FINAL RESEARCH REPORT

1993-1996

The Impact of Nueva Escuela Unitaria

Improving Educational Quality Project
-GUATEMALA-

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EXECUTIVE SUMMARY

From 1993 to 1996, the Improving Educational Quality (IEQ) project studied the implementation and impact of the *Nueva Escuela Unitaria* (NEU) program, an active, child-centered learning program, for rural Guatemalan children. The research included observations in the naturally-occurring contexts of the classroom, interviews with parents, and achievement testing in 10 NEU schools and 10 comparison schools. The research was longitudinal in nature, with testing and observations being carried out with the same children who began the study in 1993. The original sample of children had been composed of first and second graders in the 1993, thus their progress to appropriate grade levels in order to make normal progress toward primary school completion was also monitored.

DESIGN

The study design was a pre-post test, with a comparison group. Children beginning the NEU program in 1993 were compared to similar children in traditional rural schools in each year of the study. Also, children entering first grade were compared each year. Children in the experimental schools attended the NEU program in two rural regions of the country, one of which served primarily children of indigenous origin and the other, children of *ladino* background. The comparison schools followed a traditional program but had characteristics similar to those of the experimental schools, such as distance from an urban center and number of students.

The children were tested on a battery of instruments consisting of reading, mathematics and creativity measures. The subsample of children chosen in 1993 were observed in 1994 and again in 1995. Over the course of the study, children were observed at six points in time in academic subjects for one hour at each observation period. In addition, parents and teachers were interviewed about issues of interest to the NEU program implementors, especially about the transfer of learning from the school environment to daily life.

Several statistical techniques were used to analyze the data, such as two-tailed t- tests, analysis of covariance, repeated measures and chi square, depending on the type of data to be analyzed in each case. In each year, the data were analyzed by

region, by gender, and by language. The observations were coded using the codes developed in 1993, and the interaction codes were summarized and used to complete the data analysis.

MAJOR FINDINGS

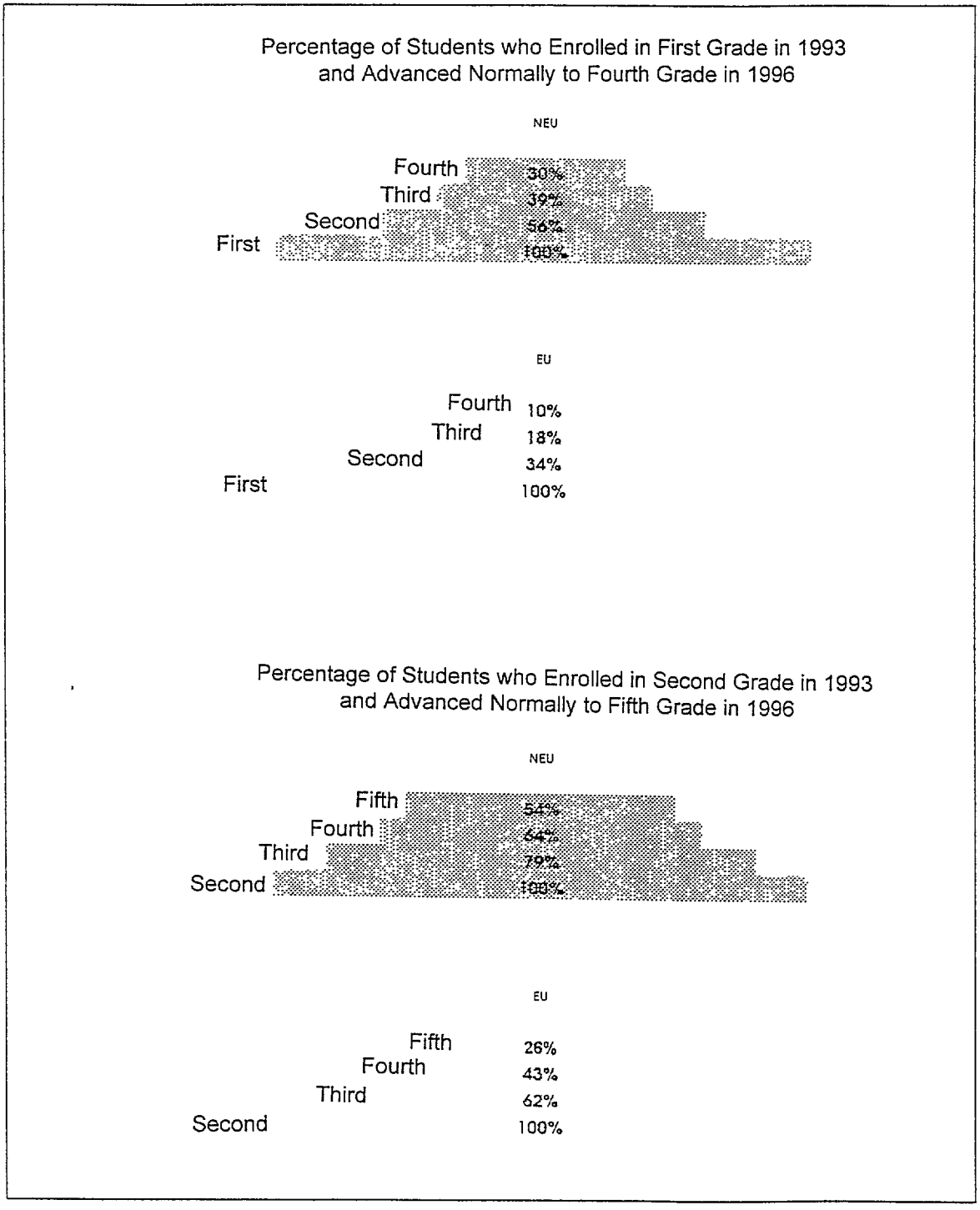
1. Children

The NEU program has had a significant impact on in increasing the number of children staying in school and making yearly progress toward primary school completion.

