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Deploying mobile computer classroom as a catalyst for more parental involvement via technology as well as bridging digital divide: a feasibility study

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DEPLOYING MOBILE COMPUTER CLASSROOM AS A CATALYST FOR MORE PARENTAL INVOLVEMENT VIA TECHNOLOGY AS WELL AS BRIDGING DIGITAL DIVIDE: A FEASIBILITY STUDY

A Thesis

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ABSTRACT

The purpose of this paper is to explore the feasibility of using the mobile computer classroom for increasing the parental involvement via technology with the intent of alleviating both the problems of downward trending performance of students as well as bridging the "digital divide" among parents and other adults. Research has already found strong positive relationship between academic performance and parental involvement. The current question is whether technology can increase parental involvement? There is also the problem of "digital divide", the gap between computer "haves" and "have-nots". The Internet usage is also not 100% among the computer owners. Deploying a mobile computer classroom at the school parking lot two hours before the student pick-up time is a novel idea to increase computer literacy rapidly. The analysis of a survey after the training, on a random day, indicates the majority of the trainees spent more time with their school-going children. The survey, however, is not statistically a random one to provide a conclusive answer with confidence. The answer is nevertheless positive as to the

feasibility of deploying a mobile computer classroom to act as a catalyst for increasing parental involvement.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

BACKGROUND

Purpose

The purpose of this study is to explore the feasibility of a novel program for making computer training more readily and conveniently available to school parents by deploying mobile computer classrooms at various school sites two hours before student's pick-up time. The intent of the program is two fold: to increase parent's time spent with their own school-going children using computer as a motivator as well as to bridge the "digital divide", the gap between computer "haves" and "have-nots". The test of feasibility of the mobile computer classroom program will be determined from the answers to the following two questions asked in the opinion survey:

1. How many more hours per week you are spending with your kid after the training?
2. Would you like to have more computer training?

Significance

Our public education system has lately come under tremendous pressure to improve students' academic

performance from the general public, business leaders, policymakers, and educators. Prescriptions to improve have been also many and varied from the Madeline Hunter method and cooperative learning, to block scheduling and interdisciplinary teaching. With the continuing declining trend in academic performance, many are looking, beyond the classroom environment, at parental involvement as one of the other critical factor for improving academic performances, at least for poorly performing students, if not for all students. Also, rapidly changing technological, economic, and social paradigms are making it almost imperative to change, and to change quickly, from the establishment-oriented Industrial Age mind-set to outside-the-box scientific Information Age thinking. This is true not only in the classrooms, but also in terms parent involvement. While the momentum to change the classrooms technologically is well on its way, the change needs to be accelerated and expanded to go, beyond the classrooms, into the communities.

As predicted by Moore's Law (Yang, 2000), the relentless change in technology has proven to be exponential. One of the consequences of not keeping up

with the rapidly changing technology is the so-called "digital divide" problem (King, 2000), a term indicating the disparity between the ones who have computers and those who do not. Because of rapidly changing technology, the "digital divide" threatens to keep growing uncontrolled if left unresolved. Thus, the "digital divide" problem extends to the parents and communities. The traditional solutions to educate the parents and community are being pursued in the classroom. A novel solution to the problem is to deploy a mobile computer classroom as a conveniently available training room at a school parking lot or at a strategic location suitable for learning. The question is: "Is it feasible?"

Nature of Problem

To understand the significance of the "digital divide" problem, one needs to understand: (1) the pervasiveness of the call for improved student achievement, (2) the relationship of parental involvement and academic performance, and (3) the growing need for technology proficiency to cope with the Information Age-related changes around us.

According to the ABC News survey of Sept. 7, 1999, (as cited in "Broad American Support, 1999") improving education and schools will be very important to 79 percent of Americans when choosing a president, which ranked higher than handling economy, managing the budget, handling crime, and protecting social security.

For the purpose of the content analysis, a list of some of the recent proposals to improve education and schools, as read in the newspapers and journals, are given below:

1. On providing an alternative to the public education system, one newspaper ("Success Alternative", 2000) reported that this week's National Spelling Bee was a showcase for alternatives to public schools. Home schooling has proven to be clearly an improvement over public education because the winner was a product of home schooling.
2. Mihaljevich (2000), a retired LAUSD teacher, thinks that today's deficiencies in the public school system is mostly due to foreign and nonstandard English-speaking homes where the parents themselves lack the required fluency to pass on to their children. By

having Family English show on TV, the whole family will be able to learn English at home.

3. Palmaffy (2000) contends that the main reason why U.S. students did so poorly on the TIMSS (the 1998 Third International Mathematics and Science Study) is because other nation's students face a far tougher curriculum than U.S. students. We simply do not challenge our students to a higher level of expectations.

4. Bill Gates of Microsoft proposed ("Top U.S. Information", 2000) that to solve the problem of poor student achievement the teacher training should be improved so that instructors can better use technology in classrooms. At present only 20 per cent of American educators is comfortable using technology in class.

5. Eaves and Furry (2000) propose that accountability is really one of our best tools. We are all accountable for the education of all students, so we should have increasing permission to do whatever it takes to get the job done.

6. Carpenter's (2000) wish list for improving American education is a moratorium on all K-12 reforms along

with a complete rewrite of American higher education for teacher education. Also, teachers who were not performing adequately should get remedied or, failing that, get fired. Last but not least, the schools should employ enough teachers so that class sizes and teacher loads could be reduced to manageable proportions.

Overview of Research Questions

As Fraenkel and Wallen (1996) point out conditions we want to improve can be a research problem. This study started with the intent to explore the feasibility of improving academic performance via more parental involvement while the schools move towards building more web sites to communicate with both students and parents. Such a study was found to be not feasible at this time since it would require a longitudinal study as opposed to a cross-sectional study. So, the study was scoped down to focus on the feasibility of the mobile computer class program only. Another factor impacting the change in focus of the research was the limited availability of peer-reviewed pertinent research.

Only one recently published research paper addressing the impact of technology on the parental involvement was found (Johnson, 1996). Most of the other papers were several years old. Thus, older papers do not reflect the advancement in the Internet. There is a large body of literature on just parental involvement. Most of the computer related information involving parents was from periodicals and the newspapers. Also, evaluating the impact of technology in the form of longitudinal studies appears to be "a hard nut to crack" as pointed out by Doug Johnson (1996). He found the assessment of the technology use should be able to determine if the use of technology is making our children better citizens, better consumers, better communicators, better thinkers - better people. On the other hand, there has been criticism about the use of computers in classrooms by Banks & Renwick (1997) as a panacea for academic problems. To avoid controversies, the research question "Is it feasible to deploy the mobile computer classroom as a catalyst for more parental involvement via technology as well as to bridge digital divide?" was formulated keeping in mind the four essential characteristics of research questions:

1. It is feasible.
2. It is clear.
3. It is significant.
4. It is ethical.

CHAPTER TWO

REVIEW OF LITERATURE

Improving Academic Performance in America

Clauton (2000) reported that from 1986 to 1996, college degrees awarded to the U.S. citizens in computer science and electrical engineering decreased by 40%. Another report ("Amid Worker Shortage", 2000) states that over the next decade, the number of unfilled high-tech jobs in Colorado alone will jump from 7,000 to 30,000 and the average daily rate of unfilled high-tech jobs is around 8,000. Another report ("Top U.S. Information", 2000) quotes Andy Grove of Intel as saying that the increase in the number of visas for high-tech workers will only provide a short-term solution to the high-tech workforce shortage problem in the US. Solving the problem of the years to come will require stirring up enthusiasm for Mathematics and Science among young people.

