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ABSTRACT

A practicum was designed to provide opportunities for second-grade students from low socioeconomic school communities to use computer technology in the writing process. Staff development training was designed and conducted to increase teachers' knowledge, experience, and attitudes toward using the computer as a tool for writing. Providing collaboration and support for teachers was a major component of the practicum. Six solution strategies focusing on empowering teachers with knowledge and support in process writing were developed, thereby increasing the use of the computer for student writing. Analysis of the data revealed that providing educators with the tools, training, and support increased student opportunities to use the computer as a tool for writing. (Two tables and one figure of data are included; a list of 29 references, a reading attitude survey, a software evaluation, a computer staff development evaluation, a student learning log sample, and a computer activity sample are attached.) (Author/RS)

Nurturing the Communication Abilities of Second Grade Students by Using Notebook Computers to Enhance the Writing Process

by

Paula C. Despot

Cluster 44

A Practicum I Report presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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PRACTICUM APPROVAL SHEET

This practicum took place as described.

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This practicum report was submitted by Paula C. Despot under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova University.

Approved:

Oct. 10, 1992
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William Anderson, Ph.D., Adviser

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This practicum was designed to provide opportunities for second grade students from low socioeconomic school communities to use computer technology in the writing process. Staff development training was designed and conducted to increase teachers knowledge, experience, and attitudes toward using the computer as a tool for writing. Providing collaboration and support for teachers was a major component.

The writer developed six solution strategies focusing on empowering teachers with the knowledge and support in process writing and computer technology thereby increasing the use of the computer for student writing.

Analysis of the data revealed that providing educators with the tools, training, and support, increased student opportunities to use the computer as a tool for writing.

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CHAPTER I

INTRODUCTION

Description of Work Setting and Community

The writer's work setting was a large public school district located in a prosperous, growing, and diverse county. The school district serves a population whose characteristics over the years have changed dramatically. Once primarily an agricultural area, rapid commercial and industrial growth have given the county a new and strong economy. Many residents enjoy income levels that are above the national and state averages. Between 1970 and 1980, the county's population grew by 24% exceeding national and state averages (Mitchell, 1987). The student population during the implementation of this practicum was 66,798 ranking the school district as the 46th largest in the United States.

Among 76 elementary schools in the district, two schools illustrated a profile of diversity that exists in the county school system. The two elementary schools are located in adjacent low-socioeconomic suburban communities. Many children residing in these areas come from families in the lower income to poverty strata range. The school communities are faced with many problems such as parents on military assignments, substance abuse, criminal activity, homelessness, and single

parents.

Table 1 shows each schools' socioeconomic, gender, and racial/ethnic data as compared to the school district. The high numbers of students qualifying for Chapter I assistance coupled with the varying cultural backgrounds made these schools appropriate sites to nurture the communication abilities of primary students. The target population for this practicum was 43 second grade students, of whom 28 are minority, 21 are female, and 26 are identified as Chapter I.

Table 1

Demographic Profile of Student Population

	Numbers of Students			
	County	School 1	School 2	Target population
RACE				
Caucasian	54,341	118	461	15
African-American	10,460	427	182	24
Hispanic	685	5	19	4
Asian	1,223	37	14	0
Indian	89	1	3	0
TOTALS	66,798	588	679	43
GENDER				
Male	34,464	300	360	22
Female	32,334	288	319	21
SOCIOECONOMIC				
Chapter 1	2,388	324	183	26
Free/Reduced Lunch	6,406	344	144	24

One second grade teacher from each of the two elementary schools volunteered to participate with the writer in this practicum. Supplementing the instruction provided by the two second grade classroom teachers, each school had the services of two full-time school-based reading teachers, one to service Chapter I students and the other to service all students. Additional instructional support at each school was available from a school-based guidance counselor, a school-based media specialist, and an administrative assistant. Both schools had access to the services of one county resource teacher in computer technology.

One school was equipped with a 32-station IBM computer lab. A full-time computer lab technician and an instructional lab assistant facilitated the daily operations in the lab. Funding for the computer lab was made available through Chapter I. Therefore its use was limited to Chapter I students.

Writer's Work Setting and Role

This writer is a reading specialist and holds the degree of Master of Science in reading education with an additional 30 hours of educational coursework. The writer has met state certification requirements in the areas of elementary education, reading, and administration and supervision. In addition to state requirements, the writer is a certified trainer for Individualized Language Arts, Dimensions of Learning (Marzano, 1991), Relationship Training, Teacher Expectations/Student Achievement (TESA) (Kerman & Martin, 1980), and Cooperative Integrated Reading and Composition. Some of the parental involvement workshops conducted by the writer include home-school reading programs, reading aloud, effective communication skills, and

conferencing strategies. In the area of staff development, the writer has delivered inservices on whole language, competency-based education, identifying advanced capabilities in the early grades, and writing process using the computer. The writer has presented for numerous educational and community conferences including the International Reading Association Conference. The writer is affiliated with many professional and community organizations and is the past president of the local reading council.

