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ABSTRACT

A practicum program was developed and implemented to increase parental involvement, teach parents how to help their children, reverse parents' and students' negative attitudes toward mathematics, and enhance mathematics performance of at-risk seventh-grade students. The objectives of the program were to increase parental involvement by 40 percent, increase parental knowledge and reverse their negative attitudes toward mathematics by 40 percent, to change students' attitude toward mathematics and increase motivation by 40 percent, and to enhance student achievement by 35 percent. This practicum was implemented with seventh-grade mathematics students who were enrolled in an alternative education program. Parents and students attended specialized evening workshops, and additional motivational strategies were used in the classroom. Surveys, questionnaire, and observation were used to measure achievement of the objectives. Results indicated that all the objectives were successfully met by both the target parents and students. (Seven appendixes include a parent participation survey, an attitude and beliefs toward mathematics survey, parent involvement survey, post evaluation questionnaire, and anecdotal comments. (Contains 66 references.) (AA)

DEVELOPING AND IMPLEMENTING A PARENTAL AWARENESS PROGRAM TO INCREASE PARENTAL INVOLVEMENT AND ENHANCE MATHEMATICS PERFORMANCE AND ATTITUDE OF AT-RISK SEVENTH GRADE STUDENTS

by

Yolanda Mendoza

A Final Report Submitted to the Faculty of the Fischler Center for the Advancement of Education of Nova Southeastern University in partial fulfillment of the requirements for the degree of Master of Science.

The Abstract of this report may be placed in a National Database System for reference.

May/1996

Abstract

Developing and Implementing a Parental Awareness Program to Increase Parental Involvement and Enhance Mathematics Performance and Attitude of At-Risk Seventh Grade Students.
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This program was developed and implmented to increase parental involvement, teach parents how to help their children, reverse parents and students negative attitudes towards mathematics, and enhance mathematics performance of at-risk seventh grade students. The objectives for the program were to increase parental involvement by 40%, increase parental knowledge and reverse their negative attitudes towards mathematics by 40%, to change students' attitude towards mathematics and increase motivation by 40%, and to enhance student achievement by 35%. Surveys, questionnaires, and observation were used to measure the objectives. Parents and students attended specialized evening workshops, and additional motivational strategies were utilized in the classroom. All the objectives were successfully met by both the target parents and students. Appendixes include a letter to parents, plan of action, parent participation survey, an attitude and beliefs toward mathematics survey, parent involvement survey, flyers, sign in sheets, mid-point review, post evaluation questionnaire, anecdotal comments.

Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. When it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of others in the field and in the hope that my own work, presented here, will earn similar respect.

Yolanda Mendoza

student's signature

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Practicum title Developing and Implementing a Parental Awareness Program to Increase Parental Involvement and Enhance Mathematics Performance of At-Risk Seventh Grade Students

Student's name Yolanda Mendoza Completion date 4/22/96

Project site W. R. Thomas Middle School - Miami, Florida

Mentor's name Ollie Daniels, Ed.D. Ollie Daniels, Ed.D.
print *signature*

Mentor's position at the site Principal Phone # (305) 995-3401

Comment on impact of the project (handwritten):

This project was extremely enlightening and beneficial to the students and parents assigned to the middle school alternative education program.

Table of Contents

Table of Contents
continued

CHAPTER I
Purpose

The work setting for the writer was a middle school that opened in 1975, on thirty-eight acres, in a large metropolitan suburban area in South Florida. The facility originally designed to accommodate about 1,232 junior high school students in grades 7, 8, and 9, housed 1,910 middle school students in grades 6, 7, and 8 at the time of the study.

Eight portable classrooms were located on the school site to accommodate the rapidly growing student population. The ethnic background of the student body totaled 14% Anglo, 1% Black non-Hispanic, 84% Hispanic, and 1% Asian/American Indian. The gender breakdown totaled 45.1% female and 54.9% male.

The school received its student population from a diverse Hispanic community. Middle class Hispanics resided in single family homes located on the southwest side of the school. East of the school within a two mile radius were apartment complexes where several students lived with their families, while others of a lower socioeconomic status resided in a neighborhood

trailer park on the north side of the school within the school's boundary. The American Indian students arrived daily, by bus, from the reservation.

The school's staff was diversified with a wide range of positions and categories. The total school program consisted of five administrators: a principal and five assistant principals. The instructional personnel totaled 77 classroom teachers, of which 35.1% had Master Degrees, 6.5% had Specialist's Degrees, and 1.3% had a Doctorate Degree. Student support personnel consisted of five counselors, one alternative education coordinator, one speech therapist, one media specialist, six paraprofessionals, three secretaries, five clerical, 12 custodial service employees, a uniformed police officer, an indoor suspension teacher, and six security monitors.

In addition to the regular curriculum, Spanish for Speakers of Other Languages, Spanish for Spanish Speakers, English for Speakers of other languages, bilingual curriculum content, French, exceptional education, alternative education, art, music, physical education, woodshop, computers, cooking, dance, yearbook, and cinematography were offered to the

students. Also, after school sports activities, student council, cheerleading, clubs, and classes were available. A tutorial program was offered through the community school for a minimal fee. In relation to schoolwide issues, students' concerns, staff input, and parental suggestions were generally considered in the decision making process. Staff members were involved in the development of the school's philosophy, mission statement, discipline plan, homework policy and the dress code. The number of students that scored above the national median score in reading was 40%, and in mathematics totaled 42%. Enrollment in the Parent Teacher Student Association (PTSA) totaled 1%.

The practitioner, a former private investigator, is a non-Hispanic white female who was embarking on a second career. This was the writer's first year as an educator who selected to work with at-risk seventh and eighth grade youngsters who had been assigned to an alternative education program. The writer's prior experience with at-risk adolescences was as a pool substitute at an alternative education facility.

The writer has completed a bachelor's degree in elementary education with certification in middle

grades mathematics. While implementing this practicum, the writer was pursuing a Master of Science degree in mathematics education with certification in learning disabilities. The writer was the sole mathematics instructor in the alternative education program and had the responsibility of teaching mathematics to 49 seventh graders, and 48 eighth graders. All of the students in the alternative education program were considered students at risk for failure due to the lack of basic skills, poor attendance, behavior problems, or dysfunctional family situations. The practitioner also chose to take on the responsibility of teaching a regular education mathematics class during her planning period, and worked as an instructor in the after school program.

The responsibility of a mathematics teacher included creating a rich and varied learning environment in which the students would be motivated to develop the abilities and skills to use mathematical terms, computations, and problem solving in a logical and meaningful context, while fulfilling the county, district, and state of Florida objectives.

In addition to the daily responsibilities of

teaching, the writer planned schoolwide student centered activities beyond the normal workday. These activities included: field trip incentives, community service projects and motivating incentives to encourage students to stay in school while maintaining positive relations with students, parents, and staff members. The practitioner also maintained a parent log to communicate with families on a regular basis by keeping them informed of the successes as well as deficiencies of their children.

This practicum was implemented with seventh grade mathematics students who were enrolled in an alternative education program and their parents. The targeted student population consisted of 44 males and 12 females. The cultural backgrounds of the group was predominantly Hispanic and consisted of two White Anglo youngsters and 54 Hispanic students. The ages of the students ranged from 12 to 16.

The target students were assigned to the alternative education program due to their behavior problems, excessive absences, below average achievement, low self esteem, or were retained due to failure in a previous year. These students lacked

motivation and interest in school as was indicated by their total number of absences, lack of homework completion, and poor test grades.

Family situations of the target population were diversified. Several of the students resided with a single parent, while others lived with guardians, grandparents, older brothers or sisters, and stepparents. A small minority of the students lived with both parents. Most of the parents or guardians spoke little or no English and are of a lower socioeconomic status.

The problem in this practicum was that the parents, of the 54 seventh-grade at risk students failed to participate in school-related activities. Whereas the regular seventh-grade classes had approximately 25% overall participation at various schoolwide events, such as open house, it was observed that less than 10% of the parents of the at-risk student population attended school-related functions.

The district's profile of the writer's work location revealed that mathematics achievement fell within the average range. The report indicated that only 42% of the students scored above the national

median. The practitioner observed that the target students' mathematics achievement was below average.

Evidence of the problem was supported by interviews, needs assessment, observations, and surveys. Through the utilization of a survey, (Appendix D) observations and discussions with the students, the writer discovered that the target students' attitudes toward mathematics needed a great deal of improvement. The students tended to think of mathematics as a dull and boring subject which was required but one they did not particularly enjoy. Also, the writer discovered that the target students possessed anxiety about mathematics and believed some of the commonly held mathematical myths such as: a good memory is needed to do mathematics, some people have a mind for mathematics and some do not, and there is no creativity in mathematics. Possessing mathematics anxiety and believing negative myths concerning mathematics will adversely affect students' achievement. As a result of the above, students got frustrated, lost interest, did poorly and required help at home. The results of the survey are indicated in the table that follows:

Table 1

Results of Survey on Target Students
Attitudes and Beliefs Toward Mathematics

Statements	Results				
	0 SA	1 A	2 N	3 SD	4 D
I enjoy doing mathematics.	0	2	1	48	3
I am fearful of mathematics classes.	32	14	4	0	4
I find mathematics dull and boring.	29	20	3	1	1
I think of mathematics as just a required subject that has to be taken.	39	11	2	0	2
I feel that I am unable to do mathematics because it is just too difficult.	41	11	1	0	0
I hate mathematics.	14	20	11	5	4
I find mathematics interesting and motivating.	1	2	4	29	18
I get frustrated easily while doing mathematics and lose interest quickly.	27	19	4	1	3
Mathematicians do problems in their heads, quickly.	35	10	9	0	0
Mathematics is not creative.	27	20	5	1	1
Some people have a mind for mathematics and some do not.	39	10	4	0	1
One needs a good memory to do mathematics.	43	11	0	0	0

The writer conducted a Parental Involvement Survey of the teachers of the at risk seventh grade students (Appendix E) and compiled the results indicating that 10% of the parents attended or requested conferences, 8% assisted with homework, 8% gave assistance with examination preparation, 10% provided organizational skills, 3% provided innovative strategies to create a positive-home learning environment, and 7% participated in school wide activities.

Table 2

Results of Parental Involvement Survey of at risk teachers

Questions	Percentages
*7th grade parents who request or attend conferences	10%
*7th grade parents who assist with daily homework	8%
*7th grade parents who provide assistance exam preparation.	8%
*7th grade parents who provide organizational skills	10%
*7th grade parents who provide innovative strategies in the home-learning environment	3%
*7th grade parents who participate in school wide activities	7%

The 1% PTSA enrollment and school wide surveys further indicated that a problem was evident at the school. After attendance at several PTSA meetings the writer observed that on the average only 30 people attended the meetings. The meetings were attended by staff, students and parents. Only one at risk student and parent were in attendance at one of the meetings. Upon interviewing students, individually, in the writers class, 90% revealed that their parents had other priorities or limitations which prevented their active participation in school-related activities. In addition to documented proof, the writer discovered through parent telephone calls that the majority of the parents did not know how to assist their children in mathematics. Additionally, the writer discovered that many of the target students had learning disability characteristics, however, they failed to meet the criteria for placement in special education programs.

A Parental Participation Survey (Appendix C) consisting of 12 questions was sent to 54 homes of the children in the writer's seventh grade classes. The purpose of the survey was to determine how many parents were interested in attending evening workshops.

Parents were to respond to 12 survey items and return the information to the writer; 41 target parents returned the survey. The results are indicated in Table 3. Based on the results, it was evident that parents were interested in attending evening workshops.

Table 3
Results of Parent
Participation Survey

	Statement	Results Yes	No
1.	I am interested in participating with my child in evening workshops to assist him/her in school.	28	13
2.	I would like to attend scheduled evening workshops to learn how I can assist my child with mathematic skills.	26	15
3.	I would like to attend evening workshops to learn how to use innovative strategies to assist my child with mathematical concepts.	26	15
4.	I would like to participate in evening workshops to help my child strengthen mathematical skills.	28	13
5.	I would like to attend evening workshops to discover and use manipulatives to assist my child in the home-learning environment.	26	15
6.	I am interested in learning ways to assist my child with mathematics homework.	31	10

Table 3 (continued)

Statement	Results Yes	No
7. I am interested in learning ways on how to improve my communications with my child's teacher.	32	9
8. I would like to participate in an evening "make and take home" workshop to discover ways to work with my child in mathematics.	29	12
9. I am interested in attending an evening mathematics laboratory to learn about the new mathematics curriculum and how to assist my child with assignments.	28	13
10. I would like to attend evening workshops on ways to assist my child with organization skills to help him/her prepare for school, home, and daily tasks.	28	13
11. I would like to attend an evening workshop to learn about test-taking tips to assist my child with preparation for standardized testing procedures.	29	13
12. I am interested in attending an evening workshop to find out about available community resources (e.g.,seminars, and workshops) to keep me informed on ways to effectively help my child.	29	12

It was the writer's belief that there were several causes of the problem. Based on personal experiences at school, the writer had noticed that parents of at-risk children fear telephone calls, parent teacher

conferences, and written notices pertaining to their child's academic progress. In at least 70% of the phone calls the writer made, parents took the time to reflect on the negatives in and of their child. Parents discussed the child's negative behaviors at home and in previous school years. In seven out of 20 calls, parents immediately questioned "What is wrong with my child?" or "What did my child do now?". Even though a problem existed, the writer often focused on the positive in hope of bridging the gap between the home and the school.