In addition to having well-organized and effective classrooms and schools for academic performance, studies show that schools with higher levels of achievement have considerably greater parent involvement. In other words, schools can more improve their academic performance if

they do involve parents, all else remaining the same. During the same period in which parent involvement has been on the decline, our children have been falling behind and dropping out in record numbers.

Improving the education of America's children has become a national priority for the 1990s. The declining achievement levels of students over the past two decades, coupled with increasingly diverse backgrounds and needs of today's students, have focused increased attention on the relationship between school performance and family life (Procidano & Fisher, 1992).

Parental Involvement

When children live in two worlds, or when school and home are "worlds apart," as Sara Lightfoot (1978) has stated, children cannot be expected to bridge the gap and overcome the confusion of "from whom to learn from". The predictable consequence in such situations is that children usually embrace the familiar home culture, including the academic components and goals. (Lightfoot, 1978)

Helfand (2000) writes that while most of the educators and policy-makers are focusing on the classroom

situation, a growing body of evidence is indicating that what occurs at home is very important for the success and failure of the American children. Parents can significantly influence attendance, homework, grades, graduation rates and other measures of academic achievement, regardless of family income and education levels. Helfin cites a study by the U.S. Department of Education, which found that students who have two involved parents earned A's nearly twice as often as students whose parents have little involvement.

The research is clear that children have an advantage in school when their parents encourage and support their school activities (Epstein, 1986).

Another strong claim on the benefits of parent involvement comes from the evaluation of preschool programs particularly Head Start where the program variable that contributed most to improved school achievement was parent involvement. The Perry Preschool Program demonstrated better grades, fewer failures, fewer absences and fewer special education placements during public school years for those children whose parents had been involved in a weekly home visitors program in

addition to the preschool program. A change in the home environment that supports student achievement occurs, as parents become more familiar with program expectations and the importance of their role as supportive parents do. Active family involvement is critical to program success because it reinforces and helps sustain the effects of school success. Thus, it can be concluded that through parent involvement, parents not only become more effective as parents but they become more effective people. Once they see that they can do something about their children's education, they see they can do something about their housing, their community and their jobs (Amundson, 1988).

According to Henderson (1990), much of the research on parent involvement resonates well with common sense, the major points are worth mentioning.

1. The family, not the school, provides the primary educational environment for children.
2. Involving parents in their children's formal education improves the children's achievement.
3. Parent involvement is most effective when it is comprehensive, well planned, and long lasting.

4. Involving parents when their children are young has beneficial effects that persist throughout the child's academic career.
5. While the effects are particularly strong at the early levels, significant benefits can be derived from involving parents in intermediate and high school years.
6. Involving parents with their children's education at home may not be enough to improve schools; a school's average level of achievement does not appear to improve unless parents are involved in the school.
7. Children from low-income and minority families benefit the most when parents are involved in the schools, and parents do not have to be well-educated to make a difference.
8. Student attitudes about themselves and their control over the environment are critical to achievement; these attitudes are formed primarily at home, though they can be profoundly influenced by experience at school.

However, Gronlick and Slowiaczek (1994) have suggested a more comprehensive parental involvement, which blends educational and developmental constructs. Specifically, they define parental involvement as the allocation of resources to the child by the parent within a specific domain. This definition acknowledges the difference between parents' general involvement with their child and their involvement in child's academic experiences…parental involvement can be observed in one of three ways. First, parental involvement can be demonstrated by obvious behaviors such as helping out in the child's classroom. Second, parental involvement can be displayed through personal involvement such as showing interest in the child's schoolwork and/or school-related activities. And third, parental involvement can be exhibited through cognitive /intellectual stimulation such as discussing current events and/or providing the child with educational materials such as books, games, or videotapes.

When parents are involved in their children's education, studies report the following: improved student academic achievement; improved student behavior; greater

student motivation, improved student attendance; lower student dropout rate; more positive attitude towards homework; increased parent and community support (Hester, 1989)

A second message from parental involvement research is that school personnel can intervene positively, effectively and efficiently to teach most parents to make a difference in their children's education. Even though socioeconomic status and family background correlate with achievement, other homer factors are important too. For example: parents interest in school; involvement in their children's education; reading to their children; and positive attitudes about learning will influence school achievement (Sattes, 1985).

Home-School Partnership

Especially for many parents who are poor and from minority and immigrant families, the initiative has to come from the school and diverse and persistent strategy is needed to break down barriers and establish trust (Davies, 1987, p.157).

Although most schools have some form of parent involvement, in practice it offers families limited opportunity for parent participation (Amundson, 1988).

Principals and teachers favor more parent involvement in the traditional ways like attending class, plays or holding bake sales to benefit the band uniform fund. But a substantial majority of teachers and principals do not view the parental role in educational decisions as either useful or appropriate (Williams and Stallworth, 1984).

Rhoda Becher (1984) found that some teachers worry that parent involvement in the form of parent volunteers in the classroom might mean losing control of their classroom. They fear that parent volunteers will undermine their authority, disrupt their classrooms, take over their teaching responsibilities and refuse to follow teachers' instructions and school regulations. Sandra Feldman, president of the United Federation of Teachers in New York City, reports that teachers are concerned that parents will interfere, cause confusion, and not work productively with children (Jennings, 1990).

Teachers report they are uncertain how they can involve parents and still keep their role as experts (Ziegler, 1987).

From 1986-1988 the Southwest Educational Development Laboratory gathered information concerning the elements that make parent involvement programs successful by interviewing key informants with expertise in the area of parent involvement programs and visiting programs in five-state region (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas). Seven essential elements were found in all successful parent involvement programs (Williams and Chavkin, 1989).

1. Written policies: Programs had written policies that legitimized the importance of parent involvement and helped frame the context for program activities.
2. Administrative Support: Administrative support was provided in three ways: (a) funds for parent involvement are designated in the main budget, (b) Resources like copiers, computers, etc. were available for the parent involvement programs, and (c) Specific people were

designated to carry out program efforts or events.

3. Training: Programs provided training for staff, teachers as well as parents.
4. Partnership approach: The partnership approach was reflected in planning, goal setting, assigning responsibilities, and program assessment.
5. Two-way communication: Communication between home and school occurred frequently and on a regular basis.
6. Networking: Programs networked with other programs to share information, resources, and expertise.
7. Evaluation: Programs had regular evaluations at key stages so that program changed can be implemented on a continuous basis.

One of the most critical steps is recruiting a parent for parental programs. Parent involvement recruitment strategies are (Ostdick-Trembath, 1999)

1. Assign a parent liaison.

2. Survey the community.
3. Use a variety of recruitment technique.
4. Arrange home visits.
5. Follow up visits or invitations.
6. Post teachers and principals outside the school.
7. Parents to recruit parents.
8. Ask parents what they would be interested in doing.
9. Schedule the first event outside the school.
10. Make the first event fun.
11. Use the first event to capture the parents' attention.