Presently, the writer is a member of an interdisciplinary team representing reading and language arts. The writer's responsibility is to support the instructional improvement and delivery of services to 19 elementary schools. Past employment experiences include being a resource teacher for gifted and advanced programs, a state liaison, a facilitator for state competency-based programs, a school-based reading teacher, and an elementary classroom teacher.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

As a language arts resource teacher for the two elementary schools, the writer became acutely aware of a problem involving technology and writing instruction confronting the students, teachers, and administrators. The school district emphasized the importance of preparing students to meet the demands of a rapidly changing technological world and allocated computer equipment to assist the schools in meeting this challenge. Parents and members of the community realized the computer's potential to enhance instruction and were instrumental in obtaining additional computers for the schools. However, the teacher was responsible for navigating the instructional approach for computer use within the classroom.

The school district promoted the development of student communication skills as an essential goal of learning and encouraged each school to incorporate listening, speaking, reading, and writing across the curriculum. The challenge arose when integrating the process of writing throughout the instructional program. Along with the school district's increased attention to writing instruction, the state-mandated assessments required students to demonstrate their ability to communicate in writing

beginning in grade three. The writing assessments performed by students on the third grade tests reinforced the significance of writing instruction in the primary grades. Again, the teacher became the vital link for charting the direction of writing instruction within the elementary classroom.

The schools in the district used strategic planning to assure equity and academic success for all students. Each school had a school improvement team responsible for developing student outcomes based on local and state curricular frameworks. The school improvement plans from the two targeted elementary schools did not reflect the use of the computer as a tool for facilitating the writing process of second grade students. The school district assisted schools by providing a curriculum guide for computer use at the elementary level. The computer curriculum guide suggested a half hour of computer technology instruction with a half hour of independent practice per week. The suggested framework allowed precious little time for young students to engage in the process of writing using the computer.

All students need to have opportunities to use the computer for writing. However for the purposes of this practicum, the writer elected to focus on second grade since local and state accountability measures began at the third grade. It was the writer's opinion that the second grade children at the targeted elementary schools were not being provided active and equitable access to computer technology for writing process development.

Problem Documentation

Evidence for the existence of this problem was supported from observations

reported by the two school principals, interviews described by the two classroom teachers, questionnaires completed by the students, and student work samples reviewed by the writer. During the spring of 1990, first grade students at both elementary schools completed a reading attitude survey. The survey was a self-reflection of literacy-related behaviors (see Appendix A). The results of this survey indicated that 69 out of 92 first graders did not enjoy writing. In October, 1991, the writer conducted an interview with one second grade teacher from each of the two elementary schools. The two teachers stated they were uncomfortable using the computer and both expressed a lack of adequate training and practice with the technology.

The writer assisted the administrative and teaching staff during the 1991-1992 school year by examining the status of the primary grades' writing instruction. As the two school principals formally and informally observed classrooms in the fall of 1991, they reported that writing instruction using the computer was not occurring in the second grade. An analysis of second graders' writing folders in November, 1991, also lent support that students were not using the computer as a tool for writing compositions. In a review of 43 work samples consisting of eight compositions for each student, the writer noted that all student compositions were written by hand.

Causative Analysis

The problem of second grade students not using the computer as a tool for facilitating their writing had five major causes. A primary cause contributing to the problem was the well-intended movement by local, state, and national educational

agencies to equip schools with computer labs. The establishment of computer labs resulted in computer instruction being isolated from the classroom. Many students and teachers viewed work in the lab as separate from work in the classroom. The selected school's computer lab was staffed by a technician. The computer lab technician and the lab assistant had limited opportunities to plan effectively with individual teachers due to the compacted teaching schedules at the elementary school.

A second cause of the problem related to the interest, knowledge, and experience of the teachers. Since computer literacy was neither a required course for teacher preparation nor a part of certification requirements for teaching, many teachers felt inadequately prepared to instruct students using the technology. The many instructional and administrative demands placed on teachers during the school day left little time to develop computer skills. To compound the situation, the students of today grow up in a world surrounded by technology. Frequently they have acquired more knowledge than teachers through their use of home computers and video games. This, in turn, may have caused the teachers to feel threatened since their abilities may not be on par with the children.

A third cause resulted from the teaching schedules in the primary grades. The schedules in the second grade classrooms were highly structured to meet the school district's curriculum demands. Crowded schedules limited the flexibility and creativity needed when young students engaged in writing compositions at the computer.

A fourth cause was that computers were not accessible to all students on an

active and equitable basis. Many times the students were only allowed to use computers when they finished their assigned seatwork or if a parent volunteer worked with them. The federal guidelines limited instruction in the Chapter I computer labs solely to students receiving Chapter I assistance.

The final cause involved the use of the computer in the elementary classroom. Primary teachers tended to use the computer to reinforce basic skills. Drill and practice exercises in reading and math comprised the majority of software used by young learners.

Relationship of the Problem to the Literature

A review of the literature indicated that students are not given continuous opportunities to interact with the computer as a tool for writing. The inequitable access to word processing technology and the lack of computer-enriched learning environments were described by Adams (1989), Schwartz (1989), and Clements (1987). Three issues from the literature emerged supporting the problem of computer use in the primary writing class.