Over the three years that dropout was measured, dropout rates have consistently been lower in NEU schools than in similar schools without the NEU program. In 1994 and 1995 dropout rates were significantly lower than in the comparison group. Rates averaged about twelve percentage points less than those in the comparison schools. The greatest impact was among Indigenous girls in Alta Verapaz where dropout rates were significantly lower for NEU students in all three years of the investigation.

The percentage of children who advanced a grade each year was twice as high in NEU as in the comparison group. The percentages were similar for both boys and girls and the differences were significant in all cases. As can be seen in Figure A, 30% of the NEU first graders had advanced to fourth grade and 54% of the second grade children were in fifth grade in 1996. This compares to 10% of the first grade cohort and 26% of the second grade cohort, respectively, in the comparison group.

Figure A


Percentage of Students who Enrolled in First Grade in 1993
and Advanced Normally to Fourth Grade in 1996
NEU
Fourth
Third
Second
First
30%
39%
56%
100%
EU
Fourth
Third
Second
First
10%
18%
34%
100%
Percentage of Students who Enrolled in Second Grade in 1993
and Advanced Normally to Fifth Grade in 1996
NEU
Fifth
Fourth
Third
Second
54%
64%
79%
100%
EU
Fifth
Fourth
Third
Second
26%
43%
62%
100%

NEU has maintained academic quality, as measured by achievement tests, while improving educational efficiency.

The greater numbers of children advancing through the primary grades created a broader range of abilities in NEU schools than in the comparison schools, where only the better students remained in school. However, on the average, the NEU students performed as well as the children in the comparison group in both mathematics and reading.

The NEU program has had a positive impact on the success of Indigenous children who enter school with some knowledge of Spanish. NEU has, however, had little impact on monolingual Mayan children.

A significantly higher percentage of NEU children who entered school with at least rudimentary knowledge of Spanish remained in school at the end of the study than did comparison children. Thirty-three percent of the children in NEU who had some knowledge of Spanish were still in school and in the appropriate grade, compared to 6% in traditional schools. With students who understood little Spanish on entering school, however, only 5% in either type of school were still enrolled after four years.

Children with poor nutritional status have a somewhat higher probability of remaining in school in NEU than in traditional schools. This would appear to be in part because the active methodology employed in NEU encourages children to participate rather than remaining passive. However, most malnourished students drop out.

A higher percentage of the most undernourished children in the NEU schools remained in school over the course of the study than were present in comparison schools. These children were observed to take a more active part in the classroom learning contexts than their counterparts in the traditional schools. However, the dropout rate for most undernourished children was over twenty percentage points higher than that of other children in both types of schools. Only 10% of the most undernourished children who began first grade in NEU and 29% of those who were in

second grade at the start of the study remained in school four years later. The percentages of undernourished children remaining in traditional schools were 6% and 10% respectively, for first and second grade.

The NEU active learning methodology contributed to significant socio-emotional development in terms of participatory behaviors such as taking turns, guiding other students in their academic work and expressing opinions in class.

The NEU program promoted the participation of children of different sexes and ethnicity. Boys and girls in the NEU program in the indigenous region and in the ladino region exhibited these behaviors with significantly greater frequency than children in comparison schools during all three years of the study. Participatory behaviors were not only more frequent but were also different in quality in NEU and traditional schools. In the NEU schools, the behaviors were generally observed with peers in the naturally occurring classroom contexts. In the traditional schools, on the other hand, where these behaviors occurred, they were generally directed by the teacher.

2. Teachers

The Nueva Escuela Unitaria program has been successful in building teachers confidence to work with multiple grades by decentralizing the learning experience of children and encouraging their active learning. However, teachers were not always able to take advantage of such contexts by encouraging exploratory, collaborative learning experiences.

A majority of NEU teachers stated that they could work successfully with three or more grades, compared to only 9% of teachers in traditional schools. This difference was reflected in classroom organization where between 40%-50% of NEU students' interactions took place in small group learning contexts. This compares to between 3%-10% in traditional schools. However, in some cases, the learning strategies that were used in small groups included copying, practicing models supplied by the teacher, and reading in unison. These were the same strategies used by teachers in large group contexts in traditional schools. Thus, although the setting and materials

employed differed in the two types of schools, the actual practice with academic content was similar owing to teachers lack of complete mastery of the NEU methodology.

The organization of the school day in both NEU and traditional schools resulted in a limited amount of instruction time.

Observations made in classrooms throughout a three-year period showed that the school day was organized in a similar fashion in both types of schools. Slightly more than two hours a day was devoted to instruction, and close to an hour is devoted to recess. Much of the remaining time involved transition from one activity to another or teachers attending to tasks outside the classroom.

3. Parents

NEU has had an impact on parental attitudes toward the school.

Throughout the study, greater percentages of NEU parents felt that positive changes were occurring in the school than among comparison group parents. The majority of parents of children in both experimental and comparison schools, however, felt that positive changes had taken place in their children's behavior at home. The most commonly cited changes were that children read more and exhibited generally better conduct at home.

RECOMMENDATIONS

Continue to expand the NEU program as a relatively effective innovation for improving the efficiency and quality of primary education in isolated rural schools.