Parental Involvement and Academic Achievement

Overall, research indicates that academic achievement motivation and academic performance are highly correlated (Skinner, Wellborn, & Connell, 1990; Wentzel, 1989).

Because home and school are two salient factors in the socialization and education of children, it has become increasingly important to understand the effects of parental involvement on academic achievement

motivation. Results indicate that the extent to which the family interacted in intellectual activities at home accounted for a significant amount of variance in children's' academic motivation (Grolnick & Slowiaczek, 1994).

Recent studies have expressed a need for home and school collaboration, indicating parental involvement as a major goal and target for educational reform (Epstein, 1990; Grolnick & Slowiaczek, 1994; National Commission on Excellence in Education, 1983). To this end, several studies have shown that parental involvement tends to result in positive outcomes with respect to children's schooling (Epstein, 1983; Fehrmann, Keith, & Reimer, 1987; Reynolds, 1989). The following studies have shown linkage between parental involvement and student's achievement: Baker, D. P. & Stevenson, D. L. (1986). Mothers' strategies for children's school achievement: Managing the transition to high school. Sociology of Education, 59, 155-166, Bogenschneider, K. (1997). Parental involvement in adolescent schooling: A proximal process with transcontextual validity. Journal of Marriage and the Family, 59, 718-733.

Barriers to Parental Involvement

Parents frequently attend activities like open house, PTA meetings, and parent-teacher conferences. Such activities are useful for getting to know the school. It is only parent-teacher conferences, which allow gathering information about academic performances albeit under severe time-constraints.

According to Moles (1987), the information presented above indicates a strong interest in the idea of parents working with schools to stimulate home learning activities. It also indicates that the skills of teachers and parents for working together are not well developed, that some mistrust of each other, especially in low-income areas, is present, and that parents often feel that they lack certain skills needed to help educate children, especially as the children grow older.

Some studies have focused on stress as an important aspect of a teacher's job dissatisfaction. The following two items were first and second in the list of top ten sources of *Teacher Stress* in EDCAL (1993):

1. Motivating students who don't want to learn.
2. Dealing with indifferent parents.

Family Configuration Changes and Schools

Many statistics indicate that family configurations are changing. During the past 50 years, the United States has experienced an unprecedented increase in the rate of women's employment, especially employment of working mother. In 1940 fewer than 9% of all women with children worked outside the home. This figure had reached approximately one-third of American mothers by the 1960s, and 70% by the 1980s, with 52% of women with infants under one year employed (Procidano & Fisher, 1992). Family configuration is on the verge of a paradigm shift.

The Oscar winner film for 1999, American Beauty focuses about a potentially dysfunctional family on the verge of a tragic divorce, and the white rap singer Eminem's "The Real Slim Shady Song", which is a best seller, talks about how his mother and wife have exploited him.

It is no wonder many school professionals have raised questions about the determinants of student's school adjustment. Students enter schools with different abilities and readiness to gain from their classroom experiences. The search for antecedents to intellectual,

emotional, and social well-being in school has led to a wide array of family characteristics, such as general patterns of functioning, access to information and social support, parenting attitudes, spousal relationships and cooperation in coping with children's difficulties, positive relations with parents and siblings, and parental involvement with schools (e.g., Bell, Avery, Jenkins, Feld, & Schoenrock, 1985; Cox, 1978; Dolan, 1983; Elizur, 1986; Galloway, 1982; Kennedy, Felner, Cauce, & Primavera, 1988; Pettit, Dodge, & Brown, 1988; Stevenson & Baker, 1987).

Historically, widowhood was the major cause of being a one-parent family. However, in recent years, divorce and births without marriage have come to be the primary causes of one-parent homes. Recent statistics indicate that 85% of single-parent homes are the consequence of separation or divorce, 24% the result of children born to never-married mothers, and only 7.6% a result of death P. 49 Single parents, particularly those without additional adult or financial resources, must often look to schools to assist in the provision for their children of a stable and caring emotional environment as well as an

intellectually challenging one (Garfinkel & McLanahan, 1986).

However, as dual-wage families have become a majority, the time available for a working wife for the school-going kids have decreased. Developing a convenient homework schedule has presented a particular challenge for children of working couples. In such families children may not start their homework until the parents come home, at which time it is too late for both children and parents to work in a stress-free environment. Additionally, opportunities for parent-teacher communication can get constrained by the work schedules of dual-wage parents.

Dual-wage families with school-aged children and adolescents are now part of the norm in American culture. All these factors need to be taken into account by school professionals in their efforts to help individual students and their families. The educational system, by respecting and adapting to the changing American family, can strengthen the connection between families and schools, thus providing our children with the best

possible educational environments (Procidano & Fisher, 1992).

Continuing Parental Involvement via the Internet

A final focus of intervention for school professionals is the home-school relationship. Single parents are often unable to be as involved in the school as might be optimal, and therefore set up the attribution by school personnel that they are unconcerned rather than overloaded. Given all the recent discussion about quality in education, the mounting evidence of parental influences must be taken seriously. Perhaps the search for problems has excessively focused on the classroom and has insufficiently explored the socialization practices that prepare the child for participation in the academic world. Improving quality in education, we suggest, might begin by examining what it is about current social conditions that disrupts parental involvement, support for autonomy, and provision of structure. In short, solving the problems of education may indeed require greater recognition of and attention to the continuities of connections between families and schools.

Thus, it is very important that schools maintain continuity with the home environment. Helping students to understand and meet their goals, and enhancing the support that they receive from their parents, often can be achieved by establishing agreements about those goals with parents. Such agreement is aided by clear and frequent communication (Procidano & Fisher, 1992).

What parents do to help their children learn is more important to academic success than how well the family is (U.S. Department of Education, 1991).

The continuity of any performance changing school program is more likely to be achieved if the Internet is used for frequent communication. Early results from an Indiana evaluation show that with daily Internet messages and active promotion, teacher-parent contact increased by 800 per cent. (Bauch, 1993).

Furthermore, computers can help improve children's academic achievement and bring families and schools together. Many parent centers include computer classes for parents to improve their education and job skills. The Buddy System Project in Indiana tries to extend learning beyond the classroom by placing a computer in

the home of every child in Indiana grades 4-12. The home computer ensures equal access for all children to many resources and advantages afforded in the Information Age. During the school year 1994-95, the Buddy System Project served more than 6,000 students and their families at 51 sites. Independent evaluations have confirmed the numerous and varied benefits of Buddy participation (Hill, 1994).

The number of families who use the Internet is also rapidly growing, and several aspects of the Internet services are becoming dedicated to families. The state of Maryland has initiated a program to offer free Internet connections to all families. Access will be available through Maryland libraries so that all families, even those that do not own a computer, can utilize Internet services (Powledge, 1994).

Because of the above reasons, technology is becoming an important component in school's strategic planning, Expected Schoolwide Learning (ESLR), and Program Quality Review (PQR) for most of the school districts if not all of the school districts in the U.S., for assessment and evaluation as well as for parental involvement. Campbell

Union School District (Heil, 2000) has decided that turning the data into useful information is key. This year, the district is implementing Virtual Education, a Web-based system that will give its teachers the ability to access important achievement data right from their desktop computers. Because it is a Web-based application, Virtual Education will also allow parents to access the system from home to check student progress.