The first issue involved access to computers. Schaeffer (1987) believed that access is the biggest problem facing educators. Former U.S. Secretary of Education, Terrel Bell (1992), claimed that until teachers have access to technology, the computer will continue to be viewed as a supplement instead of an integral part of the learning process. Significant changes to instruction were discovered by Dwyer, Ringstaff and Sandholtz (1990) when teachers had consistent access to computers in their classrooms. If the students were allowed to make the decisions about computers

in schools, LaPointe and Martinez (1988) suggested computers would proliferate the classrooms.

The next issue from the literature focused on equity. The National Assessment of Educational Progress reported that minority students in grades three and seven are less involved with computers than white students (LaPointe & Martinez, 1988). A second group experiencing limited access to computers is low-income students. The Laboratory of Comparative Human Cognition found that low-socioeconomic students received less computer time than middle- and upper-class students (Cochran-Smith, 1991). The literature referenced gender as another inequity that occurs regardless of class or racial/ethnic origin. Girls are consistently less involved with computers in school than boys. Sometimes the inequities are related to the educational practices in the classroom. Martin and Hearne (1989) maintained that teachers provide extra computer time to students exhibiting advanced capabilities and many of these students already have access to computers at home. Kozol (1991) summarized the inequities among school districts claiming the poorer districts teach computer literacy while the affluent districts use the computer as a learning tool for developing potential in students.

The third issue found in the literature focused on the use of computers. Mehan, Riel and Miller-Souviney (1984) stressed the full capability of the microcomputer is not being realized when it is used for drill and practice. When computers are only used for reinforcement, schools do not understand the major function of computers in the learning process (Balajthy, 1986). From a whole

language perspective, computer use should grow from authentic literacy experiences (Kahn & Freyd, 1990).

The literature revealed several causes for the problem. Luehrmann (1985) suggested the issue of access can be attributed to the current shortage of equipment and the resistance from some teachers who feel work completed on the word processor is cheating. These teachers fail to see how their instruction can benefit from the technology and therefore have little interest in computers (Thornburg, 1991). Some teachers even perceive that students must be taught proper typing skills before they can use the computer (Schaeffer, 1987). The lack of adequate teacher training directly impacts computer use in the classroom. Balajthy (1988) noted that the failure of past computer programs is a result of the poor preparation of teachers. Another cause addressed in the literature related to the quantity of computers in schools. Lower income children have less computers available in their schools than students from middle-and upper-class schools (Cochran-Smith, 1991). A contributing factor impacting female students and technology is that traditionally males have dominated the computer field (Martin & Hearne, 1989).

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

The following goals and outcomes were projected for this practicum. The goal of this writer was that second grade children have equitable opportunities to use the computer as a tool for their writing. This goal included understanding the role the writing process plays in developing the communication abilities of young learners and the role technology can play to enhance writing. It is the belief of this writer that comprehensive knowledge of the writing process and computer technology will lead to increased computer access in the primary classroom.

Expected Outcomes

The writer had four specific outcomes to achieve during the implementation period of this practicum. The first outcome increases opportunities for students to interact with the computer through cooperative planning efforts among the classroom and reading teachers. Each second grade teacher meets with the school-based reading teacher on a weekly basis to plan for reading and writing instruction in the classroom. Although the teacher's plan books reflect lessons in writing process, there is no record of utilizing the computer in writing. During the implementation of this

practicum, the teachers' plan books will document that all students in their classrooms will use the computer to complete four word processing activities during a six week period.

The next outcome increases the comfort level of the teachers through supportive professional training in word processing. At the beginning of the school year, the interviews conducted by the writer confirmed that the two second grade teachers needed extensive training and support in computer use and word processing. Following the implementation period of this practicum, the writer will again interview the two classroom teachers. The interviews will indicate that the two second grade teachers will gain knowledge about the use of the computer in the classroom, will feel comfortable with the technology, and will continue to use the computer to enhance the writing of their students.

The third outcome addresses student attitudes and perceptions about learning. The second grade students at both schools keep journals. Prior to working with computers, the teachers will shift emphasis from a personal journal to a learning log where students will record their experiences in writing. Thirty-eight out of forty-three students will describe positive experiences towards writing in their learning logs throughout the implementation period. The final outcome is to assure that all students receive access in using the computer for writing. In addition to journals, each child at the identified elementary schools has a writing folder. At the conclusion of the implementation period, four computer-generated writing compositions will be added to each of the student's writing folders.

Measurement of Outcomes

The first outcome of this practicum provided a record that students had received writing process instruction using the computer. The writer used documentation to measure this outcome. At the weekly planning sessions, each second grade teacher and reading teacher worked together to develop lesson plans that involved using the computer in the writing process. As the teacher's systematically plan for computer writing instruction, they recorded the teaching procedures in their plan books. The plan books provided evidence that instruction had been organized based on student outcomes. The two teachers' lesson plans served as documentation that students were provided time to complete four word processing activities during a six week instructional time frame.

The technique used to measure the effectiveness in providing computer training for the teaching staff was an individual interview. Each second grade teacher was interviewed by the writer at the conclusion of the implementation period. The interviews were open-ended and focused on knowledge about the computer, feelings towards the computer, and future involvement with the computer in the classroom.

