CALLED
INTERVAL	F	F
0--5	50	41
6--10	42	26
11--15	24	22
16--20	4	14
21--25	2	4
26--30	2	5
31--35	0	2
36--40	2	0
41--45	0	1
46--50	0	1
51--55	0	1
56--60	0	1
61--65	0	0
N=	126	119

APPENDIX M

Frequency Distributions for Black Students Called with the Computer Device with White Students Not Called

APPENDIX M

FREQUENCY DISTRIBUTION FOR BLACK STUDENTS CALLED WITH THE COMPUTER DEVICE AND FOR WHITE STUDENTS NOT CALLED

	BLACK CALLED	WHITE NOT CALLED
INTERVAL	F	F
0--5	14	41
6--10	5	26
11--15	2	22
16--20	0	14
21--25	0	4
26--30	0	5
31--35	0	2
36--40	0	0
41--45	0	1
46--50	0	1
51--55	0	1
56--60	0	1
61--65	0	0
N=	21	119

APPENDIX N

Frequency Distributions for Schools Called with the Computer Device

APPENDIX N

FREQUENCY DISTRIBUTION FOR SCHOOLS WHOSE STUDENTS WERE CALLED WITH THE COMPUTER DEVICE

	EH	LH	WH
INTERVAL	F	F	F
0--5	22	23	19
6--10	17	12	13
11--15	6	13	11
16--20	1	0	3
21--25	1	0	1
26--30	0	2	1
31--35	0	0	0
36--40	0	0	2
41--45	0	0	0
46--50	0	0	0
51--55	0	0	0
56--60	0	0	0
61--65	0	0	0
N=	47	50	50

APPENDIX O

Frequency Distributions for Schools Not Called with the Computer Device

APPENDIX O

FREQUENCY DISTRIBUTION FOR SCHOOLS WHOSE STUDENTS WERE NOT CALLED WITH THE COMPUTER DEVICE

	EH	LH	WH
INTERVAL	F	F	F
0--5	17	19	12
6--10	13	5	9
11--15	8	7	8
16--20	3	8	3
21--25	1	2	1
26--30	0	2	3
31--35	1	0	1
36--40	0	0	0
41--45	0	0	0
46--50	0	0	1
51--55	0	1	0
56--60	0	1	0
61--65	0	1	0
N=	43	46	38

VITA

CARROLL M. HELM

Personal Data:

Date of Birth:	August 13, 1949
Place of Birth:	Hamblen County, Tennessee
Marital Status:	Married

Education:

Public Schools, Hamblen County, Tennessee
Carson-Newman College, Jefferson City, Tennessee
Psychology and History, B.A., 1971.
University of Tennessee, Knoxville, Tennessee
Educational Administration, M.S., 1974.
East Tennessee State University, Johnson City, TN
Educational Administration, Ed.D., Summer 1987.

Certification:

Elementary, K - 9	Principal, K - 12
Supervisor, K - 12	Superintendent
Special Education	Psychology
History	Attendance

Experience:

Doctoral Fellow, East Tennessee State University
January 1987 - Present
Director, Pupil Personnel, Management Negotiator,
Hamblen County, July 1984 - October 1986
Supervisor, Special Education, Hamblen County
School System, July 1982 - July 1984
Principal, Southern Heights Elementary School,
Hamblen County School System, August 1978 -
July 1982
Assistant Principal, West View Middle School,
Hamblen County, August 1975 - August 1978
Teacher, Hamblen County School System,
August 1971 - August 1975

Organizations:

Lions, Hawk Board, United Way Chairman, Keep America Beautiful Board, HARC, Phi Delta Kappa