"Innovative Web Page" (2000) reported that the state of North Carolina recognized its Southern High School in Durham, North Carolina, for its exemplary academic improvement, when the proportion of students scoring at or above average on end-of-semester tests increased by more than 50 percent. Such a remarkable feat was achieved as a result of designing an innovative web site, which boasts a wealth of resources for teachers, students and parents (see www.southern.durham.k12.nc.us).

Panepinto (1999, September) reported that according to a study of seventh- through 10th-graders by Internet researcher John Lubans, Jr., the Web helps students improve the quality of their written work, find more homework resources, save time on assignments and improve

their grades. Also, a recent study by Roper Starch Worldwide, a market organization based in New York, and the Annenberg Public Policy Center, in Philadelphia, 72 percent of the parents surveyed say the Internet helps children with their schoolwork.

Ivey and Kemper (2000) reported that according to a recent survey by the National School Boards Foundation, 95% of those surveyed said that family interactions have increased or remained the same while children worked with the Internet.

ThinkWave.com announced on 02/21/2000 that parents could have now access to their children's school records and activity schedules using their software. At Menchville High School in Newport News, Va., the parents are already using this software.

"Achieve.com" also has a program, which connects teachers with parents, directly. Its ad says: "Teachers say lack of parent participation is one of their main problems. Pressed for time and resources, teachers need an easy way to encourage more meaningful cooperation. Communicate to parents easily with this FREE online service."

National Education Association's periodical NEA Today now has a special page Bits & Bytes to cater to the web site-related information by teachers from all over the U.S. Specifically, there are many tips for teachers to involve parents via the Internet.

Los Angeles County of Education (LACOE) (2000, June 29), reported that parents continue to increase their access to media and technology-related fields through Parent Technology Leader training. By the end of 2000, 18,000 parents will have received training throughout the county. Also, 89% of surveyed teachers reported to have a computer at home, 49% of their students had a computer at home and 21% of teachers reported using technology "frequently" to deliver curriculum.

According to the information (1999) downloaded from the WebTV web-site, South Bay Union school district at San Diego, California, is using the Internet for providing information to parents regarding their individual child's achievement. About 26 classes in each of the district's 12 schools have been issued a WebTV unit in their homes for the entire school year and free access to the Internet.

Wielenga (2000) quoted Los Angeles County Office of Education (LACOE) Superintendent Donald Ingwerson from his various statements in national surveys recently about the importance of the computer training that even if we have a computer in every classroom, it will only collect dust unless the teachers are trained to use it.

In addition to the above statement that without proper training, the computers will collect dust in the classrooms, here are two other testimonies that training is not taking place as rapidly as the proliferation of technology:

1. Spika (2000) of Long Beach, a librarian and a parent, wrote to the Times with reference to the gap in technology training. She has spent her entire working life in schools, offices and libraries and has witnessed that the technology industry and its many guilt-ridden relatives grant massive amounts of hardware to those who are near the bottom in trying to grapple with technology. Administrators eagerly accept hardware gotten through various generous grants. Then, the stuff arrives with little or no help in learning how to use and teach from the

software, let alone maintain and trouble-shoot the hardware.

2. Hoffine (2000) of San Diego, a parent, wrote to the Times, that failures of education technology are due to administrators' failure to provide adequate staff development and support. He cited a case in which a glossy computer lab for a school had to be mothballed because of lack of training for the lab teachers.

Thus, the training is the first step in bringing technology to schools as well as to homes. Delivering computer training to all teachers and parents is undoubtedly a critical step before we can reap the benefits from technology.

But the factor, which makes the training more urgent is the problem of digital divide. According to Romney(2000), while 74.8% of the U.S. households with income of $75,000 plus have computers, only 19.8% of the households with income between $15,000 and $35,000 have computers. When it comes to the Internet use, these numbers shrink to 48.1% and 7.6% respectively.

As has been pointed out in studies (Hill 1994), computers can help improve children's academic

achievement and bring families and schools together while improving their parents' education and job skills. The "digital divide" slows down this process for a significant amount of students and parents. The problem of several thousands of unfilled jobs, as mentioned earlier in this paper, cannot be resolved in the near future, without increased proficiency in computers among teachers and students as well as parents and other adults, across the board, at all income levels.

In a discussion web site of The Outreach and Technical Assistance Network (OTAN) for California Adult Education Technology Plan, Wagner (2000) states that San Mateo Adult and Community Education is one of first adult schools in California to offer online writing classes to students who cannot come to their campuses due to family, work schedules, or personal reasons. According to a preliminary survey of 369 adult students with low literacy skills and whose first language is not English, only 87 respondents were comfortable enough with computers to say that they are proficient. That is about 23.5% who have computer literacy. This number only represents the students. Los Angeles County Office of

Education (LACOE) has a special web site named Parent University (http://www.lacoe.edu/parent university). According to the web-site description, the Parent University pursues the guiding principle that parents are their children's first and most influential teachers. The LACOE programs under Parent University are Parent Technology Leader Training (PTL), the Parent Connection, Parent Expectation Support Achievement (PESA), Family Literacy, Migrant Education and Parent Education Center. The motto of the programs is "Helping Parents Help." All of these programs are designed to offer effective parenting skills, parent-school partnership, educational technology, and helping children to read.

Crockett (2000) wrote that government and corporate programs would not suffice to bridge the "digital divide". Before the Internet is widely accepted by low-income urban users, it has to be marketed as something relevant to them. His proposed technique is to bring technology to the street via a Web-on-Wheels, a marketing truck that strolls urban neighborhoods demonstrating Net gear and selling PCs. Urban dwellers respond more quickly to grass-roots efforts, whether they are marketing

trucks, ad spots on urban radio stations, or local billboards. Beyond marketing, what's missing is a pervasive effort to train the Internet users.

Similar to the idea of Web-on-Wheels as proposed above, California has four mobile computer training programs: (1) Carson Unified School District's Wireless Mobile computer training program for ESL students (who may or may not be parents), (2) Multi-sensory Learning Lab of Sacramento's Community College Foundation for training teachers and business organizations, (3) Tech-mobile of Ventura Unified School District's Adult & Continuing Education for ESL students (who may or may not be parents), and (4) Mobile Computer Classroom of Hacienda La Puente Unified School District's Adult Education both for parents and other adults as well as for business organizations. Searching in the Internet, I did not find any web site related to mobile computer training. None of the programs except HLPUSD's Mobile Computer Classroom goes to the school parking lot. a couple of hours before the kid pick-up time to provide computer training to parents and other adults. Such a

program has the advantages of convenience of location, saving time and maintaining the continuity of training.

But all of the mobile training programs are under the umbrella of the adult schools, while typically parent-related state and federal funded programs are distributed between K-12 and adult divisions. Bridging the "digital divide" will require, in my opinion, a joint effort between the two divisions. The parents spend most of the time dealing with the K-12 division where their school-going children attend. To receive computer training, the parents must go to the adult school since they are categorized by the public education system simply as another adult student for the purposes of training, unless they are special segments of population, which receive grants and funds from the state and federal programs. Empowering the parents to become teachers at home as well as bridging the "digital divide" in the community will require building an Internet-oriented-school-district organization as well as an internet-oriented community.