Developing student attitudes and perceptions are essential components for learning. A learning log served as a measure of the student's attitude and perception towards writing. Students were encouraged to freely express their feelings and experiences that occurred during the implementation of this practicum in the learning log. Structured responses based on the teacher's questions were recorded by the students. The teachers guided student thinking about writing by asking the following:

1. Evaluate how you feel about writing.
2. Describe your writing activity.
3. Explain your biggest problem in writing.
4. Explain how you think you are doing in writing.

Having students write in a learning log was an extremely effective measure for this practicum because the students were actively engaged in the process of writing as a means to communicate their feelings about the writing task.

Assuring equitable computer access was measured by each student's completion of four computer-generated writing activities. The four writing activities were collected by the teacher during six weeks of the implementation phase. Four computer-generated writing activities were placed in each student's writing folder.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

The second grade children at the targeted elementary schools were not provided with active and equitable access to computers for enhancing their writing development. The literature offered an array of possible solutions to facilitate children's writing using technology. Kahn and Freyd (1990) addressed the problem of computer access from a whole language perspective. They stressed computer access should not involve the amount of time spent at the computer but rather the efficient and purposeful use of the computer.

Cochran-Smith (1991) and Balajthy (1986) reminded educators the success of using the computer for student writing depends on adequate preparation time to learn word processing and consistent hands-on experiences for both students and teachers. Marzano (1991) described the type of instruction needed to ensure student learning. He cautioned teachers to balance instructional time from presentation classes where information is directed by the teacher, to workshop classes where students interact and have greater control over their learning.

The literature suggested that students need to see the teacher use the computer

during the school day. Adams (1989) noted that modeling of computer use by the teacher encouraged student use and reinforced the functional role technology plays in society.

Much of the literature emphasized that students' communication abilities in reading and writing develop as they become more proficient with the technology. Anderson-Inman (1990) discussed that the interrelatedness of reading and writing are promoted through the computer. Understanding the reciprocal nature of reading and writing, should guide the educator's selection of software (Wepner, 1990). Word processing software needs to be selected based on simple commands and ease of operation thus allowing the student to fully engage in the task of writing (Thornburg, 1991).

One innovative solution focused on flexibility in scheduling through student use of laptop computers. Franklin (1991) and Thornburg (1991) highlighted the advantages of using laptop computers in school. The portability of laptops extend learning beyond the constraints and location of the traditional classroom.

Several other ideas needed to be explored by the writer. Staff development was essential for program success and should be a blending of writing process and computer instruction. An option for training teachers would be workshops having state educational credit as an incentive. The workshops would be held at one of the schools and offered after school hours or during Saturday sessions.

Teachers needed support as they embark on this new computer venture. Peer relationships could be fostered during the workshop sessions and peer coaching

encouraged throughout implementation. Previous TESA training provided the teachers with techniques to coach each other in computer use. Students could also be involved through peer tutoring. The two schools could exchange computer writing activities developed by the students.

A writers workshop approach could be a means to allow more access to the technology and strengthen collaboration among the students. Another idea to increase equitable access to the computer is through the recruitment of mentors. Mentors could encourage young girls and minority children to actively use the computer for writing.

Parental involvement could occur during a family night where parents and students come together to use the computers. In addition, parent volunteers could be instrumental by publishing a book from the work students complete on the computer.

Description and Justification for Solutions Selected

There were six solutions the writer chose to implement. The writer would serve as a resource to the classroom teachers on Marzano's (1991) Dimensions of Learning model. The emphasis would center on the integration of writing across the curriculum. Components of the Dimensions of Learning model would be implemented in the second grade. The Dimensions of Learning model encourages classrooms to become writer's workshops; thereby creating greater flexibility in scheduling for process writing. The writer would arrange for staff development on using notebook computers in the writing process. This would provide the two teachers with adequate training. The writer would facilitate opportunities for the

teachers to engage in peer coaching. This would allow the teachers to refine and extend their use of technology and to observe for equitable student use of the computer.

Another solution the writer would attempt is to have students use word processing via computers for various or all stages of the writing process: prewrite, draft, revision, final copy. The writer's final solution would involve mentors to encourage equitable student use of computer technology.

There are several reasons why these solutions would be successful. One reason would be the school teams are strategically involved in the planning of writing process instruction. A second reason is the goal of this practicum is supported by the school and district level personnel.

Another important factor is that schools throughout the district would be adopting the Dimensions of Learning model. The writer was selected to participate in the state training and would serve as a Trainer of Trainers in the Dimensions of Learning model for the identified schools.

The writer is aware that teachers are critical to the success of the program. The two teachers volunteered to participate with the writer in this practicum. Every effort would be made to allow sufficient time and ongoing support and training for the teachers using word processing via the computer. A major factor contributing to student success is that authentic literacy experiences would replace drill and practice exercises. Many students are motivated by computer technology. Also, the parents of the school communities articulated the need for students to have more access to

computers.

National, state, and local initiatives would impact the success of this practicum. Instruction is being redirected with many outcomes focusing on writing. Students need to apply process writing on the state and local performance assessments beginning at grade three. Finally, Marzano (1991) stated, "helping students develop effective communication skills is one of the most important goals of education" (p. 151).

Report of Action Taken

This practicum project was shared with the assistant superintendent of instruction at the district level and the classroom teachers, school principals, reading teachers, media specialists, and guidance counselors at the school level. The writer was a contributing member to the school improvement teams and served as a resource to the classroom teachers.