Parent teacher conferences demonstrated a similar pattern whereby parents were apprehensive or fearful of expressing themselves. This could be attributed to the lack of English proficiency in at least 70% of the parents. Also, the writer observed that at parent conferences 20% of the parents became defensive or hostile due to embarrassment. Many of these same parents lacked control of the parent-child situation and were easily manipulated by their children. Parents often relied on the school to provide the solution to the problem.

Furthermore, parents of at risk students, due to

their socioeconomic backgrounds or living situations, had the necessity of remaining a part of the work force full time. These parents were unable to volunteer time in the classroom, participate in school activities, or give their children the time and assistance necessary to extend the learning process beyond the classroom.

Finally, parents did not know how to help their children with mathematics in the home. A question often asked of the writer is "How can I help my child at home?" or "What can I do to help my child at home?". There were several reasons parents were unable to help. They were unfamiliar with the current mathematics curriculum, the methods used today, or ways to approach the topic. At home, students looked to their parents for help or reinforcement of what they were taught in school. Either they did not understand what they were taught or due to absences found it difficult to make up the work missed.

In the majority of cases, parents did not remember their mathematics. This is a subject they learned when they went to school and unless used frequently the principles will be forgotten.

The methodology, terminology, and delivery of

mathematics instruction has undergone many changes since the students' parents attended school. In many cases, teachers have become facilitators rather than instructor. Students work in groups and discover concepts and do hands-on mathematical activities rather than sit in straight rows and do daily pencil and paper work like their parents did when they were in school.

Some parents found it difficult to explain mathematics inspite of having the knowledge. They could not bring their knowledge down to the child's level or did not possess the patience to explain simple processes.

Another extremely important and significant cause of the problem was the parents' attitude towards mathematics. Many people are actually afraid of mathematics. Whatever the reason for these fears, these fears developed into mathematics anxiety. Often, the anxiety is passed on to the child. Children are sensitive and can sense the fear shown by their parents, and unconsciously develop their own fear of mathematics. Also, parents' attitude toward their children's mathematical abilities played a significant role in a child's attitude and achievement in

mathematics. An attitude survey regarding the target parent's Attitudes Toward Mathematics (Appendix D) was conducted and it was found that the parents' attitudes toward mathematics were comparable to that of their children. Parents were also victims of mathematics anxiety and myths. The results of the survey are indicated in the table below:

Table 4

Results of Survey on Target Parents Attitudes and Beliefs Toward Mathematics

Statement	Results				
	0 SA	1 A	2 N	3 SD	4 D
I enjoy mathematics.	0	2	1	36	2
I am fearful of mathematics.	25	7	5	0	4
I find mathematics dull and boring.	21	12	5	1	2
I think of mathematics as just a required subject that has to be taken.	27	11	1	1	1
I feel that I am unable to do mathematics because it is just too difficult.	31	7	1	0	2
I hate mathematics.	9	15	10	4	3
I find mathematics interesting and motivating.	0	1	5	21	14
I find mathematics frustrating and lose interest quickly.	21	15	2	1	2

Table 4 (continued)

Statement	Results 0 SA	1 A	2 N	3 SD	4 D
Mathematicians do problems in their heads, quickly.	33	4	3	0	1
Mathematics is not creative.	25	9	5	1	1
Some people have a mind for mathematics and some do not.	35	2	1	1	1
One needs a good memory to do mathematics.	32	7	1	0	1

If parents were to be a positive influence on a child's attitude and achievement in mathematics, their attitude and self-confidence must be positive. Parents needed to be taught the new curriculum methods, innovative concepts on how to practice mathematical skills with their child, how to use manipulatives, and ways to extend mathematical skills beyond the classroom. Parents could not help their children unless they felt comfortable with mathematics and were well informed.

The primary goal of this Practicum was to increase parental participation and enhance mathematics performance and attitude of at-risk seventh grade

students and their parents. The writer felt that involving parents in schoolwide events was extremely important in making a difference in student performance amd by changing the target parents' attitudes towards mathematics would help to change the target students' attitudes toward mathematics. The writer also expected parents to develop a resource of instructional strategies to improve the home-learning environment.

The mission statement of the school stated the following:

> It is the mission of the school to develop a child academically, emotionally, socially, and physically in a caring environment that fosters high educational goals and seeks to develop in students a sense of pride and respect for the school, home, and community, along with an understanding of the necessity to strive for lifelong learning in our multicultural/global community.

After reviewing the school's needs assessment and prioritizing those needs, the School Advisory Committee recommended that the staff focus on achievement in the areas of writing, discipline, and home school communications.

The goal of the writer's work site was that all students demonstrate improvement in the following areas:

1) Given schoolwide attention to writing instruction that emphasize focus, organization, development, and convention, student performance in writing will improve, as reflected in the percentage of students scoring three or higher on a school administered pre-test and post-test, from 58% in 1995 to 60% in 1996.
2) Given training and follow-up on effective classroom management, teachers will (1) develop school wide expectations for student behavior, (2) share those expectations with students and parents in a period campaign, (3) recognize exemplary behavior by instituting a "Conduct Honor Roll" and holding quarterly receptions for honor roll students and their parents, and (4) implement effective classroom strategies for dealing with deviant classroom behavior, thus decreasing the number of students referrals, from 40% in 1994-95 to 38% in 1995-96.
3) To increase school and home communications by 5% at school functions by providing activities

that help increase a child's ability to participate appropriately in school.

4) As a result of increased emphasis in mathematics teaching strategies across the curriculum, all students will improve their mathematics computation skills as demonstrated by an increase in the total school's median percentile scores in mathematics computation on the Stanford Achievement Test from 44% in 1995 to 46% in 1995-96.

The strategies the school administration planned to use to achieve these objectives included: staff development in the aspect of pedagogy and the affective domain; a writing enhancement program; active parental participation in schoolwide activities; conflict resolution workshop for students and staff; and school recognition programs. Also, an after school tutorial program along with parental activities and workshops to increase parental, student, and staff involvement in the school community.

In accordance with the above mission statement and goals the writer of this practicum expected to achieve success by projecting and implementing the following

objectives:

1) At the end of 12 weeks, the parents of at-risk seventh grade students will improve participation by 40% as measured by teacher made attendance Sign-in Sheets (Appendix G).

2) At the end of 12 weeks, the parents of at-risk seventh grade students will increase their knowledge pertaining to innovative stategies to use in the home learning environment by 40% as measured by a teacher made Post Evaluation Questionnaire (Appendix I).

3) At the end of 12 weeks, 45% of the parents of at-risk seventh graders, who participate in specialized evening workshops, will demonstrate self-confidence and appreciation for evening workshops based upon the results of a teacher made Post Evaluation Questionnaire (Appendix I).

4) At the end of 12 weeks of specialized workshops, the parents of at-risk seventh graders will increase skills to assist with overall student achievement (homework, classwork, examinations) by 40% as measured by a teacher made Post Evaluation Questionnaire (Appendix I).

5) At the end of 12 weeks, 40% of the target parents will be familiar with the current curriculum as measured by a teacher made Post Evaluation Questionnaire (Appendix I).

6) At the end of 12 weeks, both parents and students will have developed a more positive attitude towards mathematics by 55% as measured by a teacher made attitude survey (Appendix D).

7) At the end of 12 weeks, seventh grade at-risk students will increase mathematics motivation and interest by 40% as measured by a teacher made attitude survey (Appendix D).

8) At the end of 12 weeks of specialized workshops, 40% of the seventh grade at-risk students will develop self confidence in their mathematical abilities as measured by a teacher made attitude survey (Appendix D).

9) At the end of 12 weeks, 40% of the seventh grade at-risk students will become less fearful of mathematics and rid themselves of mathematical myths as measured by a teacher made attitude survey (Appendix D).

10) At the end of 12 weeks, 35% of the seventh

grade at-risk students' performance will be enhanced as measured by teacher observation.

The writer's goal, through implementation of the of the above stated objectives, was to enhance mathematics achievement and increase parental involvement in the school community by developing and implementing a program to enable parents to help their children at home. Also, the writer wanted to be instrumental in reversing negative attitudes towards mathematics and in making parents and students realize that mathematics can be fun. The writer wanted the students and parents to be enthusiastic about mathematics and realize that mathematics is not as difficult a subject as it is thought to be.

CHAPTER II

Research and Solution Strategy

Schools today are faced with many diverse tasks. Teachers and administrators have assumed tasks that, at one time, were the responsibilities of families. Teachers are no longer just responsible for instruction of the basic curriculum. Playing mom and dad to many students is a role teachers have assumed. The basic structure of the American family, schools, and the role of parents as providers have changed significantly.

Through extensive research, the practitioner found that the lack of and need for parental involvement in general, as well as in mathematics, existed across the nation. According to Johnston and Slotnik, as stated by Pyszkowski (1989), there has been an increase in pressure, across the nation, for more significant parental involvement in schools within the past decade.

The American people were first alerted to the importance of parents being a child's first teacher in 1983 by the landmark report "A Nation at Risk".

Although the nation was alerted to the vital role families can play in their children's education the issue did not receive the attention it merited (Riley, 1994).

The writer concluded that the need and importance of parental/family involvement, across the nation, was evident and further emphasized by a national initiative. A publication by the United States Department of Education, Strong Families Strong Schools, authorized by Secretary of Education Riley (1994), disclosed that efforts by families to take a more active role in their children's education was encouraged and supported by the national initiative. Recently, many states, such as California, South Carolina, Wisconsin, Utah and Idaho have passed laws concerning family involvement. These laws were passed to encourage schools and families to work together. Some of the laws that have been created include parent participation programs, parent education components, and the inclusion of parents in the development of school policies (Riley).

Federal programs and policies are also supportive

of positive parent-school relationships. On July 11, 1994, President Bill Clinton issued directives to support business-school-home partnerships. Pieces of education legislation, that emphasized strengthening parent-school-community partnerships and that promoted parent involvement in learning, were sent to Congress by President Clinton in 1993-94 and this legislation was passed. Congress also added a parent component to Goals 2000: Educate America Act. This component stated that schools will promote increased parent involvement because of the fact that parental involvement is a critical aspect of successful schools (Riley, 1994).

Riley (1994), reported that federal policies, such as President Clinton's work arrangement policy, The National Education Goals, and the federal education program, showed and continue to show support for increasing family involvement in education. National education organizations which represent school board, superintendents, principals, teachers, students, parents and others support the need for family involvement in learning by being supportive of the Family Involvement Partnership for Learning (U.S. Dept. of Education, 1995).

Zaslavsky (1994) reported that many organizations that promote mathematics education have established the need to increase parental involvement by organizing intervention programs which take place outside the regular school setting. Zaslavsky also stated that some mathematics projects have established this need by adding or including parental components to their mathematics curriculum.

According to Riley (1994), the United States Department of Education is a key supporter of the national initiative for family involvement. Kreinberg, director of Equals, a mathematics and science program, the Lawrence Hall of Science, University of California at Berkeley (1989) reported that teachers that has attended the equals program stated the lack of family involvement and requested assistance in getting families involved in mathematics education. In 1981, a grant from the Fund for the Improvement of Post Secondary Education, United States Department of Education enabled Lawrence Hall of Science to organize and establish a program called Family Math, in response to teachers' requests.

A study by Pallie, Natriello and McDill (1989)

identified that nearly 40 percent of the American youth were at risk. White-Hood (1994) declared that today all America's children are at risk due to the fact that middle class parents are attending to their careers and spending less time at home. White-Hood pinpointed that as parents are spending less time at home their children are cutting classes, not doing assignments and failing academically. Economic hardships, increased rate of divorce and teenage pregnancy have resulted in a variety of living arrangements and teens are disconnecting themselves from school.

Middle school students are considered at risk if they are failing to complete their education without the necessary skills. Characteristics of at risk students include poor academic performance, behavior problems, low self-esteem, chronological age, poor attendance, grade retention, lower socioeconomic status, poor self concept, low aspirations, non-traditional family life, inadequate goals, lack of future orientation and families with low expectations (Ruff, 1993; Slavin & Madden, 1989; Vatter, 1992; & Phleger & Rose, 1988). The possession of low self esteem, by at risk students, is a major contributing

factor to their negative attitudes to school and mathematics. Self esteem determines how children perceive, react to, and act in the world (Vatter, Ruff).