The success of the NEU program in consistently encouraging significantly more children to stay in school and make yearly advances in grade level than did traditional rural multigrade schools suggests that the program should continue to be expanded to

additional rural multigrade schools in Guatemala. The significantly greater progress was made toward primary school completion by Indigenous and *ladino* children of both genders, as well as by children who entered school with poor nutritional status argues that the program can be effective with a variety of rural student populations.

Achievement tests by themselves should not be used to measure educational quality if a true understanding of program impact is to be gained.

The results of this investigation show that academic achievement tests must be used in combination with other measures of quality and effectiveness in making decisions about programmatic outcomes. Simply comparing mean differences on the achievement measures, without examining the numbers of children successfully advancing toward primary school completion could lead to the erroneous conclusion that the two groups were performing similarly.

NEU should be carefully monitored to ensure that refinements are made to maintained and improve on successful results.

Despite the relative success of the NEU program, only 30% of the cohort of first grade children beginning school in 1993 had made normal progress through school. Observations showing that teachers were at times unable to determine the reading abilities of their students and had children engage in traditional learning activities in small group contexts, suggests that continued monitoring and feedback is necessary if teachers are to improve their mastery of the program elements. Such improved mastery can come about by the mentoring relationships established between successful NEU teachers and new teachers in the expansion, program, through the continued use of teachers circles, and through training of supervisors to carry out systematic classroom observations.

Bilingual versions of the NEU materials should be developed in Mayan languages and bilingual teachers trained in the NEU methodology.

The relative success of Indigenous children with some knowledge of Spanish shows that the NEU active learning methodology is culturally appropriate for Mayan children. However, the lack of impact of the NEU program on monolingual Indigenous and the generally high dropout among such children in rural schools, argues for bilingual versions of the NEU materials. Thus, the efforts underway by the Ministry of Education through UNICEF- and USAID-funded projects to develop NEU materials in Mayan languages and to train bilingual teachers should be completed.

The provision of nutritional supplements in a consistent manner should be part of planning expansion of the NEU program or similar active learning methodologies.

In rural areas of Guatemala, the NEU active learning methodology must be combined with consistent efforts to improve nutritional status of severely undernourished students if greater efficiency is to be achieved. Although NEU has been more effective than traditional schools in maintaining undernourished children's normal progress toward primary school completion, the majority of the most undernourished children dropped out. This suggests that attention to nutritional status should be part of an integrated active learning program.

Examine strategies for extending actual class time dealing with academic context in rural schools.

The findings which show that only about two hours a day are used for learning subject matter, suggest that the school day might be organized more efficiently for learning. While beyond the scope of the IEQ work, a study of what children do during the recreation period and teachers' reactions to the feasibility of shortening the time spent in recreation might be studied.

CHAPTER I: INTRODUCTION

This report presents the principal results of the longitudinal applied study conducted by the Improving Educational Quality (IEQ) Project in Guatemala. This project worked with the Ministry of Education, with the AID Mission, and with the education community in Guatemala from 1993 through 1996. The project will reach completion on January 31, 1997. During the first year of the project, the participating countries were selected, a research plan was developed, and the local research teams were chosen. The countries selected to participate in this project were Ghana, Guatemala, and Mali. South Africa and Uganda joined the project at a later date. In consultation with the Ministry of Education, it was decided that the project in Guatemala would examine key aspects of a pilot program in unitary schools.

The NEU (*Nueva Escuela Unitaria*) program was designed for implementation in multigrade schools in rural areas of Guatemala. It follows the principles of active learning (Newman et. al., 1989; Resnick, 1989) which emphasize collaborative learning (Brown and Palincsar, 1989; Slavin, 1983), peer teaching (Johnson and Johnson, 1975; Larson and Christensen, 1993), the use of self-instructional guides, participation in Student Government, and other similar elements. The program's goals include providing students with an opportunity to complete the six primary grades, creating flexible and practical learners, and providing a participative and democratic education.

The NEU program was implemented in two of the country's educational regions, one with a predominantly indigenous population and the other with a non-indigenous or "*ladino*" population. During this study, close contact has been maintained with the Ministry of Education at the central level, as well as at the regional and departmental levels. During the second year of the project, field work was begun at the schools selected for the sample. During the third, fourth, and fifth years, research was continued in the selected schools reflecting the study's longitudinal nature. During the last year of the project, however, only tests were administered, and no observations in classrooms were conducted because of time limitations.

A. BACKGROUND

The NEU program can be seen within a socio-constructivist paradigm as it provides for collaboration in small groups and decentralized learning in which the teacher serves as a facilitator. The principal findings from 1993 showed that in schools where the NEU program was well-implemented, the students' academic achievement was higher than in comparison schools. Also, when well-implemented, the program can help to increase interactions between boys and girls. In both regions significant differences in learning and participation among students in the small group context in NEU schools were found. It was also found that the use of the Mayan language and Spanish among indigenous children was related to academic achievement in NEU schools. Additionally, it was discovered that students in the NEU schools were more creative and participated more than students in the comparison schools. Parents interviewed also perceived the program as favorable to their children's education.

In 1994 it was found that the greatest impact of the NEU program was on the socio-emotional behavior of the students in these schools. These behaviors seem to be the result of differences in the teaching strategies employed in the NEU schools and the quality of the interactions which take place in these classrooms. Parents noticed differences at home in children attending the NEU schools in terms of their relationships with adults and increased curiosity and participation in the household and community.