A critical step in the implementation process was adequate staff preparation in writing process and computer technology. Initially the writer presented an overview of the project during a faculty meeting at each school. Reading teachers and school principals were inserviced on the Dimensions of Learning model and how to effectively support classroom teachers to move towards a writers workshop approach.

The writer met with the reading teachers and the second grade teachers to discuss how journal writing relates to the five dimensions of learning. Types of journals were shared and sample entries were modeled. The writer provided the teachers with copies of children's books that included journals and a list of other

literature containing journal entries that they could read aloud to their class. Following the planning sessions, the teachers shifted the emphasis from personal student journals to learning logs. Students began their journal writing according to suggestions offered by Marzano (1991). The students' responses were structured to allow them to freely express thoughts and ideas, to provide students and the teacher with a log of student thinking, and to give the students and the teacher a means to effectively engage in dialogue about the habits of mind and writing content.

The school district's writing goals clearly emphasize process writing. Curriculum guides and manuals support writing instruction using a process approach. Additionally, state-mandated performance tests require students to demonstrate knowledge using various stages of the writing process. Due to the district's emphasis on the process of writing and the numerous staff development offerings in writing over the years, the writer assumed writing process instruction was occurring at the school level. Following initial planning with the second grade classroom teachers and discussions with the school reading teachers, the writer realized that much teacher support in the area of process writing was needed to ensure that students achieve appropriate levels of development in their writing. Previous teacher training using individualized language arts techniques had resulted in isolated writing skills being taught. When process writing was being incorporated, the instruction primarily centered around the prewrite stage. The second grade teachers frequently used graphic organizers and sometimes had students write a rough draft but little attention was directed on the proofreading and revising stages. Prior to utilizing the

computers, much staff development in writing process instruction was implemented. The writer discussed the need for intensive writing process instruction with the school-based reading teachers and suggested two major resource publications, The Art of Teaching Writing (Calkins, 1986) and Teaching Writing: Balancing Process and Product (Tompkins, 1990).

Each reading teacher coordinated writing process planning at the second grade level. The reading teachers reviewed the steps of the writing process with the teachers and helped the teachers include all stages of writing process instruction on a regular basis in their language arts lesson plans. Through systematic and cooperative planning, the two second grade classrooms were restructured focusing on the integration of listening, speaking, reading, writing, and thinking instruction.

A computer workshop for teachers was scheduled with the central office computer resource staff. Prior to the workshop, the writer planned with the computer instructor to ensure outcomes included word processing, word processing techniques using teacher-selected software, and integration of writing process and computer word processing. The course was held three hours a week for eight consecutive sessions. Participants received one state department workshop credit for attendance. The workshop provided instruction to teachers on basic computer literacy, word processing, word processing techniques using teacher-selected software, and integration of writing process instruction and computer word processing. The teachers were encouraged to use the computer to write for a variety of purposes such as writing letters to parents informing them about the computer writing program,

writing lesson plans, and writing to the students about their learning experiences with the computer. In addition to the two second grade teachers from the targeted schools, 14 other teachers completed the course. Due to the creation of a business partnership with a computer corporation, the notebook computers did not arrive in time for the computer workshop and therefore training was done using the IBM Model PS2 stand-alone computers.

The computer instructor shared information with the teachers regarding selection and evaluation of word processing software. The teachers were given the opportunity to preview word processing software approved by the school system. The computer instructor consulted with the teachers regarding the type of word processing software they felt was most appropriate for their students (see sample software evaluation form in Appendix B). Both second grade teachers chose Bank Street Writer III (Bank Street College of Education, 1986).

The writer met with the school principals to schedule opportunities for interaction and peer coaching among the second grade teachers. It was decided that the permanent substitutes would be used to provide release time for the two teachers to engage in peer coaching activities. However before the plan could be implemented, the school district faced severe budget problems. Permanent substitute positions were cut and no monies were available for additional substitutes. The peer coaching was restricted to interaction during the computer workshop sessions.

The writer met with the guidance counselors, the school principals, and members of the school community to discuss the establishment of a mentoring

program. One of the purposes of the mentoring plan was to encourage and support student use of computers. Recruitment and implementation procedures were carefully outlined. It was agreed upon that second grade students would be selected for the mentoring program based on the "at-risk" criteria defined at each school, the minority and gender status of the students with priority given to females and African-Americans, and any nominations received from the teachers or guidance counselors. The two counselors collaborated and held a joint training session at one school. Twenty-six prospective mentors attended the training session. Organizing the mentoring program and the recruiting and training of the mentors resulted in more time than anticipated. Scheduling with individual teachers for student involvement was a problem and the number of mentors willing to make a weekly commitment declined to three.

Although the teachers were limited to the stand-alone computers, they attempted to create an environment that promoted flexibility, interaction, and collaboration with computer technology. Each stage of the writing process was reviewed using Bank Street Writer III (Bank Street College of Education, 1986). Student products reflected the stages of process writing. Teachers provided opportunities for students to write during the school day and encouraged students to work cooperatively on writing activities. Each student completed a minimum of one writing activity per week for four weeks. The student self-selected the writing activity to be included in their writing folder. The products were added to the student writing folder. Students, teachers, reading teachers, school principals, and the writer

planned for a family night celebration. The family night highlighted a newly-formed business partnership with Librex Notebook Computers and featured the students using the notebook computers. Students shared their computer knowledge with their families, friends, and members of the community by demonstrating their use of word processing. Simple stories and messages were projected on large screens for the audience to view. After the large group presentation, the students invited the guests to their classrooms for "hands on" writing practice using notebook technology.