Ruff (1993) revealed that many at risk students enter middle school at risk. They lack the basic skills to learn, and success in school is not a family priority due to the low educational levels of many of their parents (Ruff, & Vatter, 1992). According to Matz (1994) parents' attitudes towards school affects their children's attitudes.

White-Hood (1994) stated that young people must absorb strength and hope from their families in order to be successful in life and school. White-Hood suggested that schools encourage involvement by emphasizing the importance of the family, creating family involvement programs, raising standards, and creating family partnerships.

A study by Bergman (1989) reviewed the attitudes of two hundred twenty at risk students. Student responses to the study revealed that the students needed specific help and wanted warm relationships with their teachers and peers.

Vatter (1993) and Ruff (1992) suggested that schools identify their students' needs, provide additional help with basic skills, use hands-on activities, and provide a warm nurturing environment to enable their students to flourish in the middle school environment. Bobango (1994) expressed the idea that school should be a place where all family members work together and that schools need to provide opportunities for this to happen.

According to Lewis (1992), a national education writer in Washington D. C., parental involvement decreases as children progress in grade-level. As students progress through middle and secondary schools family involvement declines (Monson & Meyers, 1992). The Carnegie Council (1989) disclosed that although benefits of parental involvement for student achievement and attitude toward school are clearly documented, all types of parental involvement declines progressively through the elementary years. A study conducted by the Johns Hopkins Center for Research on Elementary and Middle Schools discovered that only 39% of the parents visited school after their children enter middle school (Epstein & MacIver, 1990).

Research findings reported in Strong Families Strong Schools (1994) revealed that by the time children are in the seventh grade, positive parental contacts with the school dropped to 36%. Research showed that by the time children enter middle school parental involvement changes drastically.

As children grow older their parents' role as first teacher declines. Epstein and Connor (1992) suggested that teachers provide guidance for parents in assisting, monitoring and interacting with their children at home on learning activities that are related to the work at school. Educators should provide opportunities and activities that will encourage and foster positive school related interactions and communications at home.

Due to high divorce rates and single-parent households, the family structure has changed. Single parents hold two jobs and sacrifice family time. These factors have had a major impact on the lives of children (Hilliard, 1992; Tracy, 1995; Hofferth, 1987). Other factors that have contributed to the lack of parental involvement include parents own unsuccessful experiences at school, limited educational level of

parents (Johnston, 1994), the fact that parents cannot usually afford to take time off from work even in financially stable homes (Hilliard), and the lack of awareness of the role of parents in the middle school (Tracy). Thompson, Virginia, & Cittadino (1991) and Roach, Bell, & Salmeri (1989-1990) disclosed that barriers to parental involvement in education programs include alienation, inflexible scheduling and language barriers.

Research findings in a U.S. Department of Education publication, Strong Families Strong Schools (1994), suggested that although the importance has been placed on family involvement it is limited due to aspects of modern life such as:

1. Limited time--The majority of parents are employed and two-thirds said they did not have time for their children.
2. Cultural Barriers--Cultural and language barriers made it difficult for some parents to communicate with the school. Also, some families had a different view of schools and their own role in education.
3. Lack of a supportive environment

4. Many parents did not know how to help their children, others were not ready to be parents themselves, some have had detrimental school experiences themselves which made them reluctant to return to school even as parents, and still others were not aware of their own importance in the education of their children.
5. Lack of guidance to help parents assist more with their children's learning.

A survey, of a group of 230 teachers and parents, conducted by Renihan and Renihan (1995) supported research findings in Strong Families Strong Schools by revealing that some of the most serious barriers to effective parental involvement are lack of time and opportunities for involvement, poor, infrequent and communication between home and school, fear of conflict and intimidation, personal parental circumstances, unauthentic involvement, and lack of informative feedback on student performance.

Parents did not feel capable of helping middle level students with their school work but felt that they could assist their children at home if guidance

was provided by teachers (Renihan & Renihan, 1995). According to Ashlock (1990), parents were anxious to help their children learn mathematics but many were unaware how to. Walsh (1988) disclosed that many families wanted to help their children with mathematics but felt that the mathematics that is taught today was different from the mathematics family members learned in school and this made it difficult to help because family members did not know what to do. Also, families wanted to know about the new developments in mathematics. Ashlock suggested that teachers needed to provide activities and suggest ways that parents could help. Bobango and Milgram (1993) revealed that even in households where there is open and honest communication, parents were reluctant to get overly involved with the subject of mathematics. Parents were extremely reluctant to get involved in middle grade mathematics even if parents were involved in their children's other school work. This reluctancy existed due to the fact that the mathematics was either too hard, too new, or resurrected old anxieties and fears from parents own school experiences. Bobango and Milgram indicated that the best of relationships do not

exist between parents, young adolescents and mathematics.

Although families felt incapable of helping their middle level students, according to Walberg, as stated by Riley (1994), whatever families did to enhance their children's education is more important to student success than family income or education. Keith and Keith (1993) re-emphasized that what families did to help their children in school was more important than the family's status. They stated that regardless of the age of the child or grade level this was true.

Research findings revealed that family involvement improved achievement regardless of the educational level of the parents (Schurr, 1992). Family focused strategies enriched the educational environment and improved educational outcomes (White-Hood, 1994). When families were involved efforts to improve educational outcomes were more effective, students did better and stayed in school longer. When parents assumed the role of teacher, supporter, advocate and decision maker students did best (Henderson & Berla, 1994). Greater parental involvement in a child's learning was an essential link to achieving a high-quality education

(Riley, 1994). Tracy (1995) stated that family involvement was critical to student achievement, and Allen and Freitag (1988) reported that the key to student success, in school, was parental involvement. According to Walberg, as stated by Roach, Bell & Salmeri (1989-1990), student achievement improved when parents were involved. According to Garvin, as stated by Hilliard (1992), a factor crucial to school effectiveness was family involvement.

A strong partnership between educators and students' families can provide success in school for children. Effective schools have effective home-school relationships (Johnston, 1994). Positive involvement of families in a child's education did foster higher grades and test scores, better attendance, demonstration of more positive attitudes and behavior, and a greater enrollment in higher education (Henderson & Berla, 1994). Keith and Keith (1993) reported that in a study of eighth grade students and parents it was shown that parental involvement in student's academic lives had a major favorable impact on student's achievement in all academic areas. A significant factor in student achievement was support between the

home and school. Parental support was a central source of stability during the middle grade years and was desired by children (Renihan & Renihan, 1995).

When parents were involved in their children's education it was also beneficial for the parents. They developed an improved sense of self worth and developed an appreciation for the role parents play in a child's education. In general, parents understood more about learning activities, teaching and school (Davies, 1988; Henderson & Berla, 1994).

According to Roach, Bell & Salmeri (1989-1990), composite studies by Melvin in 1982 indicated that parental involvement in children's education increased academic achievement, gave parents better insights to learning, reinforced the importance of education, and allowed parents to see how schools operated. When parents were involved and worked with children in mathematics it assisted teachers in providing individualized mathematics instruction (Goldstein & Campbell, 1991).

A child's mathematics education begins in the home where opportunities for mathematics games and activities are provided. In the home parents and

children can be together in a relaxed atmosphere which is desirable and it offers an opportunity to share mathematics without too much effort (Walsh, 1988).

When parents help children with mathematics, the evidence indicates that more is learned about the child and a more positive attitude toward the subject is reinforced because a value is placed on mathematics. Also, talking about school and school work comes easier; children are encouraged to ask more questions and become mathematically aware, and get a stronger foundation in the subject. While assisting children at home, parents also experience the pleasure of learning. They help their children develop mathematical thinking, learn along with the child, share interesting and pleasurable experiences, and enjoy doing mathematics. To make mathematics enjoyable while helping their children, parents should encourage children to do, enjoy, and understand mathematics, and parents should display this encouragement and enjoyment(Walsh, 1988).

Fears of mathematics are often passed on at home from parents and older siblings. Family Math is a program that was designed to overcome the fear of mathematics and assist with comprehending mathematical

concepts. Family Math classes bring parents and their children together to enjoy mathematics. In a relaxed atmosphere children and parents are engaged in activities that make sense of mathematical concepts. Toothpicks, buttons, and other inexpensive hands-on materials are used to introduce mathematical topics. Family Math not only created a link between home and school, but also involved parents in children's learning. It offers parents the opportunity to become active participants in a their children's education in a non-threatening enjoyable way. When mathematics is done with enjoyable activities, in a relaxed setting, new kinds of relationships and understandings are created between everyone involved (Kreinberg, 1989). In reports from parents, Kreinberg and Thompson (1986) learned that the attitudes towards mathematics in both the parents and children changed from dislike to cautious acceptance to enjoyment over a period of just four weeks in a Family Math course.

After the Family Math course, parents revealed that one overcame the fears of mathematics rather than pass these fears on to their children. Communication and cooperation between parents and children and

between parents and school staff members was stimulated. The Family Math program contributes to improved home-school relationships by providing opportunities for teachers to meet and work with parents. With Family Math, it was learned, even, the most math anxious parents will become eagerly involved if is made easy and comfortable to help children with mathematics (Kreinberg, 1989). Family Math provides a neutral ground for communities and schools to come together while awakening children's interest in mathematics and helps parents discover their own mathematical capabilities and how to learn to work with children as fellow learners (Shields & David, 1988).

Romberg (1991), as Director of National Center for Research in Mathematical Sciences Education, disclosed that parents have a vital role in children's acquisition of mathematical skills. Parents must be involved in school and check to see what and how mathematics is being taught. Parents' build their children's interest in language by talking together and build an interest in reading by reading together. In the same way, parents can build a child's interest in mathematics by doing mathematics together. In order to

be successful, children have to have good instruction and encouragement. Parents need to let children know that they are interested.

Parents/families need to let children know that being successful in mathematics is possible. Parents' attitudes and support are critical to children's success, and a parent can build a child's mathematics confidence without being an expert themselves. Parents need to let children know that they are aware that mathematics is not always easy. Children need to know it is natural for some people to have trouble finding solutions to mathematical problems, but parents need to encourage children to be persistent and to think of mathematics problems as puzzles or games (Romberg, 1991).

Studies have shown that students' achievement and attitudes toward school are positively effected by parental-involvement programs. The choice of parents as instructional partners is supported by research (Goldstein & Campbell, 1991). Parental involvement in mathematics can focus a child's attention and extend learning (Flexer & Topping, 1988).

Zaslavsky (1994) identified the fact that parents

are unable to help their children with mathematics because parents have either developed a fear or avoidance of the subject. A vital part of a child's education is family involvement. Parents are a crucial influence on children's confidence in their ability to learn and developing favorable attitudes. Zaslavsky reported that a survey of thousands of students in Maryland revealed that the one factor, above all, that motivated students to pursue mathematics in high school was a child's parents.

The best and largest school system is the home. Parents aren't burdened with a large number of students or regulations from administration. Home is the ideal place for children to learn concepts, attitudes and how to seek and verify knowledge (Zaslavsky, 1994). Riley (1994) declared that one of the best long-term investments a family can make is involvement of the family in learning.

Researchers, for years, have been interested in the negative effects mathematics anxiety has on students' achievement (Wigfield & Meece, 1988). A limited number of studies have explored student attitudes and later mathematics achievement (Randhawa,

Beamer, & Lundberg, 1993). According to Suydam, as reported by Boling (1991), as students' grade level increased their identification of mathematics as their favorite subject decreased.

Reyes and Stanic (1988) suggested that mathematics achievement and student attitude are related. Attitudes that relate to achievement are expectations of success, comparisons of ones own ability to the ability of other students, and confidence in ones own academic ability. Attitudes towards mathematics are just as important as mathematics achievement, as shown by the National Council of Teachers of Mathematics (NCTM) in the Curriculum and Evaluation Standards for School Mathematics 1989 in which two of the five goals focus on student attitudes. Attitudes are affected by direct experience and interaction with relevant others. Information in the form of beliefs, attitudes, and behaviors are provided for persons through the interaction with others and are a guide for the development of their own attitudes. Parents are the most influential, in attitude formation, for a child (Tocci & Engelhard, 1991).

Tocci & Engelhard (1991) investigated student

achievement and attitudes in relationship to parental support and reported that parental behaviors are related to student achievement and attitude. Tocci & Engelhard found that the home environment had a major impact on adolescents because of perception of parents' reactions to and ability to do mathematics, and encouragement to study the subject influenced students' attitudes toward mathematics.

Dodd (1992) revealed that mathematics phobia was created not inherited. Teachers need to realize the connection between students' academic performance and their personal feelings and the subject matter. Beliefs govern actions, therefore, the lack of confidence in oneself is perhaps the greatest obstacle to learning. If students feel incapable of doing something, the students may be unable to perform a task of which the students are truly capable. Teachers can help students build self-confidence by finding ways for students to experience success. Anxious students need patient, encouraging teachers. Lack of confidence, anxiety, and any negative feelings students might have due to turmoil in the child's personal life adversely affects motivation.