The NEU program had a greater impact on girls, who had a significantly higher level of achievement than girls attending traditional schools. It was also found that the NEU program has a significant effect in retaining students in school. A significantly lower drop-out rate was found in NEU schools when compared with traditional schools. However, the changes in socio-emotional behavior and classroom environment found in the NEU program were not demonstrated through consistently higher academic achievement.

B. METHODOLOGY

The methodology used throughout the study was multi-method and multi-site. An integrative strategy was employed, which includes an analysis of individual classroom behaviors through the selection of a subsample of students in experimental

and comparison schools to explain achievement results. During the first two years of the study, the children in the subsample were observed for periods of 10 minutes on different days to total one hour of observations. However, during the 1995 project year, due to changes in the research design requested by the NEU program developers, the students were observed for periods of 10 minutes until an hour of observations were completed on the same day.

The study design was longitudinal, that is, in the first year children in first and second grade attending the sample schools were observed, and in the following years these students were followed through third and fourth grade. In 1996 the children were assessed when they were in fourth and fifth grade in those schools which had all of the primary grades. This study also incorporated a transversal component by comparing the performance of students who were in first and second grade in 1993 to students in those grades in subsequent years.

C. OBJECTIVES AND RESEARCH QUESTIONS

The principal objective of the study related to the manner in which the implementation of the *Nueva Escuela Unitaria* (NEU) program was being carried out in two of the country's educational regions: Region II, which includes the departments of Alta and Baja Verapaz, and Region IV, which includes the departments of Jalapa, Jutiapa, and Santa Rosa. The primary goal was to examine the relationship between the implementation of the program and the performance of students when compared to students in traditional unitary schools.

The study questions were directed toward three contexts: students, teachers, and the community. In order to answer these questions, quantitative and qualitative components were used, combining these two types of methodology.

D. INSTRUMENTS

The instruments adapted and designed in the first year of the study were used in the following years as well (see Research Report: Phase I. Baessa, 1994). Therefore, the tests of creativity, reading, and mathematics were used throughout the study. The reading tests used in 1995 were the same as the previous year's with the exception of

the fourth grade test. For the fourth grade, the test from the *Serie Interamericana nivel 2 forma B* (Interamerican Series, level 2, form B) was used. In mathematics, the same test used to evaluate third grade was used, as the course of study did not vary much, and the results indicated that the students were unable to answer all of the items in third grade.

Naturalistic classroom observations of teachers and students were carried out, periodically each year, and at the end of the school year both teachers and parents were interviewed through 1995. During 1995 the research design was altered in order to evaluate the complete schools (see report on complete schools, 1996) making it necessary to restrict the observations to one period during that year. The parents and teachers were interviewed using the same instruments designed in 1994 and 1995.

E. SAMPLE

As a longitudinal design was chosen for this project, the sample consisted of students who were in first and second grades in 1993 and stayed in the experimental and comparison schools in both educational regions. During 1995, two schools working with the NEU methodology decided to leave the program and continue working with the traditional methodology. Therefore, four experimental schools in Region II and four in Region IV remained in the sample. This caused a reduction in the total sample of children in experimental schools. Also during 1995, two comparison schools from the sample became part of the NEU program's expansion project.

In 1993, 216 students in NEU schools and 159 in traditional schools took the tests. In 1996 they were administered to 233 students in NEU schools and 239 in comparison schools. The longitudinal sample consisted of 97 students who remained in NEU schools in 1996 and had test scores for each project year and 51 students in the comparison schools with the same characteristics.

During the first year of the study, a subsample of six students in first and second grades were chosen for observation. In 1994, the observed children who had dropped out were replaced to observe the same number of children as in the previous year, but in 1995 the observed children who left school were not replaced, reducing the sample of observed children. During 1995, in Region II, 94 students were observed: 39 in NEU and 55 in the comparison schools, and in Region IV, 81 students were observed: 39 in

NEU and 42 in the traditional schools. The children in the subsample were observed for periods of 10 minutes at different times of day and on different days of the week until an hour of observations in mathematics class and in Spanish Language, Social Studies, or Natural Science had been completed. These observations were conducted only once, at the middle of the year in 1995.

In 1996 no observations were conducted in the schools as this was the final year of the Improving Educational Quality project, and this year was to be spent analyzing data and producing reports. However, data from the enrollment logs were examined, and tests were administered at the end of the school year.

With the purpose of responding to the different study questions, different subsamples were chosen: students with normal progress, from year to year; students in first and second grades; malnourished versus well-nourished children; schools which returned to the traditional methodology; and expansion schools.

F. DATA ANALYSIS

The data were analyzed using different statistical techniques. In some cases t-tests were used. In others, analysis of covariance, analysis of variance with repeated measures, and chi-squared tests were used.

The observations from all project years were coded with the codes developed during the first year of data collection. These codes were entered into a database, and they were totaled for each subject. These totals were entered in Quattro Pro. These files were then converted into SPSS for Windows files and were combined with the files containing the test results. The interviews conducted with teachers and parents were coded and analyzed using SPSS for Windows. Also, the relative and absolute frequencies, as well as chi-squared tests, were calculated to analyze the data. Case studies integrating the qualitative and quantitative data were also prepared with the goal of presenting a summary of experience in each of the schools across the four years of the study. At the end of the project, a file with measures across all years was compiled in order to analyze the data longitudinally.