At the conclusion of the school year, teachers were interviewed to determine if they increased their knowledge regarding computers, increased their comfort level using the technology, and if they will continue using the computer to enhance student writing. A debriefing meeting was held with the school principals, reading teachers, and classroom teachers to evaluate the project, measure the success, and plan for the future involvement with computer technology.

CHAPTER V

RESULTS, DISCUSSION AND RECOMMENDATIONS

Results

The general setting for this practicum was a large, suburban school system while the specific setting was two elementary schools. The two schools were selected based on their large minority and low socioeconomic student populations. The problem which was solved through this practicum was that second grade children have not had active and equitable access to computer technology for writing process development. The strategies chosen by this writer to solve this problem focused on empowering teachers with the knowledge and support in process writing and computer technology thereby increasing the use of computers for student writing. Collaboration was established among classroom teachers and professional support personnel to restructure writing instruction in the second grade classroom emulating a writer's workshop approach. An expanded training program was implemented to help teachers incorporate computer technology in writing instruction.

The outcome measures were as follows:

Outcome Measure 1: By the end of the implementation period, the two second grade teachers' planning will document that all students will use the computer to

complete four word processing activities during a six week period. During six weekly planning sessions with the classroom teachers, four teacher directed lessons reflected writing process instruction using the computer. Both teachers exchanged lesson plans and willingly shared their computer lessons with other interested teachers. Outcome 1 was achieved.

Outcome Measure 2: At the conclusion of the implementation period, teacher interviews will indicate that they have more knowledge, feel comfortable with the technology, and will continue to use the computer to enhance the writing of their students. The computer course met for eight weeks with the focus being teacher training in computer technology and writing process instruction. An evaluation survey conducted by the offices of computer education and staff development indicated that 16 out of the 16 participants strongly agreed that they acquired information and techniques that can be used in their work setting. Table 2 summarizes the results of the evaluation survey of the computer course. A copy of the evaluation form appears in Appendix C.

Table 2

Mean Results of the Computer Evaluation Survey

	Items	Mean Response
1.	I have acquired information and techniques that I can use in my work.	5
2.	I can integrate my past experiences with the new skills I have learned.	4.8
3.	The materials used in the workshop helped me gain a better understanding of the subject matter.	5
4.	The instructor shows knowledge and expertise in the content of this course.	5

Note. Number of teachers completing survey = 16.

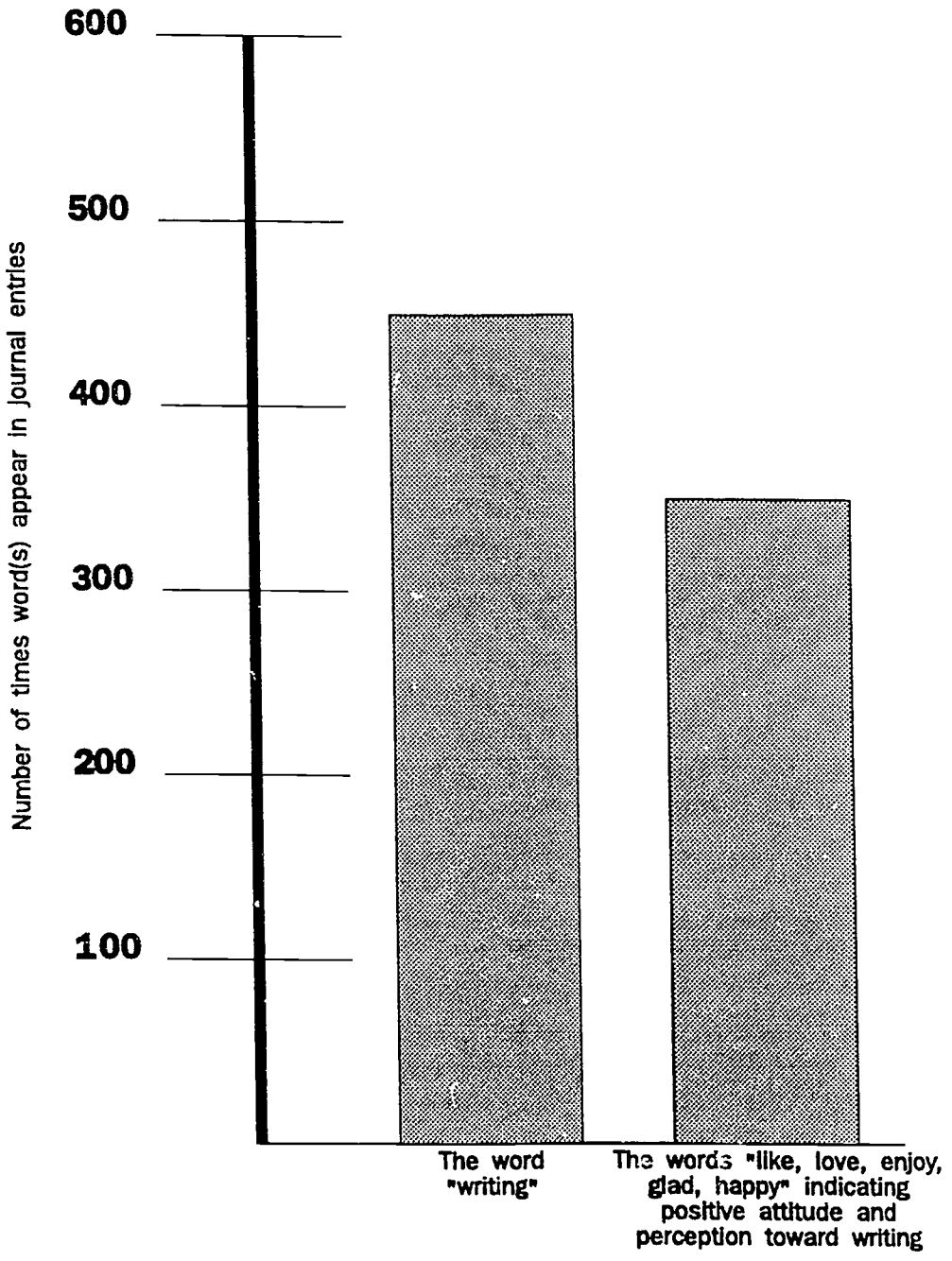
5=strongly agree, 4=agree, 3=mildly agree, 2=disagree, 1=strongly disagree