A study by Spangler (1992), in which questions regarding mathematics beliefs were asked to mathematics students, revealed that mathematics was thought to be arithmetic, memorization, and formulas. Students believed that mathematics problems should be done quickly, that someone who is good in mathematics fits a stereotype nerd image, and had a limited view of career opportunities involving mathematics. Students perceive mathematics as a discipline without any creativity.

Frank (1988) reported that some commonly held mathematics beliefs are:

1. Mathematics is computation.
2. Mathematics problems should be solved in less than five minutes or else something is wrong with the problem or the person.
3. The goal of mathematics is to obtain the correct answer.

Zaslavsky (1994) revealed that many conditions in our society bring about fear and avoidance of mathematics but it is possible to change negative feelings about mathematics. Mathematics is thought of as a logical impersonal branch of knowledge. It is recalled by many as a punishment. Negative feelings

about mathematics can take the form of fear or avoidance, and lack of self confidence in ones mathematics ability is the root of the problem. Zaslavsky reported that some common misconceptions of mathematics are :

1. Mathematics is mainly arithmetic.
2. Mathematics involves a lot of memorization.
3. Mathematics must be done fast.
4. One must work on mathematics alone.
5. Mathematics is hard.

According to Spangler (1992), educators agree that these beliefs and other negative beliefs are not conducive to mathematics teaching and learning.

Zaslavsky (1994) stated that it is possible to change negative feelings and misconceptions of mathematics by using enjoyable mathematics activities and sharing experiences with others in a small group.

There exists a cyclic relationship between beliefs and learning. Learning experiences contribute to beliefs about what it means to learn mathematics, and a student's beliefs about mathematics will influence how one approaches mathematics. This cycle of influence

can be used to reinforce positive attitudes by providing students with a rich collection of mathematical experiences. Also, students must be made aware of the beliefs that are held about mathematics (Spangler, 1992).

Beliefs that students possess have a powerful influence on the evaluation of ones own ability, and on ones motivation and interest in mathematical tasks (NCTM, 1989). The NCTM Standards pinpointed that students awareness of ones own beliefs towards mathematics is just as important as a teachers awareness of students beliefs. It suggested that teachers assess students' beliefs towards mathematics as part of the overall assessment process. The NCTM Standards recommended that teachers use informal methods such as discussions and observations to assess students' beliefs about mathematics. Observations should be a primary method because evidence of students' disposition can be seen in every aspect of a students' mathematical activities.

Frank (1990) suggested that a way to change beliefs might be to make students aware of the mathematical beliefs possessed by oneself and by

others. According to Frank (1990) a mathematical myth is a belief about mathematics that is harmful to the person holding the myth because belief in mathematical myths can create false impressions about mathematics. These impressions can lead to mathematics anxiety and avoidance. Belief in myths can interfere with a student's understanding of mathematics, and with a student's confidence in the ability to do mathematics. Frank disclosed that a beneficial method to address mathematical myths was to administer a survey followed by a discussion to help develop student awareness about myths. Frank proclaimed that teachers' beliefs about mathematics teaching have an impact on students, and a teacher's beliefs will influence how they teach mathematics.

Research revealed that students in the middle grades lose interest in mathematics due to repetition of fifth and sixth grade concepts, lack of concrete learning orientation, peer influence, and rapid physical growth. Boling (1991) suggested presenting material in new ways. Teachers should use concrete manipulative materials, incorporate team or group activities into the mathematics curriculum, and

activities with action can meet the student's need to move around. Frank (1990) reported that a study by Whealter (1984) revealed that mathematics beliefs can be changed by changing the mathematics curriculum.

To reverse negative mathematical attitudes and beliefs and build self confidence, Dodd (1992) suggested using games and group activities. Through these types of activities children realize that it is possible to learn new concepts and self-confidence increases. An increased self-confidence will lead to a higher level of competence. Teachers who expand the teaching strategies which are used and do not limit the strategies to the traditional methods will see an increase in the number of mathematics fans. Every teacher should help students come to believe that all students can learn. Teachers should use a questionnaire or survey to discover a child's feelings and beliefs about mathematics (Dodd).

If a person possesses the belief that one is incapable in mathematics, the expectation is that one will look stupid and feel humiliated when performing mathematics and this causes the person to feel apprehension and anxiety about being in a situation

that requires performing mathematics. People sometimes act on the basis of what is believed to be true. Ones behavior is a reflection of ones beliefs and both are consistent and become self-fulfilling (Mitchell & Collins, 1991).

Mitchell and Collins (1991) reported that negative self-talk and images and beliefs lead to anxiety which causes physical symptoms, the inability to think and avoidance which leads to the inability to perform which leads back to anxieties and verifies a student's beliefs and self-talk. Common beliefs about mathematics are known as myths which have little or no validity. To reverse mathematical anxiety and dispel of myths Mitchell and Collins recommended cognitive restructuring. Anxiety is not caused by mathematics. It is caused by the meaning one attaches to mathematics. One has tq be made aware of mathematical myths and negative self-talk. The negative self-talk and self images have to be brought to a conscious level in order for one to reverse these feelings. A person needs to talk about these feelings with others who are experiencing the same feelings and discover what caused these feelings and understand that these negative

feelings are not necessarily true. Positive self-talk can be used to build a new self image.

Buerk (1985) recommended that changing the way mathematics is taught can help change student beliefs. When students work in small groups students have an opportunity is provided to discuss different ways to solve a problem. Students no longer look at mathematics as a set of rules to be memorized. Boling (1991) stated that group activities increased student interest and attention in mathematics.

In order for a partnership between the school and home to work there must be mutual trust and respect and an ongoing exchange of information. Schools should make every effort to communicate with parents in ways that parents can understand. Information should be provided in a clear and concise form. To reduce distrust and cultural barriers, informal lessons and resource centers should be offered to families. Parents' needs should be evaluated through surveys. Expand opportunities for school contact by providing evening and weekend meetings and conferences. Use technology to link parents to the classroom, make going to see the teacher easier, establish a home-school

coordinator, give parents a voice in school decisions, encourage family learning through interactive homework assignments involving family members, and offer Family Math and Family Science programs (Riley, 1994).

Riley (1994) suggested that families can connect with their children by establishing a daily family routine, scheduling homework time, communicating positive values and traits such as responsibility, respect and hard work, and offering praise and encouragement for achievement. Riley went on to report that in order to make a difference in schools, families need to keep in touch with school and to ask for high learning standards and more family involvement activities. Riley suggested that families and schools team up to improve learning by using evening and weekend hours for activities and meeting. It is believed that this would broaden opportunities for contact. Mistrust and cultural barriers could be reduced through workshops and parent centers where family learning could be encouraged through homework assignments,

Suggestions, in a U.S. Department of Education document authorized by Secretary of Education Riley

(1994), for improving the learning environment at home included establishing a family daily routine, scheduling daily homework time, expressing high expectations for children, offering praise and encouragement, keeping in touch with school, asking more from schools and getting involved and using school resources such as enrichment programs.

If schools encouraged and supported family involvement there would be a definite increase in family support because all parents want their children to succeed. Schools are the key to strengthening school and family connections. In order to increase the involvement of families in children's education, schools must support family involvement by fostering a partnership (Riley, 1994).

According to Bempechat (1992), families must feel wanted in schools and be recognized for the potential and strengths that families possess. Parental support and student motivation will increase if schools teach parents how to improve learning at home and help parents feel welcomed in school.

Hunter (1994) reported that a parental involvement program in West Virginia, in 1992, called Red Apple

Corps successfully increased parent involvement, student attendance, promotion rate, total basic skills, and positve attitudes by providing programs for parents, tutoring programs, a school newspaper and awards. Allen & Freitag (1988) suggested that schools propose workshops to encourage students and parents to learn and work together.

Riley (1994) suggested that schools survey parents to evaluate their needs, concerns, and opinions, and also hold evening and weekend meetings to accommodate working families. Riley also suggested that recreational and learning activities for parents should be held in the evening to accommodate work schedules.

To reduce barriers between home and school, Comer (1988) created the School Development Program. The program made the assumption that middle-class staff members in schools and many poor families are distrustful of each other. This program was successful in reducing barriers by instructing parents how to help their children learn and by providing workshops, dinners, and events at school so that parents and staff could interact. Riley (1994) proclaimed that programs such as Comer's can improve student achievement and

behavior in school, and reduce the barriers between the school and the home. This program, according Riley, is operated in 375 school districts in nineteen states across the nation.

Hilliard (1992) suggested that due to the drop in parental involvement in the middle school years the school has to encourage family involvement. Middle schools can encourage involvement by offering parent roles in school governance, offering opportunities to support the learning process at school and home, informing parents, initiating workshops or parent education classes, and by teaching parents how to tutor their children in specific subjects.

Today, more than ever, educators need the help of families. Educators must support this involvement by letting families know and feel welcomed and desired (Hunter, 1994). Educators have responded to educational trends throughout history and promoting parental involvement is the current trend. Most parents would like to help their children succeed and parental involvement does effect student learning. Schools must establish a program that invites parent participation. Educators should ask parents to

volunteer, and if commitments do not allow for volunteer time ask if parents would like information on what can be done at home to help their children. Teachers and parents can work together and develop information packets on how to help students succeed (Bobango, 1994). Matz (1994) proclaimed that if educators believe family involvement is important, educators will discover that families, as well as students, need to be educated.

In order to bridge the gap between home and middle school, meaningful roles for involvement must be established. Schools must be sensitive to cultural backgrounds and schedules of family members and availability. School must be a place where families want to come (Tracy, 1995). Many times parents are reluctant to get involved due to negative personal experiences with school, language barriers, and a limited educational background. School leaders have to create an inviting, encouraging environment for all types of families (Hilliard, 1992).

Lewis (1992) revealed that parental involvement takes time and suggested that parental involvement activities should involve the students or improve

parents' education. Learning activities for the home should be related to children's classwork. According to Schurr (1992) 16 proven strategies to increase family involvement include, mutual goal setting, assessment of school policies, resource centers, parent handbooks and tip sheets, weekend or evening information fairs, workshops or family night, home visits and a schoolwide homework policy.

Parents of middle level students can be involved through supervision of homework activities, reinforcing academic expectations, becoming knowledgeable about the school and the curriculum, and family studying activities. Schools must be opened up to families and the traditional barriers must be broken. Schools can be made accessible by offering resource rooms, encouraging parents to attend inservices, formally recognizing parents, and being aware of the constraints of time and schedules on families (Renihan & Renihan, 1995). Family involvement should be encouraged by creating partnerships which emphasize the importance of the family. Family development programs can be created which focus on and up date the mission of the school's guidance department and foster respect for adolescents

and the families of adolescents (White-Hood, 1994).

Epstein & Dauber (1989) reported that workshops can provide parents with the knowledge and skills that parents need to work with their children at each grade level. Parent-student workshops provide parents with specific tools and confidence to support the efforts at school (Allen & Freitag, 1988). According to Matz (1994), when arriving at workshops parents should be greeted warmly and provided with learning packets, refreshments, handouts, and an evaluation sheet. Upon completion of the workshop participants should be given a certificate of accomplishment. Parents should be given the opportunity to evaluate workshops and make comments on the value of the workshop. A certificate from the presenter is a token of appreciation for the family's attendance.

An excellent activity to get parents into school is Family Night. Open houses and Family Night are alternatives for promoting parent-student-school relationships (Torney, 1990). Bobango (1994) suggested that instead of a general Family Night, to promote involvement, discussions and activities can be conducted on a specific subject such as mathematics.

Mathematics activities are provided that enable students and parents to work together. When a specific subject Family Night is provided it gives children and parents the opportunity to do something positive together, allows time for teachers to inform parents about the curriculum and instructional approaches, and provides parents with information and suggestions for helping children succeed in school.

As a way to encourage family learning and involvement Family Math and Family Science programs are used. In both these programs, families and their children attend workshops consisting of stimulating joint activities to learn and use at home. Studies showed that families engaged in more learning activities at home after participating in these workshops, and that science and mathematics classes were enjoyed more by student participants (Fruchter, Galleta, & White, 1992).

The basic philosophy of Family Math is that families who do mathematics together will get the same results as families who read together; mathematics skill will increase and the enjoyment of mathematics will grow. Family Math sessions are taught by an

enthusiastic classroom teacher. The atmosphere of the session should be relaxed, informal and friendly. Family Math is not drill and practice. It consists of active involvement in mathematics. The spirit of Family Math is consistent with the NCTM Curriculum and Evaluation Standards for school mathematics 1989 (Bobango & Milgram, 1993).

After interviewing nine teachers who had been teaching Family Math for several years, Devaney (1986) reported that Family Math was perceived as an effective medium for enriching parent and children communication. This program can assist in a school's efforts to involve families in the schooling of children, especially single parents, low income and non-English speaking parents (Devaney).