CHAPTER II: INDICATORS OF ACADEMIC SUCCESS

A. DROP-OUT RATE

In rural areas of Latin America analyzing the drop-out rate is a complex process. Children drop out of school for long periods of time, from six months to one year, due to factors such as the illness of a family member or seasonal migration, and then return the following year. In order to calculate and analyze data on drop outs, first the number of children who left school during a given year must be determined and then the number of children who returned the next year must be measured. In order to obtain the most realistic data on drop outs possible, the number of children who left school temporarily was subtracted from the number of children who dropped out. Therefore, the calculations differ somewhat from those reported in previous years. The following table presents the data calculated for the total sample by year.

Table 1: Drop-Out Rate by Year for the Total Sample

Year/Grade	NEU	EU
1993/1st & 2nd	15%	23%
1994/1st, 2nd, 3rd, & 4th	20%*	33%
1995/1st, 2nd, 3rd, 4th, & 5th	18%*	30%

* x^2 is statistically significant

As shown in the table, in the total sample there is a higher drop-out rate in the traditional schools. The differences are significant for 1994 and 1995.

Then the drop-out rate by region for Alta and Baja Verapaz and Region IV was calculated using the same procedure. The following tables display the drop-out rates found for each region.

Table 2: Drop-out Rate by Year in Alta Verapaz

Year/Grade	NEU	EU
1993/1st & 2nd	21%	22%
1994/1st, 2nd, 3rd, & 4th	18%*	34%
1995/1st, 2nd, 3rd, 4th, & 5th	20%*	27%

* x^2 is statistically significant

Table 3: Drop-out Rate in the Department of Baja Verapaz

Year/Grade	NEU	EU
1993/1st & 2nd	5%*	38%
1994/1st, 2nd, 3rd, & 4th	11%*	31%
1995/1st, 2nd, 3rd, 4th, & 5th	18%*	28%

* x^2 is statistically significant

Table 4: Drop-out Rate by Year in Region IV

Year/Grade	NEU	EU
1993/1st & 2nd	15%	14%
1994/1st, 2nd, 3rd, & 4th	23%*	32%
1995/1st, 2nd, 3rd, 4th, & 5th	16%*	33%

* x^2 is statistically significant

As seen in the tables above, in NEU schools there is a consistent trend towards a lower drop-out rates across the years for all groups. In Region IV, there is less difference between NEU and traditional schools in the percentages of drop outs.

ANALYSIS BY GENDER:

The drop-out rate was also analyzed by gender. The following tables present the results of the analysis by gender and by type of school.

Table 5: Drop-out Rate by Year and by Gender

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	19%	17%	9%*	30%
1994	17%	34%	22%	30%
1995	19%*	28%	16%*	32%

* x^2 is statistically significant

As shown in Table 5, a consistent tendency towards lower drop-out rates by sex also exists in the NEU schools, with the exception of boys in 1993. It is noteworthy that in 1995 the drop-out rate for girls in traditional schools is twice that of girls in NEU schools. The drop-out rate by gender for each department was also examined across the study. The following tables present these results.

Table 6: Drop-out Rate by Year and by Gender in Alta Verapaz

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	27%*	15%	9%*	30%
1994	20%	36%	15%*	30%
1995	23%	27%	15%*	28%

* x^2 is statistically significant

As can be seen in Table 6, with the exception of boys in the first year, in the Department of Alta Verapaz the drop-out rates are consistently higher in the traditional schools. In this department the drop-out rate is generally higher for boys in NEU (when compared with NEU girls), however, in the traditional schools there is no consistent pattern.

Table 7: Drop-out Rate by Year and by Gender in Baja Verapaz

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	0%*	31%	10%*	45%
1994	8%*	33%	16%*	30%
1995	16%*	34%	22%	21%

* x^2 is statistically significant

In the department of Baja Verapaz the tendency is very similar to that found in Alta Verapaz, as all of the drop-out rates are higher in the comparison schools. In this case the only exception is girls in 1995 where the percentages are almost equal for NEU and EU schools. A higher drop-out rate was found for girls than for boys.

Table 8: Drop-out Rate by Year and by Gender in Region IV

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	22%*	11%	9%	19%
1994	20%	33%	26%	31%
1995	18%	25%	14%*	41%

* x^2 is statistically significant

Table 8, above, shows that in Region IV in 1993 there was a higher drop-out rate for NEU boys. In all other cases the comparison schools have a higher drop-out rate. Also, there is not much difference between the drop-out rates for boys and girls in the experimental schools, while in the traditional schools an appreciable difference is noted, especially in 1995.

B. CHILDREN "IN PROGRESS" AND GRADE REPETITION

The percentage of grade repetition was calculated for the total sample according to the attendance lists provided by the teachers the following year. Thus, the number of

children in the same grade that they were in the previous year at the beginning of the new academic year was calculated. The following tables show the percentages of grade repetition for NEU and traditional schools. In 1993 the children repeating a grade were reported by the teachers when they provided the lists of students enrolled in the schools. In later years these data were calculated as explained above. It must be mentioned that in NEU schools, where flexible promotion is used, after 1994 many children were "in progress." That is, they had not completed all of the work necessary to be promoted, but during the course of the following school year they passed to the next grade. They were students who remained in the same grade and progressed at their own pace.

Table 9: Repetition by Year in the Total Sample

Year	NEU	EU
1993	24%	31%
1994	15%*	27%
1995	19%*	25%
1996	20%*	27%

* x^2 is statistically significant

As shown in Table 9, for all years except 1993, at the beginning of the NEU program implementation, there are differences ranging from 7% to 12% in favor of the NEU schools. Repetition was also calculated across years in the departments of Alta and Baja Verapaz and in Region IV, which includes Jalapa, Jutiapa, and Santa Rosa.