Both Chapman (2000) and Peck, Cuban & Kirkpatrick (2000) do not expect the schools can alleviate the

"digital divide" problem even though Chapman cites that President Clinton recently announced $2.25 billion in proposed federal programs and tax breaks to expand technology access and skills in low income communities. It is not clear from their articles if Chapman and Peck, Cuban & Kirkpatrick looked beyond the K-12 division to close the "digital divide" but certainly, a joint effort between K-12 and the adult divisions can resolve the problem as Wagner (2000) reports.

Technology, Television and Time Factors

Simultaneous changes in technology are also influencing people's life styles and their interpersonal relationships. Of all the technologies, televisions and computers have the greatest impact on people's life styles.

In the U.S., statistics indicate that more than 95% of households have a television set that is turned on, on average, for about seven hours a day and is watched by children between the ages of six and eleven for approximately twenty seven hours per week (Dorr, 1986)

According to Minzey & LeTarte (1994), Benjamin Bloom of the University of Chicago has found that if given the

proper amount of time, 80 percent of all students can achieve as well as the top 20 percent. Also, J.B. Carroll, another noted researcher in the area has stated, time is really the central variable in school learning. If *time* is the central variable and necessary time is provided, then the attainment of desired learning is possible.

Ivey and Kemper (1999) reported that there is a technology gap between parents and their children. They surmised from anecdotal evidence that more than half of the parents are behind the learning curve of their children.

A survey conducted jointly by the Nickelodeon channel and Time, as reported by Goldstein (2000), states 92% of parents feel they are very interested in what their children are doing in school, but 24% of kids, 9 to 14, feel their parents show little or no interest in what they are doing in school. Teachers overwhelmingly say they want parents to be extremely involved in their children's work, but only 3% of teachers say they believed parents really are. Nearly 4 out of 10 teachers say their schools don't do enough to involve parents.

According to Minzey & LeTarte (1994), if given the proper amount of time, 80 percent of all students can achieve as well as the top 20 percent. Time is really the central variable in school learning. If time is the central variable and necessary time is provided, then the attainment of desired learning is possible. There are a number of research findings related to education time. A summary of some of these includes:

1. Become a "parent-teacher" and use some of your time to teach your children.
2. Provide children with learning *time* at home with a place and *time* for homework (p. 81).

Thus, the time spent in learning at home with parents becomes a significant factor for improving academic performance. Delgado and Geraghty (2000) pointed out time as one of the barriers to communication between parents and schools.

In one poll, 80% of parents with school-age children were willing to spend one evening a month at school learning how to improve children's behavior and interest in schoolwork (Gallup, 1978)

There are a number of research findings related to education time. A summary of some of these includes:

1. In a 35-hour high school week, students spend less than 17 hours on instructions. The rest of the time is spent on announcements, passing out materials, assemblies, lavatory trips, discipline, waiting for instructions, lunch, recess, etc.
2. The fact that Asian American children do better in school than do other ethnic groups in America is probably due to the fact that they spend twice as much time on homework as do other ethnic groups in the American schools.
3. In every case study, the percentage of gain in achievement increased proportionally to the percentage of increased time in schooling.
4. Private high schools students do twice as much of homework as do public high school students.
5. The number of minutes of classroom instruction is directly related to student performances.
6. The student who comes to school regularly has higher grades than the student who does not attend regularly does.

Poor performance in the U.S. schools may be due to the lesser number of hours for instruction. The length of school week in Japan is 59 hours, in Russia 53 hours, while in the United States it is 30 hours. The school year in Japan is 240 days, in America 180 days. Polls by Gallup in 1982, 1983, 1984, and 1985 show that Americans do not want to increase the school year. Increasing the school year by one day throughout the United States would add approximately one billion dollars to school costs. The end result is that *time* appears to be so valuable, and yet, there seems to be no movement by either of the educators, the legislators, or the public to support a move toward longer days, weeks, or years for students.

There are, however, some things community members can do.

1. Insist that the board of education hold administrators and teachers accountable for using the existing *time* more effectively and efficiently.
2. Encourage your schools to experiment with varying schedules so that some classes might be taught over longer periods of *time*.

3. Become a "parent-teacher" and use some of your time to teach your children.
4. Provide children with learning *time* at home with a place and *time* for homework.

Regarding psychological barriers; certain inherent tension between teachers and parents must be considered. Parents are primarily concerned with educational development of his or her child, whereas teachers are concerned with the progress of the whole class. This difference in perspective is compounded for the low-income and minority parents, who are likely to feel threatened by the authority of the teacher; perceived socioeconomic-status differences, and their lack of formal education (Lightfoot, 1978).

Suspicion and misunderstanding may affect both parents and school staff. Teachers are overwhelmed periodically with a sense of futility regarding the limitations of low-income minority parents. Many parents are resentful of schools that are depriving their children of a quality education parents believe middle-class children are receiving (Ascher, 1987).

The opinions of the teachers can be seen in a National Education Association survey (1979) asking who is most to blame when children do poorly in school. Teachers blamed children's home life much more often (81 percent) than the children (14 percent), (Ascher, 1987).

Most Hispanic families do care about their children, contrary to popular belief, and will participate in parent involvement programs. Since the interaction of low-income Hispanic parents and schools is low to non-existent and is directly related to specific school practices, then school practices need to change (Nicolau and Ramos, 1990).

If schools treat parents as powerless or unimportant, or if schools discourage parents from taking an interest in their children's education, this will promote the development of attitudes in parents and consequently in their children, that inhibit school achievement (Henderson, 1981).

Support for Parental Involvement

California has both a state board of education comprehensive policy on parent involvement and a state law mandating parent involvement in school districts and

schools. The policy of the California State Board of Education, adopted in 1989 and 1994, outlined the following six research-based types of parent involvement for districts to implement:

1. Help parents develop parenting skills and foster conditions at home that support children's efforts in learning.
2. Provide parents with the knowledge of techniques to assist children in learning at home.
3. Provide access to and coordinate community and support services for children and families.
4. Promote clear, two-way communication between the school and the family as to school programs and children's progress.
5. Involve parents, after appropriate training, in instructional and support roles at the school.
6. Support parents as decision-makers and develop their leadership in governance, advisory and advocacy roles.

Further support for parental involvement came with the passage of California Assembly Bill 322 (Waters). Effective in January, 1991, Assembly Bill 322 mandates

that parental involvement policies and programs are required in the federal amendments to the 1965 Elementary and Secondary Education Act, and makes the implementation of parental involvement a contingency for receipt of state's School Improvement and Economic Impact Aid funds.

Schools of the Future

Marvin Cetron (1986), in his book *Schools of the Future,* makes several points regarding what schools will have to do in the years to come. He feels we will need to train students for a changing job market. Students will need vocational retraining every five to ten years. And finally, he believes that teachers will become managers of education rather than only the dispensers of knowledge.

Nolan Estes (1985), a professor at the University of Texas and former superintendent of Dallas, Texas, states his futuristic ideas:

1. Public schools will become educational freeways with multiple entrances and exits.
2. If education is really a lifetime process, then there is really less reason to stay in the traditional school.