In a follow up survey of parents who participated in the Family Math courses, during the first year of the program, Kreinberg & Thompson (1986) reported that over 90% of the parents who attended regularly played mathematics games with their children, 75% indicated an increased ability to help their children with mathematics after the course, and 80% discussed with teachers their children's mathematics progress.

Communication in mathematics is a standard common to all grade levels and helps people become actively involved in doing mathematics. Family Math sessions provide an opportunity for students to do mathematics activities together in a different way, and parents can talk with other adults about children and mathematics. Providing Family Math sessions will indicate that the school is recognizing a need and providing a means to meet it. The sessions will improve relations between home and school because students, parents, and teachers cooperate and communicate at the sessions (Bobango & Milgram, 1993).

Bobango & Milgram (1993) indicated that Family Math activities can be taken from the Family Math book or they can be original. The curriculum is not rigid and should meet the needs of the families involved. The only requirement, as stated by Bobango & Milgram, is that the activities provide an opportunity for parents and children to work together in an informal, relaxed, fun environment, and that the activities can be repeated in the home. An important outcome of Family Math is practical application of mathematics in the home.

Bobango & Milgram (1993) suggested that Family Math courses be offered by grade level and that parents be informed through a basic information and interest survey where parental input can be solicited. Once results are in and tallied, a program can be established. Personal contact was also suggested. To maintain high attendance at the sessions, it was recommended that written or oral reminders, sent home through the students, or personal telephone calls be provided. To encourage attendance door prizes, dinners, refreshments and other incentives can be used.

Family Math sessions give parents and children time to talk about mathematics. The sessions build self confidence for both parents and children and help children and families realize you do not have to be a genius to develop mathematics understanding (Bobango & Milgram, 1993). The sessions provide an increased understanding of mathematics, good public relations between the school and the community, increased communication between school, parent, children, and teacher around mathematics.

Families are provided with activities to help children with mathematics at home. The encouragement

of positive attitudes towards mathematics among parents and children is fostered. Also, validation of parent roles as a mathematics educator, and the creation of an opportunity for all family members to enjoy doing mathematics together is accomplished (Bobango & Milgram, 1993; & Thompson & Cittadino, 1991). All participants should leave with a positive attitude toward mathematics and with a fulfillment that activities had been together, as a family. Participants, parents, and children should be allowed to evaluate the program but the evaluation need not be difficult or complicated. A questionnaire and/or interviews should be conducted to reveal the extent to which the participants benefitted from the program (Bobango & Milgram,).

Thompson & Cittadino (1991) stated that families are provided an opportunity to learn mathematics together through Family Math programs. In many cases, the program has provided a first opportunity for parents to do mathematics with their children. In Family Math the class leader is considered a facilitator and learning comes from doing. Parents explore and learn mathematics topics that may be new to

them and the family develops a broader picture of what mathematics is. Families often develop pleasant activities to help children with reading and often resort to unpleasant strategies for mathematics. Family Math provides pleasant strategies, a supportive non-threatening environment in which children and parents feel comfortable doing mathematics. Even mathematics anxious parents feel comfortable and are provided strategies to use at home (Thompson & Cittadino).

The U.S. Department of Education in a newsletter (1995) stated that Family Math programs involve adults positively in their children's mathematics education by involving parents and children in evening or weekend mathematics activities in the form of games or puzzles. At the sessions, family members gain confidence in mathematics as well as have fun.

According to the U.S. Department of Education, in a pamphlet distributed by the National Council of Teachers of Mathematics (1994), children love games and puzzles and that is why it is helpful to connect games and puzzles that children play at home with the mathematics taught at school. McBride & Lamb (1991)

indicated how the use of games, to reinforce mathematics lessons, reversed students' negative feelings towards mathematics. They involved students in creating games to fit mathematical concepts by adapting commercial board and card games. While adapting the games, students' understanding of mathematics developed. Further, McBride & Lamb (1991) pinpointed that games are highly motivating and effective. Games encourage peer tutoring, reinforce problem solving skills, drill specific mathematics skills and increase teacher effectiveness.

Games that can be related to mathematics concepts help teachers, families, and students connect mathematical concepts to a positive, real-life environment, promote the home-school partnership, and reduce the traditional home-school separation. Games also maximize students' perception of the value of mathematics, the ability to communicate and reason mathematically, and self confidence in their mathematical ability. Commercial games which are mathematically related are recommended as a curriculum choice for middle school students (Leonard & Tracy, 1993). Family members are not aware of the high

mathematical content and value of many common games, therefore, Leonard & Tracy recommended inviting parents to the school to a parent-teacher meeting to inform parents of the mathematical value of games and instruct them on how to apply the games to mathematical concepts.

Games are one of the best ways to involve children in mathematics (Zaslavsky, 1994). Games will accomplish the goals of life-long learners and people that are mathematically literate by not boring students with routinization. Games should be incorporated in schools and families for motivational and educational reasons (Leonard & Tracy, 1993). Through games parents can practice school skills painlessly. Store bought games strengthen mathematics skills, and when families play games with their children an enthusiasm for learning is displayed that could be contagious (Fox, 1988). According to Kennedy (1986) children can apply mathematical concepts to the real world through the use of games that include manipulatives.

Tooke, Hyatt, Leigh, Snyder, & Borda (1992) reported that it was discovered by mathematics educators around the world that mathematics is better

learned, and should be taught by students experiencing it through manipulatives. The use of manipulatives in the middle grades is just as beneficial to middle school students as it is to elementary school students. The NCTM (1989) found manipulative instruction appropriate in all grade levels and included it in the NCTM recommendations for teaching mathematics. Weiss (1988) disclosed that evidence from research says that there is a greater probability of enhancing and increasing mathematics achievement in every grade level with lessons using manipulative materials.

Lund (1994) recommended that playing cards be used as a mathematics manipulative because they are highly motivating, inexpensive and readily available, helpful as an aid to reinforce concepts, a powerful springboard to new topics, and effective as a tool to provide skill maintenance. Playing cards are flexible because they can be used at numerous grade levels and in many settings are a familiar, tactile, visual, yet a mysterious and magical way to provide variety. Playing cards can be used individually, one on one, small groups or for the whole class.

A family mathematics awareness pamphlet,

distributed by the NCTM (1995), suggested using energy bills to reinforce mathematics skills. Through energy bills children can construct graphs, make comparisons, and discover patterns while reinforcing basic computation skills.

Flexer & Topping (1988) pinpointed that working on mathematics should be a stressless experience and as relaxed and enjoyable as reading stories. Teachers must give parents insights on how mathematics is best taught and learned, and what parents can do at home to help their children. This information can be provided for parents through newsletters, inviting parents to the school for meetings, or sending home instructional materials. A meeting can also be held so that parents can make mathematics materials to use at home.

According to the NCTM (1994) the Office of Educational Research and Improvement believes that the most important thing, concerning mathematics, that parents can do is to reinforce mathematics lessons the child receives at school. Strategies parents can use to do this are using objects that a child can touch, handle, and move, and build a child's confidence by praising for correct answers. Parents should never

tell their children that some people are not good in mathematics and never reveal that they themselves are not good in mathematics.

SOLUTION STRATEGY

Based on the research completed, the practitioner concluded that a definite need, exists nationally, for parental involvement; particularly in mathematics. The writer also concluded that parents' and teachers' attitudes towards mathematics has a major role in children's mathematics attitude and achievement.

The writer agreed with all the researched suggestions and solutions. All of them have merit and attempt to solve the problem. To attempt to solve the problems that existed in the writers's classes, the writer chose to develop and implement a parental awareness program and provide evening workshops for parents and students as outlined by Riley (1994), Zaslavsky (1994), White-Hood (1994), Bobango (1994), Epstein & Dauber (1989), and Allen & Freitag (1988), as well as implementing different motivational strategies in the classroom as suggested by Boling (1991). Based on the research of White-Hood (1994), Henderson & Berla (1994), Riley (1994) and Tracy (1994) the writer felt

that by involving families in the education of their children mathematical achievement and attitude could be enhanced.

The basis for the parental awareness workshops was the Family Math model, but the writer did not use the activities from the Family Math book. The writer combined several strategies into the Family Math concept based on the indications of Bobango & Milgram (1993).

The writer chose the Family Math model as a basis for this practicum because it was a program created, based on the requests of teachers, to involve families in mathematics education as discussed by Kreinberg (1989). Also, Riley (1994) offered Family Math and Family Science as an alternative to bridge the gap between school and home.

Family Math increased parental involvement in mathematics, improved relations between home and school, built confidence in children and parents, assisted in overcoming the fear of mathematics, assisted with mathematics compehension, and provided the opportunity, which in many cases, have been the first time for parents to do mathematics with their

children was reported by Kreinberg (1989), Bobango & Milgram (1993), Kreinberg & Thompson (1986), and Thompson & Cittadino (1991). The workshops will be relaxed and informal, refreshments will be served and the participants will feel wanted and welcomed as recommended by Bobango (1994), Thompson, Virginia, & Cittadino (1991), Roach, Bell, & Salmeri (1989-1990), and Riley (1994).

The practitioner will inform and instruct parents, with the assistance of the target stuidents, on the new curriculum in the school because researchers such as Renihan & Renihan (1995), Ashlock (1990), Walsh (1988), and Bobango & Milgram (1993) disclosed that parents want to help their children but need to be shown how to due to the changes in the curriculum and the parents' lack of self confidence with mathematics or limited educational background

Surveys and questionnaires were filled out by both parents and students to enable the writer to become aware of the needs and attitudes that existed as suggested by the NCTM (1989), Vatter (1993), Ruff (1992), Spangler (1992) and Dodd (1992), as well as the participants becoming aware of their attitudes

towards mathematics. The above instruments helped the practitioner decide which activities to implement in the classroom and workshop sessions.

Frank (1990), Spangler (1992), and Zaslavsky (1994) suggested that a way to change negative attitudes and beliefs is to create an awareness of ones own and others mathematical beliefs, therefore, a workshop session will be held educating parents and students about attitudes, myths, and achievement. The U.S. Department of Education (1995), the NCTM (1989), Lund (1994), McBride & Lamb (1991), and Leonard & Tracy (1993) all agreed that by implementing fun activities, using games, cards and other manipulatives to teach middle school mathematics students will become motivated to learn, enjoy mathematics, and their achievement and attitude will definitely be enhanced.

CHAPTER III

Method

In order to begin implementation of specialized evening workshops, to accomplish the stated objectives, the writer met with the principal, alternative education coordinator, and other necessary administrators to discuss the plan of action. The practitioner planned to secure the media center and implement eight evening workshops, from 7:00 p.m. to 9:00 p.m., over a twelve week period. After receiving approval from the administration the writer secured dates and informed the custodial staff.

During class time, the practitioner utilized resources and activities to motivate the target students. Activities from the workshops were reinforced in the classroom, as well as, additional games and activities. The writer wore buttons and other mathematical paraphernalia which displayed positive mathematical phrases and sayings. Materials and trinkets and certificates with positive mathematical sayings were given as rewards and

incentives. Additional mathematical motivational posters were displayed in the classroom. By utilizing these resources and an extremely positive attitude, the writer displayed her love and enjoyment of teaching and doing mathematics and made certain that the students could feel this enthusiasm.

The writer explained the workshops and class activities to the 56 at-risk seventh grade students. Confirmed dates were secured from additional presenters: alternative education coordinator, guidance counselor, and district mathematics coordinator. The writer met with the alternative education coordinator, administrators and the mathematics department head and discussed the strategies that were going to be utilized. A letter from the writer and the alternative education coordinator was sent home to the parents explaining the goals and objectives of the program (Appendix A). Attached to the letter was a Plan of Action (Appendix B). In addition, a Parental Participation Survey (Appendix C) and Attitude Toward Mathematics Survey (Appendix D) accompanied the letter and plan of action. These surveys were returned to the writer and the results were recorded

A survey, concerning parental involvement, was distributed to all personnel who instructed at-risk seventh grade students (Appendix E). These surveys were recorded. Through observation, the writer noticed that students lacked motivation and interest, and their mathematics performance was low. The practitioner conducted a survey of the target students' attitudes toward mathematics (Appendix D) and record the results. The results, of the surveys conducted, were shared with school-site administrators.

The parents were informed of each workshop session through a flyer (Appendix F) which was sent home with the students. The writer, who is bilingual to some extent, followed up with phone calls to the parents.

Parents were provided with materials and handouts. The practitioner will asked an eighth grade student to volunteer for each session to watch younger children in case parents could not secure a babysitter. Refreshments were provided for participants. The writer intended to create a comfortable, relaxed, atmosphere at all workshops. Parents, as well as students, felt relaxed, at ease, and welcomed. The writer used hands on activities in all sessions when

applicable. A mathematical puzzle, activity, or cartoon was on every table for parents and students to toy with while waiting for the sessions to begin. Upon entering the workshops parents and students signed in on sign-in sheets (Appendix G) and a Venn diagram displaying a different theme each week.