Following the implementation period, the writer held individual interviews with the two second grade teachers. The interviews revealed that the two teachers who participated in this practicum felt they had acquired and extended their knowledge of computers. They felt more comfortable using computers in their classroom and indicated they were extremely anxious to use the "newly arrived" notebook computers in their daily instruction. Based on the interpretation of the teacher interviews, outcome 2 was achieved.

Outcome Measure 3: Thirty-eight out of 43 students will describe positive experiences towards writing in their learning logs. An analysis of student logs, indicated that 40 out of 43 second grade students recorded positive feelings towards writing in their logs (see sample student entry in Appendix D). Outcome 3 was achieved. Figure 1 displays the number of times students mentioned the word writing in their logs and the number of times they used positive words to describe their feelings about writing.

Figure Caption

Figure 1. Student attitudes toward writing found in 43 student learning logs each containing 19 entries.



Outcome Measure 4: Four computer-generated compositions will be added to the student writing folders. All students completed four computer-generated compositions using the word processing program Bank Street Writer III (Bank Street College of Education, 1986). The compositions indicated variation in different stages of the writing process (see student sample in Appendix E). Outcome 4 was achieved.

Discussion

The specific outcomes which the writer planned to achieve were met through the implementation of this practicum. The goal of this practicum was to increase opportunities for second grade children to use the computer as a tool for their writing. The goal was achieved through the comprehensive knowledge of writing process and computer technology imparted to the classroom teachers and the collaborative support of district and school-level personnel working together.

Three areas relating to the goal of the project were analyzed through the data. Adequate staff training was ascertained through the individual teacher interviews. Equitable access to writing with computers was determined by an examination of teacher lesson plans and student work samples. Increasing student attitudes toward writing was described in the students' learning logs. The process of teaching writing through staff development in writing and computer technology; the products that resulted from increased access to the computer; and the attitudes of students toward writing are essential components for nurturing the writing potential of young students. Larter, Braganca, and Rukavina (1987) noted that primary students writing using computer technology improved when process, attitudes, and product were addressed.

Many other exciting initiatives occurred as a result of this practicum. Once teachers experienced the power of computer technology, they embraced the computer in their classrooms. They became role models for the children and the best advertisement for continuation of the program. Computer banners decorated the classrooms with the words "writing to learn, learning to write." Both principals commented on the increased use of the computer by students and teachers.

Another outgrowth centered on the enthusiasm surrounding the notebook computers. Branscum (1992) suggests that "educators should ignore calls for technology equity and start exploring ways to achieve equity using the technology" (p. 88). The search for alternative solutions to the problems of access, equity, and availability had prompted the writer to examine notebook computers. After contemplating the potential of using this new technology in education, the writer secured a number of grant awards enabling the purchase of ten notebook computers. Although access to notebook computers may be standard to the business observer, obstacles had to be overcome in adopting their use in education. Initially there was resistance to using notebook computers from educators, businesses, and parents. The major challenge was justifying the advantages of the notebook computer over the traditional stand-alone model. Underling this challenge was the writer's belief that the "modern tools of learning need to be with the learner" (Thornburg, 1991, p. 12).

During the implementation period of this practicum, a business partnership was established with Librex Notebook Computers. The company agreed to generously donate an additional 20 computers to the writing program. Thirty six-pound, portable

V386X notebook computers complete with modems, software, and the company's commitment for technical assistance arrived at the schools. After their arrival, the notebooks were constantly in demand among the teachers and the school district's central office staff.