Table 10: Repetition by Year in Alta Verapaz

Year	NEU	EU
1993	18%	27%
1994	18%	27%
1995	22%	26%
1996	20%	28%

* x^2 is statistically significant

Table 11: Repetition by Year in Baja Verapaz

Year	NEU	EU
1993	18%	27%
1994	8%*	25%
1995	16%	25%
1996	18%	25%

* x^2 is statistically significant

Table 12: Repetition by Year in Region IV

Year	NEU	EU
1993	28%	35%
1994	15%*	28%
1995	19%	25%
1996	21%	27%

* x^2 is statistically significant

As seen in the three tables above, there is a consistent pattern of lower repetition rates in NEU schools for all grades, even in the first year of study. It could be speculated that the teachers who were included in the program had a greater interest in their role as a teacher which led to a lower repetition rate.

Then the data were analyzed by gender with the goal of determining whether the program had a greater impact on girls.

Table 13: Repetition by Gender in the Total Sample

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	17%*	33%	32%	28%
1994	17%*	32%	12%*	21%
1995	18%	25%	21%	25%
1996	21%	27%	20%	26%

* x^2 is statistically significant

As shown in the table above, from the beginning of the NEU program the percentage of repetition among boys in the total sample was lower in the experimental schools than in the traditional schools. In the case of girls, the rate of repetition in the NEU schools has fallen across the years while in traditional schools it has remained fairly constant.

Next the rate of repetition was analyzed by gender and by department across the years. The following tables present these findings.

Table 14: Repetition by Gender in Alta Verapaz

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	9%	27%	38%	28%
1994	19%	33%	17%	19%
1995	17%	28%	30%	23%
1996	17%	30%	22%	25%

* x^2 is statistically significant

As shown in Table 14, in the department of Alta Verapaz for boys there was a consistent pattern of lower repetition rates among students attending NEU schools. On the other hand, the girls showed greater variability. In almost all years, with the exception of 1994, there is higher repetition among female students in NEU schools. In general, there is a higher rate of repetition among girls than among boys, although some exceptions exist.

Table 15: Repetition by Gender in Baja Verapaz

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	16%	31%	21%	22%
1994	11%	32%	4%	15%
1995	15%	25%	16%	24%
1996	14%	23%	23%	27%

* x^2 is statistically significant

In the department of Baja Verapaz, as seen in Table 15, a consistent pattern of lower repetition rates is seen among the boys in NEU schools. Among girls, the pattern is similar but less marked. No great difference is observed upon comparing repetition for boys and girls in both types of schools.

Table 16: Repetition by Gender in Region IV

	Boys		Girls	
Year	NEU	EU	NEU	EU
1993	22%	38%	33%	32%
1994	17%	31%	12%	25%
1995	20%	22%	18%	28%
1996	27%	27%	16%	26%

* x^2 is statistically significant

Table 16, above, shows that repetition rates for boys are consistently lower in NEU schools, with the exception of the last year when the rate is equal to the rate in EU schools. For girls, the repetition rates for NEU and EU students are practically the same in the first year and then consistently lower among girls in the NEU schools for the remaining years. There is no appreciable difference in repetition rates when girls and boys are compared, as no consistent pattern is observed. In some years it is higher, and in others it is lower for one sex or another.

The rate of repetition by grade and by type of school were then calculated across the years. This data is displayed in the following tables. These percentages were calculated by looking at enrollment for each year and comparing the lists with information on which grade the children were enrolled in the previous year.

Table 17: Repetition in First Grade by Year

Year	NEU	EU
1993	29%	34%
1994	29%	40%
1995	35%	39%
1996	38%	34%

* x^2 is statistically significant

Table 18: Repetition in Second Grade by Year

Year	NEU	EU
1993	16%	24%
1994	2%*	22%
1995	17%	18%
1996	20%	22%

* x^2 is statistically significant

Table 19: Repetition in Third Grade by Year

Year	NEU	EU
1994	0%	0%
1995	5%	14%
1996	7%	13%

* x^2 is statistically significant

Table 20: Repetition in Fourth Grade by Year

Year	NEU	EU
1995	0%	0%
1996	2%	6%

* x^2 is statistically significant

Due to the longitudinal sample and the fact that in 1993 only students enrolled in first and second grade were studied, there was no percentage calculated for third grade in 1993 nor for fourth grade in 1993 and 1994. As shown in the proceeding tables, repetition by grade is consistently higher in the traditional schools for all grades. This is not, however, always statistically significant.

C. NORMAL PROGRESS AMONG STUDENTS

The percentage of students in the longitudinal sample who began first grade in 1993 and are currently, in 1996, in fourth grade was analyzed. It should be recalled that two of the traditional schools in the sample do not offer fourth grade. The data for children who began second grade in 1993 and, if they did not repeat any grade, are currently enrolled in fifth grade, was also analyzed. Only two of the schools in the sample do not offer fifth grade, and both are traditional schools. The following two tables present the findings.

Table 21: Normal Progress of Children Enrolled in First Grade

	NEU	EU
First Graders in 1993	147	211
Fourth Graders in 1996	44	21
Percentage	30%*	10%

* x^2 is statistically significant

Table 22: Normal Progress of Children Enrolled in Second Grade

	NEU	EU
Second Graders in 1993	94	104
Fifth Graders in 1996	51	27
Percentage	54%*	26%

* x^2 is statistically significant

As shown in Tables 21 and 22, normal progress of children enrolled in 1993 in first and second grades in NEU schools through the beginning of 1996 is statistically significant when compared to the progress of children enrolled in traditional schools.