WEEK ONE:

The writer held a general meeting to discuss the results of the surveys, and explain future workshops. Also, a discussion was held relating to mathematical achievement, myths and attitudes. Parents and students talked about their experiences with mathematics and will be told how to restructure negative mathematical talk and feelings. In addition, one day of class time was set aside to question students about mathematical myths and the importance of possessing a positive attitude toward mathematics. Confirmed dates were secured for the media center and guest speakers. Additional motivational mathematics posters were displayed in the classroom.

WEEK TWO:

Preparation took place for the opening workshop session. A flyer was sent home to parents followed by

telephone calls. Students worked in groups on activities from Mathematics In Context (MIC). The practitioner began wearing buttons displaying positive mathematical phrases.

WEEK THREE:

The opening session of evening workshops was held. It concentrated on (MIC), the new curriculum being implemented for the first time at the writers school site. The district mathematics coordinator, as well as the writer, spoke with the families about the curriculum. The practitioner demonstrated a lesson as parents and students worked together in groups. After the demonstration lesson, parents and students took turns being both facilitator and student. Additionally, the writer grouped parents and students to work on lessons. The writer provided individual and group help and tips. Parents left the session understanding how to provide assistance with homework in MIC and how to lead their children to the correct discoveries.

WEEK FOUR:

The second session of the evening workshops provided parents with ideas and suggestions in order to

establish an in home learning and studying environment. Parental concerns pertaining to mathematics were addressed. A discussion was held about the importance of mathematics and the role of parents. Parents were provided with a handout containing a list of do and don't tips, some ideas to consider while doing mathematics at home, and family mathematics activities. The do and don't tips were discussed and modeled in order that parents understood how to utilize them. Parents discovered innovative ways to assist with homework. The alternative education coordinator and the quidance counselor, assigned to the at risk student population, spoke about study habits. Parents, students, and practitioner worked together to set up a specific homework and studying plan.

WEEK FIVE:

Attendance results were tallied for the sessions already held. Parents were notified of the upcoming session through a flyer and telephone calls. The writer began using certificates in the classroom for various activities.

WEEK SIX:

During the third workshop, which was held the

sixth week of implementation, parents were instructedon how to utilize a deck of playing cards as an instructional mathematical manipulative. The writer explained why cards should be used, when and where to use cards, and some tips for using them. Target parents and students were shown several card games which employ basic mathematical operations. In addition, they were instructed on how to utilize cards to strengthen problem solving skills. The participants were given time to practice the games in pairs and in groups. At the end of the session parents answered four questions related to the workshops which they had already attended. The data was utilized by the practitioner as the mid-point review (Appendix H).

WEEK SEVEN:

During week seven the writer interviewed students randomly to discover if parents were applying the strategies from the workshops at home, and if parents were more involved with the students in mathematics. Flyers, followed by a telephone call from the writer, were sent home notifying parents of future workshops.

WEEK EIGHT:

In the eighth week of implementation the fourth

session was held. Parents and students were shown how to use the newspaper as a mathematics manipulative. They were taught how to reinforce mathematic skills and create at home projects in mathematics with the use of the newspaper. After being instructed on various activities, parents and students worked together on the activities and created a long range project. In addition, they made a game with the use of the newspaper.

WEEK NINE:

During the ninth week of implementation, the workshop session that was held instructed parents on how to use utility bills, charge account bills, road signs and other household items to practice mathematical concepts with their children. Parents were provided some sample problems to apply to the utility bills and shown how traffic signs can be utilized to learn the names of geometric shapes. Instructions were provided for several games that could be made using the shapes of traffic signs.

WEEK TEN:

Week 10 of implementation was game week. Students were allowed to bring games to school and they adapted

the games to fit mathematical concepts. At the workshop the writer discussed the significance of using games to teach mathematics. The students demonstrated, for their parents, the games that they adapted in class. Workshop participants were grouped and given time to play the games.

WEEK ELEVEN:

The eleventh week of implementation a make and take home workshop was provided for participants. Together, students and parents constructed mobiles, tangrams, number jars, and additional games to be utilized in the home learning environment. The materials, constructed, will be utilized in the home to provide practice and reinforcement of mathematical concepts. Parents completed a Post Evaluation Questionnaire (Appendix I) pertaining to personal experiences with the workshops (Appendix J). In addition, parents were asked to make comments regarding the workshops (Appendix J). Parents and students completed a post attitude survey (Appendix D) and compared it with their pre attitude survey. Attendance results were tallied from workshop session five to the present session.

WEEK TWELVE:

The twelveth week of implementation the culminating ceremony was held. The writer briefly reviewed mainpoints from the workshops. The writer presented certificates to acknowledge participants for their efforts and participation in the workshops. Parents and students were given time to discuss their experiences, at home, with the utilization of the strategies provided from the workshops. Handouts were distributed with additional ideas and follow-up suggestions.

CHAPTER IV

Results

To achieve the goals of this practicum, successfully, the behavioral objectives were measured by several methods. In addition to written documents, the writer used observation and parents and students comments as a means of measurement to determine the results.

To measure objective one, parental participation, the writer utilized weekly sign in sheets and a Venn diagram. Upon entering, the workshop participants signed a Venn diagram to set a mathematical tone. Participants also signed weekly sign in sheets (Appendix G) which were tallied to note the number of participants in attendance each week. The results of this measurement instrument are indicated in Table 6. A mid-point evaluative instrument (Appendix H) was compiled, during week seven, to measure attendance at the preceding workshops. The results of the mid-point evaluation are indicated in Table 5. Based are the results indicated in both tables it was evident that

parental participation increased.

Table 5
Results of Mid-Point
Evaluation

Week	Parental Attendance
Week One	10
Week Two	no workshop
Week Three	15
Week Four	19
Week Five	no workshop
Week Six	21
Week Seven	no workshop

Attendance was not as high as the writer hoped for but out of the 54 target students approximately 20 families were in attendance at the majority of the workshops. As the weeks progressed attendance increased. Prior to implementation only 1% of the parents of the total at-risk population participated in school wide events, therefore, the results of the workshops indicated a significant gain in participation, of the parents of the seventh grade target students, with approximately 36% participating in the workshops. Indicated in Table 6, as a signficant increase, are the results of parental involvement throughout the weeks of implementation.

Sign-in-sheets were tallied in the table below:

Table 6
Attendance Record
Results of Sign-In-Sheets

Session Attendance	Parents	Students
Session One	10	8
Session Two	no workshop held	
Session Three	15	15
Session Four	19	21
Session Five	no workshop held	
Session Six	21	24
Session Seven	no workshop held	
Session Eight	21	23
Session Nine	19	20
Session Ten	21	25
Session Eleven	22	24
Session Twelve	25	28

Objective two, three, four and five pertained to parent's ability to help their children in the home learning environment and the appreciation for evening workshops. Several means were utilized to obtain these results. At the end of twelve weeks parents filled out a post evaluation questionnaire (Appendix I). This questionaire consisted of ten questions based on the objectives to be accomplished, and provided information about the final affect the workshops had on the parents. The writer calculated the results using only

21 of the 25 participants questionnaires that attended the final session because they had attended the majority of the sessions held. Based on the results of the post evaluation questionnaire indicated in Table 7, the writer determined that parents were better able to assist their children. Parent's knowledge, confidence, and understanding of their role increased.

Table 7
Results of Parents
Post Evaluation Questionnaire

Questions 1-7	Results Yes	No
I have gained confidence in my my ability to help my child.	21	
My ability to communicate with my child has improved.	20	1
I have gained knowledge to effectively assist in the education of my child.	21	
I have a better understanding of my role as a parent.	21	
I have gained knowledge pertaining to innovative strategies to use in the home learning environment.	21	
I am interested in participating in more school-related activities.	21	
I am more familiar with the current mathematics curriculum.	21	

The writer's observations at the workshops and a log of parental comments was also used as a means of evaluation. At the workshops the writer observed interactions between students and parents, motivation, attitude, students and parents participation, and weekly attendance. These categories also revealed that a positive change was occurring. Parents were significantly more confident when working with their children. As the sessions progressed, the writer observed, the attendance increased and their existed a great amount of enthusiasm and interest. Most of the sessions concluded later then scheduled. Parents and students did not want the sessions to end and would express the desire to stay later. The writer continued the sessions until the custodial staff expressed the desire to close the media center.

At many of the sessions students were present without their parents. Students asked the writer if they could attend the sessions even if their parents were unable to attend. These students would remain in school and assisted the writer with preparation. The workshops were thoroughly enjoyed by all persons involved. Parents and students expressed the desire to

have the workshops again in the coming school year. Parental comments allowed participants to express their own feelings about the workshop sessions (Appendix J)

Objective six, seven, eight and nine were measured by a teacher made attitude survey (Appendix D). The survey was administered to parents and students before and after the twelve weeks of implementation in order to measure a change. The statements in the survey pertained to beliefs, myths, and attitudes toward mathematics, which through research, the writer discovered are commonly held by many people. Also, through interviews, conversations, comments, and discussions the writer's students and parent's of the students expressed some of these statements. A Likert scale attitude survey was used because it is self explanatory and its ease of construction and scoring. The results of the parent attitude survey were compiled based on the 21 parents that attended the majority of the sessions. The results indicated that parents attitude towards mathematics was definitely more positive, their fear of mathematics was greatly improved, they now found mathematics to be fun and interesting, and no longer believed many of the

mathematical myths. The results are indicated below:

Table 8

Results of Survey on Target Parents
Attitudes and Beliefs Toward Mathematics

Statement	Results				
	0 SA	1 A	2 N	3 SD	4 D
I enjoy mathematics.	18	2	1	0	0
I am fearful of mathematics.	0	0	2	17	2
I find mathematics dull and boring.	0	0	0	20	1
I think of mathematics as just a required subject that has to be taken.	0	0	0	21	0
I feel that I am unable to do mathematics because it is just too difficult.	0	0	0	19	2
I hate mathematics.	0	0	0	20	1
I find mathematics interesting and motivating.	18	3	0	0	0
I find mathematics frustrating and lose interest quickly.	0	0	0	18	3
Mathematicians do problems in their heads, quickly.	0	0	0	21	0
Mathematics is not creative.	0	0	0	21	0
Some people have a mind for mathematics and some do not.	0	0	0	19	2
One needs a good memory to do mathematics.	0	0	0	21	0

Teacher observation was also an evaluative tool with these objectives based on the NCTM Standards (1989). The practitioner felt this was an excellent method of evaluation due to the fact that a child's attitude will be displayed in every facet of mathematics. The teacher made attitude survey (Appendix D) was administered again, to the students, after implementation was completed. Through the survey and classroom observation, the writer found that the attitude of all the target students was more positive and mathematics was enjoyed much more. Also, the writer found that the attitude of those students that attended the workshops was more positive than the students that did not.

Table 9

Results of Survey on Target Students Attitudes and Beliefs Toward Mathematics

Statements	Results				
	0 SA	1 A	2 N	3 SD	4 D
I enjoy doing mathematics.	36	10	1	3	4
I am fearful of mathematics classes.	4	2	2	39	7
I find mathematics dull and boring.	2	4	4	41	3

Table 9 (continued)

Statements	Results				
	0 SA	1 A	2 N	3 SD	4 D
I think of mathematics as just a required subject that has to be taken.	2	4	4	41	3
I feel that I am unable to do mathematics because it is just too difficult.	4	5	1	37	7
I hate mathematics.	2	3	2	40	7
I find mathematics interesting and motivating.	35	13	4	1	1
I get frustrated easily while doing mathematics and lose interest quickly.	2	1	5	39	7
Mathematicians do problems in their heads, quickly.	0	0	5	38	14
Mathematics is not creative.	0	0	0	49	5
Some people have a mind for mathematics and some do not.	1	0	4	40	9
One needs a good memory to do mathematics.	0	0	5	47	2

The writer observed that students definitely displayed a more positive attitude towards mathematics in the classroom. No longer did the writer hear the students say that they hated mathematics. The day after the workshops the students would be discussing

the sessions with the students that did not attend. The students would express how much the workshops were enjoyed and encourage other students to attend. Students from other classes asked if they could attend the workshops. The motivation and desire to learn that existed in the writer's class was very high.

The sole means for objective ten, student performance, was teacher observation. Attitude plays a significant part in mathematics performance and the practitioner chose observation for the means of evaluation for the above stated reason. The writer observed that students' interest, motivation, participation and achievement were enhanced during and after the 12 weeks of implementation. Students expressed the desire to be successful in mathematics and would ask for additional assistance when necessary.

There was a tremendous increase in homework completion and students displayed a more positive attitude towards their grades and achievements. Also, the students would comment about how much the writer enjoyed mathematics and was making learning fun.

In general, the results of the practicum were positive. Parents became involved in achool and took

an active role in their children's education. Student achievement was enhanced. Parent's and student's negative attitudes were reversed and self-confidence and motivation increased. The only negative the writer found was that all of the same parents were not present at all of the workshops, but a sufficient number attended all the sessions.