3. We should move in education from a choice of futures to a future to a future of choices.
4. In the future, an illiterate will not be one who does not know how to read, but one who does not know how to learn.

Minzey & LeTarte (1994) cited President Lyndon Johnson's 1966 speech at American Association of School Administrators for having said that tomorrow's school will be a school without walls-a school built of door, which open to the entire community and it will not close its doors anymore at 3 o'clock. We just cannot afford to have an $85 billion plant in this country open less than 30 percent of the time.

CHAPTER THREE

METHODOLOGY

Subjects

The subjects were 60 adults who responded to the flyers of Computer Classes for parents and other adults. Since, the class is operating as an Adult school class, a fee of $22 for 22 hours of computer training was charged to the trainees. Trainees came to the Mobile Computer Classroom two hours before the student's pick-up time, 12 P.M. to 2 P.M. The class typically was held Mondays, Tuesdays and Wednesdays because the Mobile Computer Classroom is utilized for other adult training classes as well.

The topics covered in the training are as follows:

1. Introduction to Computers
2. Introduction to Windows 95
3. Using the windows in Win'95
4. Word Processing
5. Using Help
6. Intro to Desktop Publishing
7. Introduction to the Internet

Population of Trainees

A total of 60 students have so far attended the class. The breakdown of the trainees is as follows (see Table 1):

Gender:

Male	20%
Female	80%

Ethnicity:

Hispanic	80%
Rest	20%

(Rest was equally divided between White, Black and Asian)

Families with children:

With children	45%
No children	55%

Note: Any adult could attend this class.

Income:

Maximum	$38K
Minimum	$7K

Marital Status:

Married	53%
Single	47%

Hypothesis

The higher the computer literacy of a needy parent after the training, the greater will be the parent's involvement, measured in number of hours.

Null Hypothesis:

H_0 = after the training, the number of hours spent with the child remained the same.

Alternate Hypothesis:

H_1 = after the training, the number of hours spent with the child did not remain the same.

Sample

The sample was cross-sectional in nature but it could not be categorized as purely random. We had a hard time getting hold of the trainees after the training was over. The only randomness was the selection of just one day. On that day, we called up the trainees and found 16 of them at home. That was 16 out a total of 60 or 26.7%. We could not find demographic data on two respondents. So, essentially we got 14 good responses out of 60, i.e., 23.3% (see Table 2).

Table 1. Database of Trainees

Rec. #	Site	Name	Sex	# Of Child	Ethn-icity	Inc-ome $000	Mar-ital Sta-tus
1	Work-man	M.T.	F	0	H	N/A	M
2		M.C.	F	0	H	N/A	M
3		A.H.	M	2	H	$22.0	M
4		M.G.	F	3	H	N/A	N/A
5		E.B.	F	0	H	N/A	M
6		A.D.	F	0	B	N/A	S
7		J.B.	M	2	H	$22.0	N/A
8		M.B.	F	2	H	N/A	N/A
9		A.C.	F	4	H	N/A	M
10		M.M.	F	1	B	N/A	S
11		R.V.	F	0	H	$38.5	M
12		A.D.	F	0	B	N/A	S
13		M.G.	F	3	H	$7.5	M
14		A.C.	F	4	H	$22.0	M
15		E.B.	F	0	H	N/A	M
16		M.M.	F	0	H	$15.5	N/A
17	Fair grove	R.A.	F	0		N/A	M
18		J.M.	M	2	H	$38.5	M
19		T.S.	F	3	A.I.	$19.8	M
20		D.B.	F	6	H	$47.0	N/A
21		C.G.	F	3	B	$15.5	S
22		E.R.	F	0	H	$5.5	N/A
23		J.L.	M	0	C	N/A	M
24		D.A.	F	0	W	N/A	S
25		M.C.	M	0	H	N/A	M
26		C.W.	F	2	H	$38.5	M
27		H.P.	F	0	H	$7.5	S
28		M.M.	F	0	H	N/A	S
29		T.P.	F	3	W	N/A	M
30		D.B.	F	0	W	$38.5	M
31		A.G.	F	0	H	$7.5	M

Table 1. Database of Trainees

(Continued)

Rec. #	Site	Name	Sex	# Of Child	Ethn-icity	Inc-ome $000	Mar-ital Sta-tus
32	Los Altos	L.S.	F	0	H	$15.0	M
33		E.R.	F	0	H	$7.5	S
34		B.F.	F	0	H	$15.5	M
35		C.E.	F	3	W	$22.0	M
36		S.J.	M	0	A	N/A	S
37		N.B.	F	3	A.I.	N/A	M
38	Fairgrove	W.M.	F	0	H	$7.5	S
39		N.M.	F	0	H	$7.5	S
40	Lassellete	M.L.	F	2	A.I.	$15.5	M
41		O.B.	F	2	H	$15.5	M
42		L.G.	F	0	H	N/A	S
43		H.U.	F	2	H	$7.5	M
44		M.S.	F	2	H	$38.5	M
45		M.L.	F	2	H	$15.5	M
46		G.A.	M	2	H	$16.0	M
47	Sparks	J.G.	M	2	H	N/A	M
48		A.M.	F	3	H	$22.0	M
49		E.C.	F	0	H	N/A	M
50		D.S.	M	0	W	$22.0	S
51		K.R.	F	0	H	N/A	S
52		A.Q..	F	0	H	N/A	S
53		A.R.	F	1	H	$7.5	S
54		V.J.	F	0	H	N/A	S
55		E.A.	F	0	H	N/A	S
56		A.J.	F	0	H	N/A	S
57		J.J.	M	0	H	$7.5	S
58		M.J.	M	4	H	$15.5	M
59		U.J.	M	0	B	$7.5	S
60		M.M.	F	0	H	$7.5	M

Table 2. Increase in Parental Involvement After the Training

Name-School code	Do you have a comp-uter?	Would you like to purc-hase a comp-uter if it was less than $200?	How many more hours per week are you spend-ing with your kid after the train-ing?	Would you like to have more comp-uter train-ing?	How can we improve to make the training more useful to you?	How can you help your kid using comp-uter?
DR-FA	No	Yes	10	Yes	More hands-on & projects	School work
CG-FA	No	Yes	4	Yes	More advance level & hands-on	School work
TS-FA	No	Yes	5	Yes	More hands & review	School work
EM-FA	Yes	No	10	Yes	More hands-on & projects	School work
JM-FA	Yes	No	0	No	More hands-on & projects	School work
SA-FA	Yes	No	7	Yes	More hands-on & projects	School work
RA-FA	Yes	No	10	Yes	More project & review	School work
SP-FA	No	Yes	5	Yes	More project & word	School work
GF-LR	No	Yes	3	Yes	More hands on	School work
LS-LR	No	Yes	8	Yes	More hands on	School work
DA-LR	Yes	No	8	Yes	Alright	School Work
NN-LR	No	Yes	4	Yes	More hands-on & projects	School work

Table 2. Increase in Parental Involvement After the Training

(Continued)