ANALYSIS BY GENDER:

The students' normal progress was also analyzed by gender. The following tables present the results found upon analyzing the data by sex.

Table 23: Normal Progress by Gender for Children Enrolled in First Grade

Boys		
	NEU	EU
First Graders in 1993	76	119
Fourth Graders in 1996	22	12
Percentage	29%*	10%
Girls		
	NEU	EU
First Graders in 1993	71	92
Fourth Graders in 1996	22	9
Percentage	31%*	10%

* x^2 is statistically significant

Table 24: Normal Progress by Gender for Children Enrolled in Second Grade

Boys		
	NEU	EU
Second Graders in 1993	56	56
Fifth Graders in 1996	29	13
Percentage	52%*	23%
Girls		
	NEU	EU
Second Graders in 1993	38	48
Fifth Graders in 1996	22	14
Percentage	58%*	29%

* x^2 is statistically significant

As shown above, both boys and girls attending schools in the NEU program have had consistently higher academic success than students of both sexes in traditional schools in terms of normal progress through the grades. If the fact that NEU

schools allow for flexible promotion and that students can finish a school year as students "in progress," either advanced or delayed, is taken into account, then these results are even more significant in terms of the academic success which the NEU program is achieving.

D. SCHOOL ACCESS

One objective of rural school innovations such as NEU is to attract children to school who would not traditionally attend school. A second objective, as already discussed, is to encourage children to continue in school by offering a complete six-year primary school program. In order to examine the success of the NEU program in meeting these objectives, the total enrollment in NEU sample schools was compared to that of the traditional schools in the comparison group. Table 25 shows the overall average attendance in the NEU and EU schools over the four years of study. As can be seen, both types of schools follow a similar pattern. That is, there is a slight drop in average attendance in 1994 then steady increases in 1995 and 1996. The magnitude of the increase is, however, different. In EU schools, there are slight increases of two and three children per year, with a total increase in average attendance of five children, or approximately one additional child per school per year.

In the NEU schools the overall average enrollment increased by 18 children per school. This is an average of 4.5 children per year over the four years of the study. Thus, it would appear that NEU has been extremely successful in attracting children to attend school, when compared to similar schools without the NEU program.

Table 25: Overall Average Enrollment by Year

Year/Program	1993	1994	1995*	1996*
NEU	42	40	54	60
EU	39	34	41	44

* Includes sample schools which left or joined the NEU program.

When average enrollment is examined by Region, the phenomenon of increased attendance becomes clearer. As shown in Table 26, the increase in average enrollment occurs in NEU schools of both regions.

Table 26: Yearly Average Enrollment by Region

Region II				
Year/Program	1993	1994	1995*	1996*
NEU	41	38	48	47
EU	46	38	47	53
Region IV				
Year/Program	1993	1994	1995*	1996*
NEU	42	31	53	66
EU	32	30	29	30

* Includes sample schools which left or joined the NEU program.

In Region II, there is also a increase in enrollment that is similar to that in the NEU schools and actually slightly greater. Whereas NEU schools in Region II increase an average of six children over the four years, EU schools have increased by seven children.

Region IV accounts for the differences found in increases in average attendance between the two types of schools. The comparison schools experience a slight drop in attendance whereas the NEU schools increase by an average of 24 children per school.

In order to examine the continuance of children in school, the percentage of the children who were in fourth, fifth, and sixth grade in each year of the study was calculated. As can be seen, neither type of school had any children in the higher grades during the fist year of the study. In 1994, five children in a single NEU school were in fourth grade, accounting for 2% of all children enrolled in the NEU sample schools. No children in traditional schools were in the higher grades. In 1995 and 1996, nearly one-third of the NEU students were in the higher grades. The percentage of children in the higher grades in EU schools had increased but still was well below

that of NEU. In 1996, the percentage of children in higher grades decreased, whereas in NEU it remained constant.

Table 27: Percentage of Children in Grades 4-6 by Year

Year	1993	1994	1995*	1996*
NEU	0	2%	30%	29%
EU	0	0	21%	16%

* Includes sample schools that left or joined NEU program.

Table 27 shows the percentage of children in the higher grade levels by region. As can be seen, the same pattern is found in both regions. Both types of schools had few children enrolled in the higher grade levels at the start of the 1993 and 1994 school years. In 1995 and 1996, the percentage of children in higher grades increased substantially. In each region, however, NEU had relatively more children enrolled in the higher grades than comparison schools.

Table 28: Percentage of Children Enrolled in Grades 4-6 by Region

Region IV				
Year	1993	1994	1995*	1996*
NEU	0	0	29%	29%
EU	0	0	17%	15%
Region II				
Year	1993	1994	1995*	1996*
NEU	0	3%	30%	29%
EU	0	0	22%	19%

* Includes sample schools that left or joined NEU program

CHAPTER III: IMPLEMENTATION AND STUDENT PERFORMANCE

A. LEVEL OF IMPLEMENTATION

The study of the implementation of the program, as carried out during the first three years of the project, assumes that because a program, such as NEU, is a continuous process, it requires a parallel evaluation strategy throughout the entire implementation period. In 1995 information was collected for the last time on the same elements that were evaluated in previous years: physical location of the schools, schedule and organization, instructional materials, and teaching strategies. Based on this information, changes which had taken place in these areas between the beginning of the study in 1993 and 1995 were noted.