CHAPTER V

Recommendations

The writer was extremely pleased with the success that was achieved through the implementation of this practicum. During implementation the writer was asked, by parents and students, to conduct the workshops again during the new school year. Parents questioned whether workshops could be conducted in all subject areas. The writer plans to conduct workshops again during the new school year with the at-risk student population. The writer also plans to broaden the workshops to cover a variety of subject areas, and to include other teachers involved with the at-risk population.

The principal has requested that the practitioner conduct the workshops school wide during the coming school year. The writer is planning to write a grant based on the practicum and discuss with the district mathematics coordinator further dissemination of the practicum. The writer has thought about seeking a position, in a teacher education program, instructing future mathematics teachers utilizing the motivating

strategies included in this practicum.

The writer recommends that all mathematics teachers implement the strategies used in this practicum, in their classess, and to conduct workshops for parents and students. Other recommendations include:

1. Encourage parental involvement by welcoming parents to the school.
2. When conducting workshops spread the sessions over six months, allowing more time between each session to better accommodate the parents.
3. Motivate students in mathematics as well as in other subject areas.
4. Display an enthusiasm, motivation, and love for teaching.

Teachers should be kept abreast of new methods of teaching mathematics. Attend workshops, conventions, and take advantage of every opportunity to learn new methods. The writer highly recommends for others to implement this practicum and accomplish the same positive results.

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APPENDICES

APPENDIX A
LETTER TO PARENTS

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Parents Can Make A Difference

Dear Parents,

We are planning to offer evening mathematics workshops to assist parents of students in our alternative education program. Parents are their children's first and most influential teachers, and we are seeking your support in helping them achieve. It is equally important that we work together as partners to encourage our children towards success.

Parents often ask, What can I do to help my child at home? The answer is involvement in evening workshops, allowing parents and their child to learn and achieve together.

Evening workshop sessions will be held on Mondays, from 7:00-9:00 p.m. upstairs in the media center. Kindly take a moment to complete the attached survey and return it to your child's mathematics teacher. We are looking forward to working with you. Thanks in advance for your support.

APPENDIX B

PLAN OF ACTION

APPENDIX B

PLAN OF ACTION

Topics	Planning to attend Yes	No	Uncertain
Session One "Attitude and Mathematics" A discussion will be held relating to mathematics achievement, myths, and attitude. Learn how to restructure negative thoughts and feelings towards mathematics.			
Session Two "Mathematics in Context" Come learn from and with your children the new mathematics curriculum. The district mathematics coordinator will be a guest speaker.			
Session Three "The Home Learning and Studying Environment" Parents will be instructed and provided ideas on how to help their children learn mathematics. A discussion will be held on the importance of mathematics and the role parents play. A handout will be provided.			
Session Four "A Deck of Playing Cards and Mathematics" Parents will be instructed on how to use a deck of playing cards as an instructional mathematics manipulative. Parents and students will learn card games to strengthen or reinforce mathematics' skills.			

APPENDIX B continued

PLAN OF ACTION

Topics	Planning to attend		
Session Five	Yes	No	Uncertain
"Newspapers and Mathematics" Parents and students will be shown how to use the newspaper as a mathematics manipulative. Parents and students will work on activities which reinforce basic mathematic skills using the newspaper. A game, involving mathematics, will be created using the newspaper.			
Session Six Parents will learn how to use road signs, utility bills, charge account bills, and other household items to assist their children with mathematics. Parents and students will work together on sample problems.			
Session Seven "Game Week" A discussion will be conducted on the significance of using games to teach mathematics. Students will demonstrate how they adapted commercial games to mathematical concepts. Parents and students will play the games in cooperative groups.			
Session Eight "Make and Take Home Workshop" Parents and students will construct simple mathematics manipulatives to utilize in the home learning environment.			

APPENDIX B continued

PLAN OF ACTION

Topics	Planning to attend		
Session Nine	Yes	No	Uncertain
"Awards Night" Parents and students will discuss their experiences, with the new strategies, in the home learning environment. A brief review of all sessions will be held. Parents will be awarded certificates for their participation. A handout will be provided with additional ideas and suggestions.			

APPENDIX C
PARENTAL PARTICIPATION SURVEY

APPENDIX C
PARENTAL PARTICIPATION SURVEY

Statement	Results Yes	No
1. I am interested in participating with my child in evening workshops to assist him/her in school.		
2. I would like to attend scheduled evening workshops to learn how I can assist my child with mathematic skills.		
3. I would like to attend evening workshops to learn how to use innovative strategies to assist my child with mathematical concepts.		
4. I would like to participate in evening workshops to help my child strengthen mathematical skills.		
5. I would like to attend evening workshops to discover and use manipulatives to assist my child in the home-learning environment.		
6. I am interested in learning ways to assist my child with mathematics homework.		
7. I am interested in learning ways on how to improve my communications with my child's teacher.		
8. I would like to participate in an evening "make and take home" workshop to discover ways to work with my child in mathematics.		

APPENDIX C continued
PARENTAL PARTICIPATION SURVEY

Statement	Results Yes	No
9. I am interested in attending an evening mathematics lab to learn about the new mathematics curriculum and how to assist my child with assignments.		
10. I would like to attend evening workshops on ways to assist my child with organization skills to help him/her prepare for school, home, and daily tasks.		
11. I would like to attend an evening workshop to learn about test-taking tips to assist my child with preparation for standardized testing procedures.		
12. I am interested in attending an evening workshop to find out about available community resources (e.g.,seminars, and workshops) to keep me informed on ways to effectively help my child.		

APPENDIX D
ATTITUDE TOWARD MATHEMATICS SURVEY

APPENDIX D
ATTITUDE TOWARD MATHEMATICS SURVEY

Statements	Results				
	0	1	2	3	4
	SA	A	N	SD	D
I enjoy doing mathematics.					
I am fearful of mathematics classes.					
I find mathematics dull and boring.					
I think of mathematics as just a required subject that has to be taken.					
I feel that I am unable to do mathematics because it is just too difficult.					
I hate mathematics.					
I find mathematics interesting and motivating.					
I get frustrated easily while doing mathematics and lose interest quickly.					
Mathematicians do problems in their heads, quickly.					
Mathematics is not creative.					
Some people have a mind for mathematics and some do not.					
One needs a good memory to do mathematics.					

APPENDIX E
PARENTAL INVOLVEMENT SURVEY

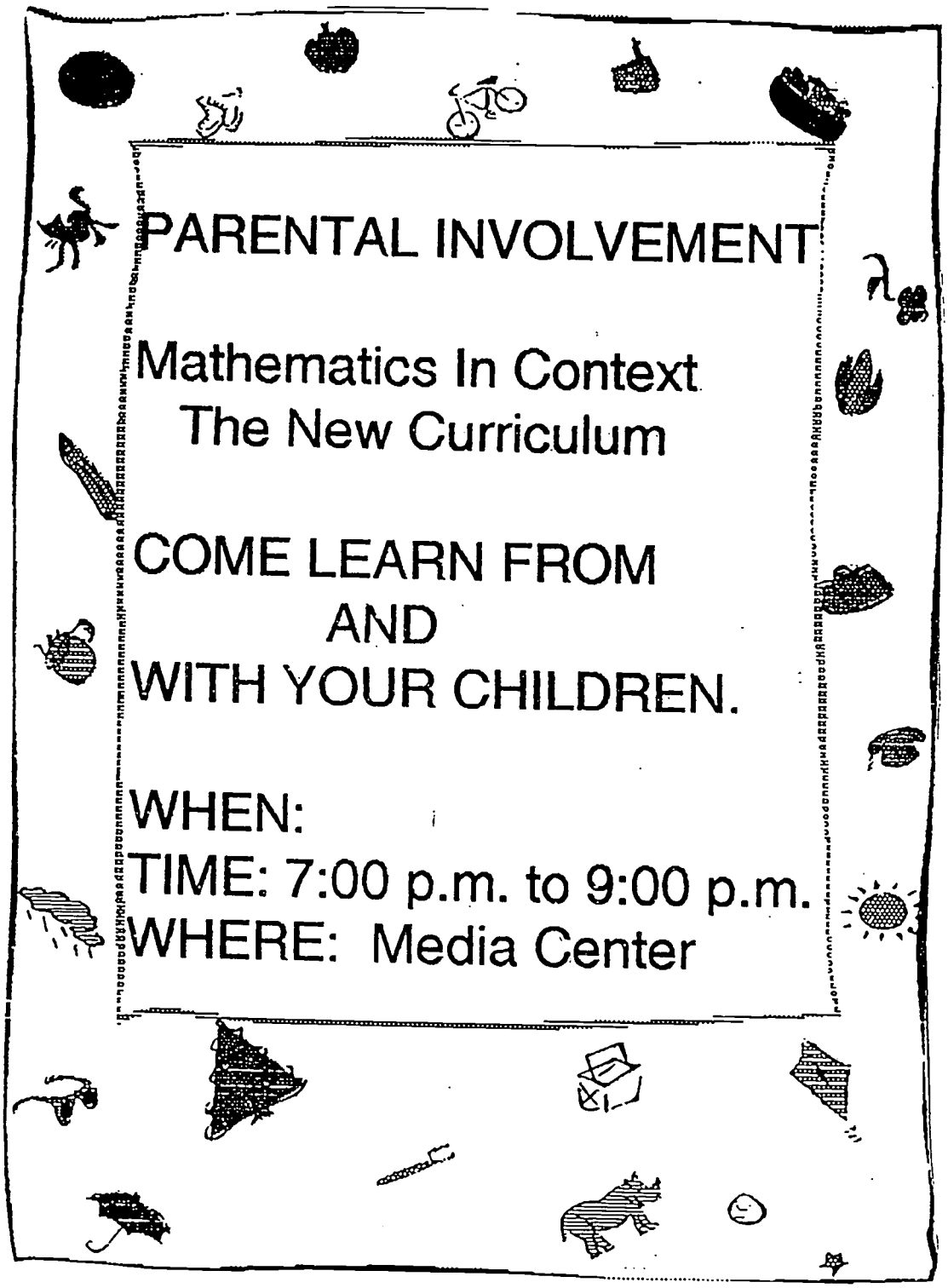
APPENDIX E
PARENTAL INVOLVEMENT SURVEY

Questions	Percentages
*7th grade parents who request or attend conferences	
*7th grade parents who assist with daily homework	
*7th grade parents who provide assistance exam preparation.	
*7th grade parents who provide organizational skills	
*7th grade parents who provide innovative strategies in the home-learning environment	
*7th grade parents who participate in school wide activities	

APPENDIX F
FLYERS TO PARENTS

APPENDIX F
FLYERS TO PARENTS

APPENDIX F continued
FLYERS TO PARENTS



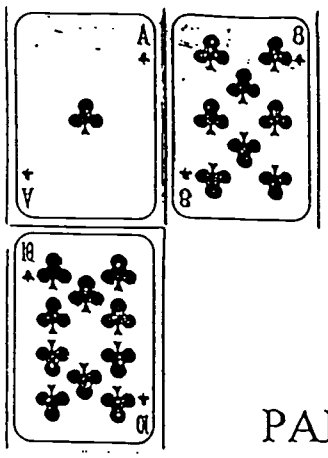
APPENDIX F continued
FLYERS TO PARENTS

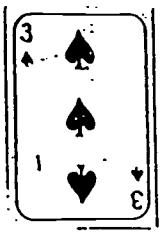
PARENTAL INVOLVEMENT

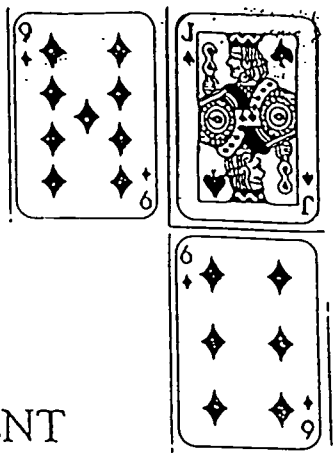
FAMILY MATHEMATICS ACTIVITIES AND TIPS TO CREATE A HOME-LEARNING AND STUDYING ENVIRONMENT

WHEN:
TIME: 7:00 p.m. to 9:00 p.m.
PLACE: Media Center

APPENDIX F continued
FLYERS TO PARENTS

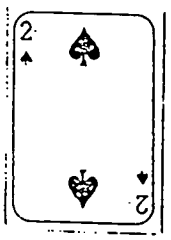


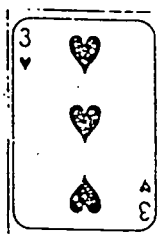




PARENTAL INVOLVEMENT

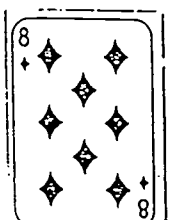
DID YOU KNOW THAT A
DECK OF PLAYING CARDS
CAN BE USED TO REINFORCE
MATHEMATICS?