Name-School code	Do you have a computer?	Would you like to purchase a computer if it was less than $200?	How many more hours per week are you spending with your kid after the training?	Would you like to have more computer training?	How can we improve to make the training more useful to you?	How can you help your kid using computer?
MP-KW	Yes	No	8	Yes	More hands-on & projects	Home work
DB-KW	Yes	No	10	Yes	More hands-on & projects	School work
TP-KW	No	Yes	0	Yes	More hands-on & projects	School work
MM-KW	No	Yes	5	Yes	More hands-on & projects	School work

Summary statistics of "How many more hours per week…?" question:

Mean	6.0625		Skewness		-0.4610
Standard Error	0.8390		Range		10
Median	6		Minimum		0
Mode	10		Maximum		10
Standard Deviation	3.3560		Sum		97
Sample Variance	11.2625		Count		16
Kurtosis	-0.6971		Confidence Level(95.0%)		1.7883

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

Findings

Findings are very interesting. The survey questions are shown as the labels of the column in Table 2. Even though, 64% of the respondents did not have computers and had to pay $22 to take the class, 60 persons have attended the mobile computer classroom in the past six months. There was no childcare arrangement yet we were able to recruit 60 students for the class. Many could not speak English (almost 80%). The majority (93.8%) of the respondents expressed eagerness to receive more computer training in answer to the survey question: "Would you like to have more computer training?"

The majority of them (87.6%) increased their time with their school-going children. All 100% of them believed that they want to learn computers to help their kids do home work. The statistical analysis is provided in Table 2.

Many adult students who could not afford the fee and/or who could not arrange for child-care had to be

turned away. A reasonable estimate would be about 120, the twice the number of students who attended.

As pointed out earlier, the training is the first step in bringing technology to schools as well as to homes. The mobile computer classroom is a grass-roots level effort to make the computer training available conveniently. It is also a novel idea to increase parental involvement and to improve job skills of the adults, both at the same time.

Discussions

The presence of mobile computer classroom in the school parking lot attracts potential parents and other adult trainees. Indeed, the mobile computer classroom becomes an extended school classroom. Its novelty makes learning exciting and fun.

However, no adult education program, I know of, has been able to conduct free computer classes for parents and other adults because of lack of funding for such training. Free training will be possible only under a grant for such training.

The findings are sufficiently clear to pursue the use of mobile computer classroom towards building an

internet-oriented school district as well as an internet-oriented community in keeping up with the Information Age. However, to accelerate the process will require offering free computer training and childcare to economically disadvantaged parents.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In terms of demonstrating whether mobile computer classroom can be a feasible alternative for providing computer training, the answer is in affirmative. It appears not to be just a feasible one but also an effective one for accelerating the proliferation of computer training with the intent of increasing computer literacy among parents and other adults of the community. Most of the respondents answered in affirmative to the question: "Would you like to have more computer training?" Mobile computer classroom can provide training conveniently and regularly enough to empower the parents for more involvement with their school-going children as the communication via school web sites becomes available.

Recommendations

Many trainees were turned away because we could not provide child-care. The attendance will increase significantly, if the training can be provided free of charge with child-care.

In terms of hardware and software for the mobile computer classroom, it should be designed to accommodate both Mac and PC computers. If we could accommodate Mac computers, then the mobile computer classroom can be utilized for teacher training at school sites. The satellite dish as presently configured requires a telephone line to connect with the Internet. It will be lot more efficient to have a two-way broadband service to interconnect with the Internet.

In designing the curriculum, one needs to take into account the percentage of ESL trainees. It may be possible to have the curriculum to accommodate ESL training along with computer training.

Bridging the "digital divide" will require a joint effort between the K-12 and adult division of the school district. The parents spend most of the time dealing with the K-12 division where their school-going children attend. To receive computer training, the parents must go to the adult school since they are categorized by the public education simply as another adult student for the purposes of training. The mobile computer classroom, which belongs to the adult division, has to work hand-in-

glove with K-12 division to make the training available at the school sites.

Declining academic performances and increasing unfilled Information Age-related jobs are becoming serious problems. Without a conveniently available computer training program, the progress towards alleviating the "digital divide" as well as increasing parental involvement via technology is going to be slow because of time-constraints resulting from changing family configurations and fast life-styles. The mobile computer classroom meets the requirements of a conveniently available computer lab at a convenient time and location to bridge the digital divide rapidly.

APPENDIX A:

INFORMATION ON HACIENDA LA PUENTE UNIFIED SCHOOL DISTRICT'S MOBILE COMPUTER CLASSROOM

For computer training or a computer room

Check out Hacienda La Puente Adult Education's Mobile Computer Classroom

- Flexibility of location & schedule - Comes to your place of business.
- Latest hardware & software - Pentium laptops, MS Office, the Internet, and others.
- Saves time and costs - Affordable price and customized training.
- *Learn fast*, hands on- Small class size, maximum 10 students.
- Transport your training to your branches or to other locations.
- During the onsite training hours: The classroom can become part of your network. *Onsite computer consultation* solves problems quickly. Post-training off-site consultation is available.
  Use the motor coach as an emergency temporary office.
  The hourly rate could be as low as $10 per trainee.

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REFERENCES

2000 Annual Report Card to the Community. (1999, June). Los Angeles Office of Education, Downey.

Amid Workers Shortage, High-Tech Firm Training High Schoolers. (2000, May 29). The Los Angeles Times p. C5.

Amundson, K. J. (1988). First teachers: Parental involvement in the public schools Alexandria, Virginia: National School Boards Association

Ascher, C. (1987, December). Improving the school-home connection for poor and minority urban students. New York: Institute for Urban and Minority Education, Columbia University.

Ballen, J. & Moles, O. (1999). Strong Families, Strong Schools, U.S. Department of Education.

Banks, Sandy & Renwick L. (1997, June 8). Technology Remains Promise, not Panacea. The Los Angeles Times, p. A1.

Bauch, J. P. (1993). A Sampler of Projects and Results -- The Transparent School Model 1987-1993. Nashville, TN: Vanderbilt University, Betty Phillips Center for Parenthood Education.

Bell, N.J., Avery, A. W., Jenkins, D., Feld, J., & Schoenrock, C. J. (1985). Family relationships and social competence during late adolescence. Journal of Youth and Adolescence, 14, 109-119.

Broad American Support for Improving Public Schools. (October 1999). Community Update (U. S. Department of Education, No. 71) Jessup, MD: ED PUBS.

California Department of Education (1992). California strategic plan for parental involvement in education. Sacramento, CA.

Carpenter, Wade. (2000, January). Ten Years of Silver Bullets. Phi Delta Kappan, pp. 383-388.

Cetron, Marvin (1986) Schools of the future, American Association of School Administrators, Arlington, Virginia, 1986.

Chapman, Gary (2000, May 1). Problem of Technology Gap Starts with Shortage of Skilled Teachers [Digital Nation]. The Los Angeles Times, p. C1.

Clayton, J. (2000, January 29) Old Math, Good Math [Los Angeles Times Editorial]. The Los Angeles Times p. B7.

Cox, T. (1978). Children's adjustment to school over six years. Journal of Child Psychology and Psychiatry, 19, 363-371.

Crockett, R. O. (2000, May 8). How to Bridge America's Digital Divide. Business Week, p. 56.