A final impact of this practicum happened during the family celebration. The students and their families residing in the two neighboring school communities along with educators, politicians, business leaders, and community representatives gathered at one of the elementary schools to explore the fascinating world of notebook computer technology. As onlookers gazed at students demonstrating word processing, the power of computer technology suddenly became a reality for the families living in low socioeconomic communities and the teachers serving the high minority populations. The result of the celebration was a renewed interest in education by both teachers and family members.

In summary, young children do need equitable access to computer technology in preparation for meeting the challenges of the future. By providing educators with the tools, training, and support, students will be given equitable opportunities to strengthen their communication skills as evidenced by this practicum.

Recommendations

In making recommendations about implementing a project such as this, it is essential to focus on adequate staff development and support prior to implementation and throughout the duration of the project. Lever (1991) emphasizes the importance of teacher training and assistance for effective use of the computer in classroom

instruction. Through comprehensive training and support, teachers are empowered to make use of the computer as a teaching tool.

Another key element in staff development and support involves the process of writing. Marzano (1991) stressed communication development as the core of authentic student learning. This writer believes that technology is a natural extension of communication and a necessary component to enhancing the writing potential of young children. Perhaps the success of this project was best captured in the faces and expressions of the young students. They didn't want school to end because they wanted to "work more on the computers."

Computer technology has the potential to affect education in significant ways. Throughout the United States, computers are rapidly becoming an integral part of many classrooms. Fischler (1992) claims educators have not begun to successfully implement and take full advantage of emerging technologies. In order to so requires educators to shift pedagogical approaches. Thornburg (1991) suggests adopting a model whereby the student is a constructor of knowledge. The role of technology is one that supports and facilitates construction of student knowledge. The notebook computer technology along with the process approach to learning that transformed these school cultures holds promise in providing educators opportunities to reexamine traditional methods of delivering instruction.

Dissemination

The results of this practicum report have been disseminated using a variety of sources. Presentations were made at the local school system level during faculty,

principal, and central office director meetings. At the state education level, the information was shared at a literacy conference. The local reading council and the state computer educators association have requested the writer to make a formal presentation at their annual conferences.

Throughout this practicum, the writer communicated the success and implementation of the project via computer telecommunications. Much information continues to be shared and networks established using this powerful medium.

The writer has submitted proposals to the state reading conference and technology conference. In addition, the writer has prepared an article for publication. Further plans to disseminate the results of this practicum include submitting proposals to regional and national education and business conferences.

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APPENDIX A

READING ATTITUDE SURVEY

READING ATTITUDE INVENTORY

1. How do you feel when your teacher reads a story out loud?

2. How do you feel when someone gives you a book for a present?

3. How do you feel about reading books for fun at home?

4. How do you think your friends feel about reading?

5. How do you think your parents feel when you read?

6. How do you think you'll feel about reading when you are older?

7. How do you feel about writing?

8. Do you get books from the library?

9. Does someone read to you at night?

10. Do you have a computer in your home?

Name: _____

Teacher: _____

APPENDIX B

SOFTWARE EVALUATION

SOFTWARE EVALUATION

Software	Grade 2	Suggested Users	Rating (E G F P)
Bank Street Writer III	✓yes __no	(P) I A	primary E intermediate E adult F
The Children's Writing and Publishing Center	✓yes __no	(P I A)	primary E intermediate E adult E
Clifford's Big Book Publisher	✓yes __no	(P I A)	primary E intermediate E adult E
Create With Garfield!	✓yes __no	(P I A)	primary E intermediate E adult E
LogoWriter	✓yes __no	(P I A)	primary G intermediate F adult G
The Process Writer	__yes X no	P I (A)	primary P intermediate F adult F

Additional Comments: _____

_____

_____

APPENDIX C

COMPUTER STAFF DEVELOPMENT EVALUATION

STAFF DEVELOPMENT EVALUATION FORM

Title of Presentation: Computer Application / Word Processing
Instructor: _____

Please respond to the following items by noting your feelings and/or thoughts about the statements listed. Be as honest as you can, for the results will assist in the development and direction of future programs. (Circle the number that best describes your thoughts.)

1. As a result of this course/workshop:

   a. I have acquired information and techniques that I can use in my work.

Strongly Agree	Agree	Mildly Agree	Disagree	Strongly Disagree
(5)	4	3	2	1

   b. I can integrate my past experiences with the new skills I have learned.

(5)	4	3	2	1

   c. The materials used in the workshop helped me gain a better understanding of the subject matter.

(5)	4	3	2	1

2. The instructor shows knowledge and expertise in the content of this course.

(5)	4	3	2	1

3. List ways in which you can apply this training experience to your professional position.
   I can use the activites I was introduced to in many of my language arts lessons.

4. Additional comments about the course will be appreciated (e.g. strong or weak points of the session or speaker, etc.).
   The speaker made this workshop enjoyable. I learned more than I knew before I took this workshop.

APPENDIX D

STUDENT LEARNING LOG SAMPLE

Monday April 28, 1992
Writing is important
because we can
communicate with
others and write letters
to them.
Writing also helps
us to read more.

APPENDIX E

COMPUTER ACTIVITY SAMPLE

STUDENT:

TITLE: The Happy Girl DATE WRITTEN: 05/20/92, 10:39 am

The happy girl had a cat. and it always made her laugh. The cat said mew.