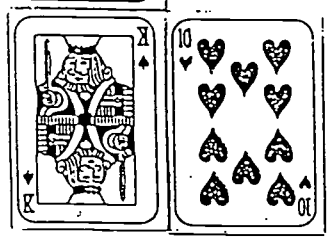


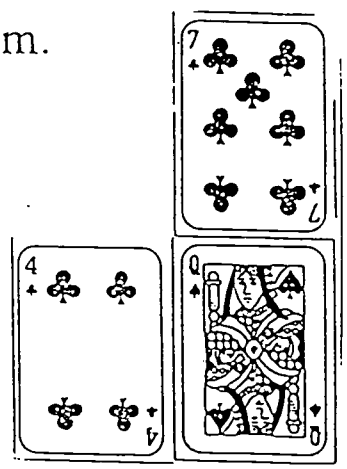


COME LEARN HOW!

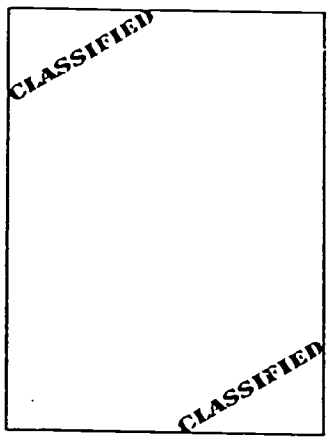
WHEN:
WHERE: MEDIA CENTER
TIME: 7:00 p.m. - 9:00 p.m.



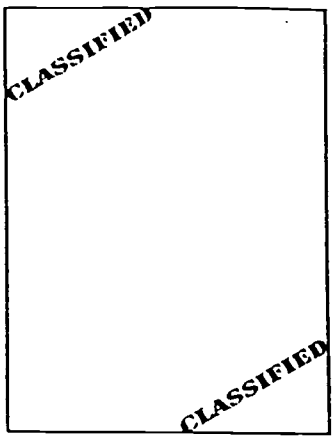




APPENDIX F continued
FLYERS TO PARENTS



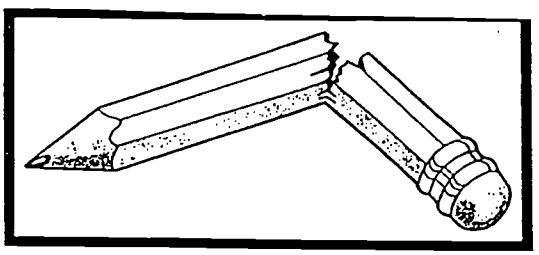
NEWSPAPERS AND MATHEMATICS



PARENTS LEARN WITH YOUR CHILDREN
HOW MATHEMATICS CAN BE REINFORCED WITH THE NEWSPAPER

WHERE: MEDIA CENTER
WHEN:
TIME: 7:00 p.m. - 9:00 p. m.

APPENDIX F continued
FLYERS TO PARENTS



PARENTAL INVOLVEMENT

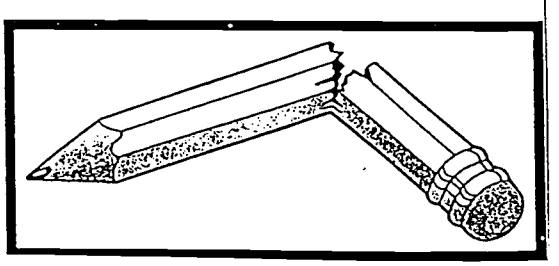
INNOVATIVE MATERIALS

LEARN HOW TO USE HOUSEHOLD ITEMS, ROAD SIGNS, AND BILLS TO PRACTICE AND REINFORCE MATHEMATICS

WHEN:

WHERE: MEDIA CENTER

TIME: 7:00 p.m. till 9:00 p.m.



APPENDIX F continued
FLYERS TO PARENTS

GAMES! GAMES! GAMES!

PARENTAL INVOLVEMENT

SEE MATHEMATICS COME ALIVE! YOU WON'T EVEN KNOW YOUR DOING MATHEMATICS!

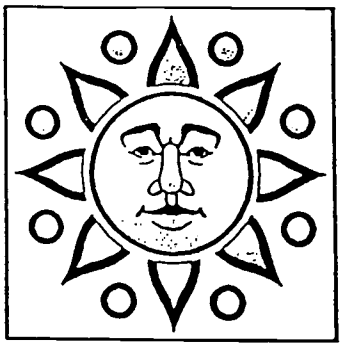
WHEN:

WHERE: MEDIA CENTER

TIME: 7:00 p.m. - 9:00 p.m.

GAMES! GAMES! GAMES!

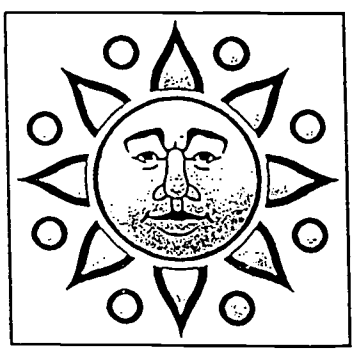
APPENDIX F continued
FLYERS TO PARENTS



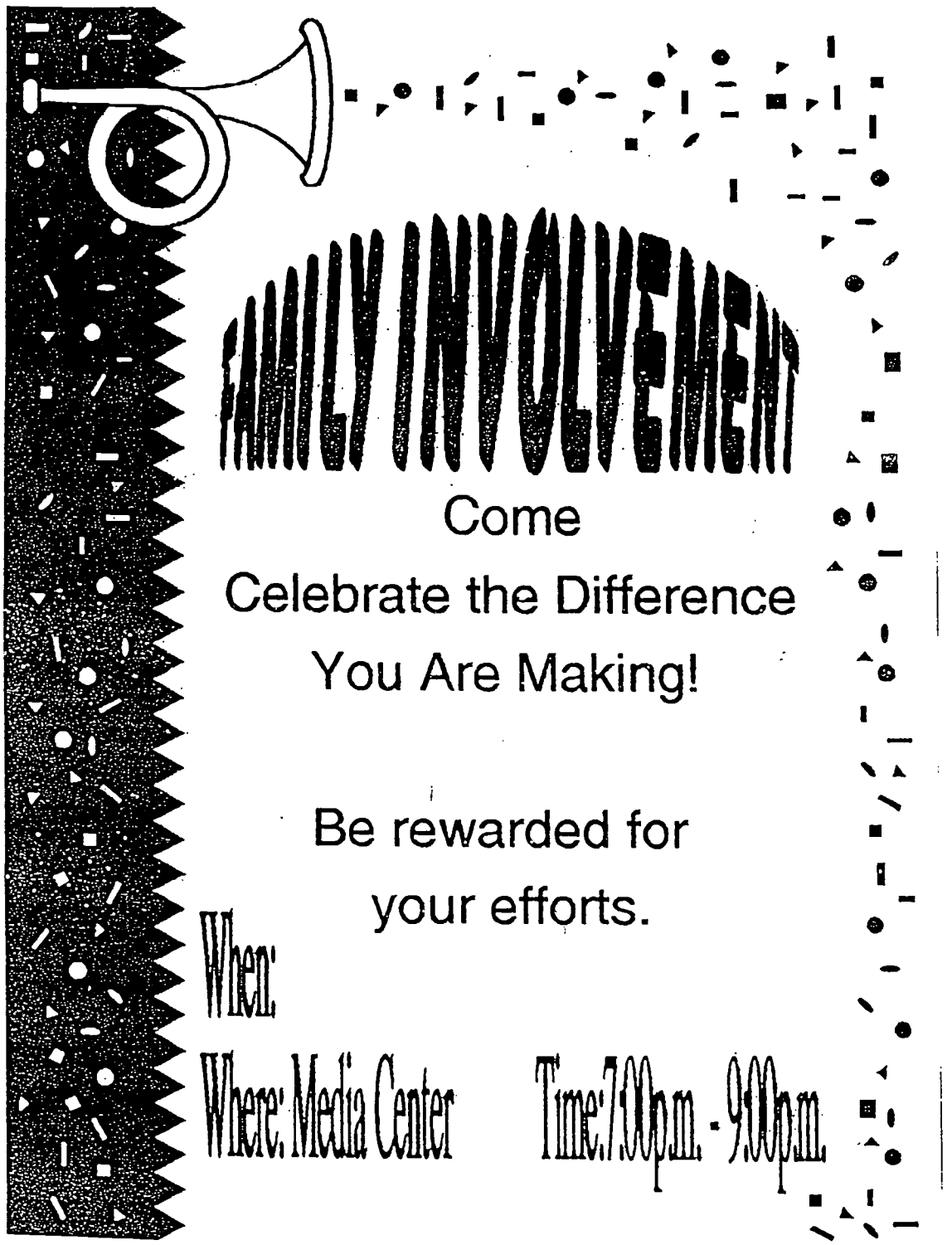
MAKE AND TAKE HOME WORKSHOP

PARENTS, COME AND CONSTRUCT MATHEMATICS MANIPULATIVES WITH YOUR CHILDREN.

WHEN:
WHERE: MEDIA CENTER
TIME: 7:00 p.m. - 9:00 p.m.



APPENDIX F continued
FLYERS TO PARENTS



APPENDIX G
SIGN IN SHEETS

APPENDIX G
SIGN IN SHEETS

Sign In Sheet

Date

Parent's Name	*Student's Name*

APPENDIX H
MID-POINT EVALUATIVE INSTRUMENT

APPENDIX H
MID-POINT EVALUATIVE INSTRUMENT

Mid-Point Evaluative Instrument
Attendance at Sessions

Week One_____

Week Two_____

Week Three_____

Week Four_____

Week Five_____

Week Six_____

Week Seven_____

Week Eight_____

Week Nine_____

* Mid-point Average_____

APPENDIX I
POST EVALUATION QUESTIONNAIRE

APPENDIX I
POST EVALUATION QUESTIONNAIRE

Parent Post Evaluation Questionnaire

1. I have gained self confidence in my ability to assist my child with homework, exam preparation and class work.
   yes____ no____

2. My ability to communicate with my child has improved.
   yes____ no____

3. I have gained knowledge concerning ways in which I can effectively assist in the education of my child.
   yes____ no____

4. I have a better understanding of my role as a parent in the education of my child.
   yes____ no____

5. I have gained knowledge pertaining to innovative strategies to use in the home learning environment.
   yes____ no____

6. I am interested in participating in more school-related activities.
   yes____ no____

7. I am more familiar with the current mathematics curriculum.
   yes____ no____

8. In terms of assisting my child at home, the instructional materials provided were:
   a.Excellent b.Very Good c.Good d.Fair e.Poor

9. The workshop activities were:
   a.Excellent b.Very Good c.Good d.Fair e.Poor

10. The workshop presenter(s) were:
    a.Excellent b.Very Good c.Good d.Fair e.Poor

APPENDIX I (CONTINUED)
POST EVALUATION QUESTIONNAIRE

11. I attended the indicated number of evening sessions.
    a.1-2 b.3-4 c.5-6 d.7-8 e. 9

12. I would recommend that future evening workshops be made available to parents:
    yes____ no____

Additional comments:

_____

_____

_____

_____

_____

APPENDIX J
ANECDOTAL COMMENTS FROM PARTICIPATING PARENTS

APPENDIX J
ANECDOTAL COMMENTS FROM PARTICIPATING PARENTS

Parent #1	Thanks once again! It was a great opportunity to do activities and to share time with the teacher, as if we were a family.
Parent #2	I was happy to be in school having fun and learning how to be helpful to my daughter.
Parent #3	This workshop was very informative. It gave us time, parents and teacher, to be together and communicate. I find this very helpful and hope it continues. Thank-you very much.
Parent #4	I think the idea is great. It gets families together. I wish we could have done more.
Parent #5	Thanks for your help. You are a nice teacher. I learned a lot and had fun.
Parent #6	I really like the workshop. We have a lot of fun working together. They have really helped my sons attitude towards math.
Parent #7	Thank you for helping me remember how to do fractions. I was very happy to be with you and all the other people.
Parent #8	I really enjoyed the workshop. The games were fun and it will really help me to help my son with math. Thanks for caring.
Parent #9	I was really happy to be in school to learn.
Parent #10	It's the first workshop I attend. I had a real good time thinking and playing cards. I'm sorry I missed the rest.

APPENDIX J (CONTINUED)
ANECDOTAL COMMENTS FROM PARTICIPATING PARENTS

Parent #11	All the workshops are fun. I have a good time and I use my brain at all of them. I wish there could be more.
Parent #12	I think the workshops are fun and I learn. You should keep doing them and do them again next year. Please do more workshops!
Parent #13	I think the workshop is a great idea. It gives the parents ideas on how to help the students while making it fun for both.
Parent #14	More workshops should be scheduled to get students involved in different techniques that help them understand and practice skills, while enjoying it.

JUN 1 8 1996

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Author(s): YOLANDA MENDOZA

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