Davies, D. (1987, February). Parent involvement in the public schools: Opportunities for administrators. Education and Urban Society, 1987. (2), 147-163.

Delgado, R. A. & Geraghty, C. (2000, January 26). Building a Dynamic Home-School Partnership. Paper presented at 2000 Parent Involvement conference, City of Industry, California.

Dolan, L. (1983). The prediction of reading achievement and self-esteem from an index of home educational environment: A study of urban elementary students. Measurement and Evaluation in Guidance, 16, 86-94.

Dorr, A. (1986) Television and Children. A Special Medium for a Special Audience. Newbury Park, Calif.: Sage, 1986

Eaves, Betsy & Furry, A. R. (2000, May/June). A Roadmap for Delivering Instruction. Thrust for Education Leadership, pp. 30-32, 38.

Elizur, J. (1986). The stress of school entry: Parental coping behavior and children's adjustment to school. Journal of Child Psychology and Psychiatry, 27, 625-638.

Epstein, J. (1986, January). Parents' reactions to teacher practices of parent involvement. Elementary School Journal, 86 (3) 277-294.

Estes, Nolan (1985) Superintendent, Dallas, Texas, from a speech delivered at the Michigan Association of School Administrators conference, Detroit, October, 1985.

Fraenkel, J. R. & Wallen, N.E. (1996) How to design and evaluate research, New York: McGraw-Hill, Inc.

Fruchter, N., Galletta, A., & White, J. L. (1992). New Directions in Parent Involvement. New York: Academy for Educational Development.

Galloway, D. (1982). A study of persistent absentees and their families. British Journal of Educational Psychology, 52, 317-330.

Gallup, G. H. (1978) The 10th annual Gallup Poll of the public's attitudes toward the public schools. Phi Delta Kappan, 60: 33-45.

Goldstein, Andrew (2000, July 3). Paging all Parents, TIME, Education, p. 47, 2000.

Grolnick, W.S. & Slowiaczek, M.L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivation model. Child Development, 65, 237-252.

Heil, G., Olson, S., & Olszewski, Marla (May/June, 2000) From Assessment to Action: A cycle for success. Thrust for Educational Leadership, May/June, 2000.

Helfand, Duke (05/28/2000) Parent Teachers (B1), The Los Angeles Times, Los Angeles.

Henderson, Anne T. (1990) Parents are a school's best friends. Parent Involvement in the schools. Bloomington, IN. Center for Evaluation, Development, Research, Phi Delta Kappan (55-60)

Hester, H. (1989, January). Start at home to improve home-school relations. NASSP Bulletin, 73 (513), 23-27.

Hoffine, Bill (2000, May 18). School Computers [Letters to the Times]. The Los Angeles Times, p. B10. Innovative Web Page at Southern High School. (2000, March). Community Update (U. S. Department of Education, No. 75) Jessup, MD: ED PUBS.

Ivey, M. & Kemper, E. (1999, October 11). Adults need to close up tech gap. Whittier Daily News, p. A6.

Ivey, M. & Kemper, E. (2000, April 10). Digital Family Bonding. Whittier Daily News, p. A8.

Jennings, L. (1990, May, 2). Union locals join to encourage parent-school ties. Education Week IX, 32.

Kennedy, M.G., Felner, R.D., R.D., Cauce, A., & Primavera, J. (1988). Social problem solving and

adjustment in adolescence: The influence of moral-reasoning level, scoring alternatives, and family climate. Journal of Clinical Child Psychology, 17, 73-83.

King, A. G. (2000, May 29). Digital Divide. U.S.News & World Report, Special Section.

Lightfoot, S. L. (1978). Worlds apart: The relationship between families and schools. New York: Basic Books.

Mihaljevich, Nenad. (2000, June 10). Let TV Teach English to Families [Essay]. The Los Angeles Times, p. B9.

Minzey, J. D., LeTarte, C.E. (1994). Reforming Public Schools through Community Education. Dubuque, Iowa: Kendall/Hunt Publishing.

Moes, O. C. (1987). Who wants parent involvement? Interest, Skills, and Opportunities Among Parents and Educators. Education and Urban Society, Vol. 19 No. 2, February 1987 137-145.

Nicolaue, S., & Ramos, C.R. (1990). Together is better: Building strong partnerships between schools and Hispanic parent. New York: Hispanic Policy Development Project, Inc.

Ostdick-Trembath, Julie Ann (June, 1999). The Relationship between Academic Achievement Motivation and Student's Perceived Parental Expectations and Parental Involvement: A College Sample. A Thesis Presented to the Faculty of California State University, San Bernadino, June, 1999.

Palmaffy, Tyce. (2000, June 9). American Students Rarely Earn 'A's When Up Against Foreign Students. Investor's Business Daily, p. A24.

Panepinto, J. (September 12, 1999) Logging on at homework time. Access Magazine, Family Link, p.8.

Peck, C., Cuban, L., & Kirkpatrick, H. (2000, May 14). Schools are Ill-suited to Close the Digital Divide. The Los Angeles Times, p. M1.

Pettit, G.S., Dodge, K. A., & Brown, M. M. (1988). Early family experience, social problem solving pattern, and children's social competence. Child Development, 59, pp. 107-120.

Powledge, T. (1994, June 23). Information highway without tollbooths: Maryland is the first state to offer free access to the Internet. The Washington Post, p. 10.

Procidano, Mary E. & Fisher, Celia B. (1992) Contemporary families - A Handbook for School Professionals, New York, Teachers College.

Romney, Lee (2000, June 29). "digital divide" Narrows for Latinos. The Los Angeles Times, p. C1.

Sattes, B. D. (1985). Parent involvement: A review of the literature. Charleston, West Virginia: Appalachia Educational Laboratory.

Spika, Stephanie. (2000, May 15). Technology Gap in Training Too [Letters]. The Los Angeles Times, p. C5.

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. Journal of Educational Psychology, 82(1),22-32.

Stevenson, D. L., & Baker, D. P. (1987). The family-school relation and the child's school performance. Child Development, 58, 1348-1357.

Success Alternatives. (2000, June 2). Investor's Business Daily, p. 28.

Top U.S. Information Technology Leaders Seek Indian Experts. (2000, June 16). India Journal, p. A1.

U.S. Department of Education (1991). American 2000: An educational strategy. Washington, D.C., p. 7.

Wagner, Celia (2000, June 6). Access - Community Portal [online]. Available: http://www.otan.dni.us/webfarm/caetp/ (June 10, 2000)

Wielenga, Laurie (2000, June 28) Program arms teachers with high-tech skills. The San Gabriel Valley Tribune, p. A1.

Williams, D. L., & Stallworth, J. T. (1982). Survey of educators regarding parent involvement in education: Implications for teacher training. Austin, Texas: Southwest Educational Development Laboratory

Williams, D. L., & Chavkin, N. F. (1989, October). Essential elements of strong parent involvement programs. Educational Leadership, 47 (2), 18-20.

Yang, D. J. (2000, July 10). Leaving Moore's Law in the dust. U. S. News & World Report, 37.

Ziegler, S. (1987). The effects of parent involvement on children's achievement: the significance of home/school links. Toronto, Canada: Toronto Board of Education.