1. Physical Changes in the Schools

During 1995, the last year in which observations were conducted, no notable changes in the physical space occupied by the schools took place. The interiors and exteriors of both NEU and EU schools in both regions remained the same. The experimental schools had a much greater quantity of instructional materials than the traditional schools. Among these materials study corners with elements from the community, posters, maps, self-instructional guides, and mathematics guides which were distributed in 1995 were observed. Also, in the NEU schools the minimum library was supplemented during 1995 with a greater number of books. Another notable difference between the experimental and traditional schools is the furniture. In 1994 the NEU schools received new furniture in the form of two-student desks, which were organized into groups facilitating work in pairs or small groups. In the traditional schools the furniture generally is deteriorated and consists of desks which hold two to three students, arranged in rows facing the blackboard and the teacher's desk.

2. Schedule and Organization

In the schedule of classes and how teachers organize time there were no major changes during the course of the study. In NEU schools, as in traditional schools,

classes generally begin between 8:00 and 8:30 AM. There is a recess period of 30 to 40 minutes, and classes end between 12:00 and 12:30 PM. The following tables show the allocation of time in Regions II and IV. It should be remembered that in both regions, in 1995 there were only four NEU schools as the teachers in two schools, Chirrepim in Region II and Talud in Region IV, decided to leave the program. In the sample of comparison schools, Chiraxsi in Region II and Barrial in Region IV joined the NEU expansion program in 1995 and were, therefore, analyzed separately.

Table 29: Distribution of Class Time in NEU and EU in Region II

NEU*				
Year	Instruction	Transition	Recess	Cleaning
1993	64%	7%	22%	7%
1994	67%	7%	22%	4%
1995	70%	7%	22%	3%
EU*				
Year	Instruction	Transition	Recess	Cleaning
1993	48%	11%	29%	12%
1994	63%	7%	25%	4%
1995	65%	7%	24%	3%

* Does not include schools which changed methodology.

As shown in Table 29, on average in Region II more time was dedicated to instruction in NEU schools, although the difference was not very great. In both types of schools there was a gradual increase in the amount of instruction time across the years. It can be seen that the percentages of time used of transition and cleaning in both types of schools are similar, however, the percentage of time used for transition between activities is lower in the experimental schools. This may be due to a more organized system and predetermined planning.

Table 30: Distribution of Class Time in NEU and EU in Region IV

NEU*				
Year	Instruction	Transition	Recess	Cleaning
1993	73%	1%	21%	5%
1994	70%	3%	22%	5%
1995	71%	4%	22%	3%
EU*				
Year	Instruction	Transition	Recess	Cleaning
1993	57%	8%	26%	7%
1994	56%	8%	31%	5%
1995	59%	12%	22%	7%

* Does not include schools which changed methodology.

In Region IV there is a greater difference in the average percentage of instruction time used in NEU and comparison schools across the three years of the study. On average the teachers in experimental schools spend almost 20% more time teaching. This difference is due to the use of more time for transition between activities and prolonged recess periods in the traditional schools. There is not much difference across time in the allocation of time in each program.

STUDENT-TEACHER RATIO:

No changes in the number of teachers were found since 1994 in NEU schools in Region II. In Mariscal, Secuchil, and Sanimlaha there were still two teachers, and in Carmelo there was one. In Mariscal and Secuchil the teachers handle approximately the same number of students. In Sanimlaha there were approximately 10 students less, and in Carmelo the number of students also dropped slightly. In Chiraxsi there were two teachers with approximately the same number of students. Seocox had two teachers who handled 53 students, which does not reflect any changes. In Sigualóm there are still two teachers, and the number of students not declined.

In Baja Verapaz, Limonares remained under the direction of only one teacher who is responsible for the same number of students. In San Simón, there was also only one teacher who taught an average of 46 students during the three years of the study.

In Region IV in 1995 there were only four NEU schools left in the longitudinal sample as the teacher at Talud decided to leave the program and continue with the traditional multigrade methodology. Carrillo had two teachers in 1995 due to the large number of children enrolled in 1994, and the enrollment remained the same as the previous year, but increased from 1993. The other three schools: Pantanal, Cerezal, and Canalitos, each had only one teacher, and the number of students at each school did not vary substantially after the beginning of the study. Of the traditional schools in the region, only Lazareto had two teachers, as in the previous year. There was only one teacher at each of the other five schools.

3. Instructional Materials

From 1993 it was noted that there were great differences in the instructional materials used in the NEU schools. There were self-instructional guides, at first in a preliminary form so that they could be validated by the teachers and later in a more definite form. Finally, in 1996 guides printed in color were distributed. The NEU schools also received a minimum library at the end of the first year of the study which was expanded in 1995. The most important change observed in 1995 was that after validating the mathematics guides developed by the teachers under the supervision of the director of NEU, these were distributed to all of the schools.

In the traditional schools, from the beginning of the study, it was noted that the materials used consisted solely of the blackboard and chalk. These materials continued to be used throughout the three years of the study. Also, text books such as Nacho and Victoria, were still used.

Over the three years of the study there was a notable change in the experimental schools in terms of the materials and resources available, and in the comparison schools there was no change.

4. Teaching Strategies

From the beginning of this study, the contexts in which learning occurred in the sample schools was analyzed. The following tables illustrate the percentages found for different learning contexts in both regions across the three years of research, in the experimental as well as the traditional unitary schools. In order to conduct a longitudinal analysis, the contexts were separated into active, child-centered contexts and traditional, teacher-centered contexts. It must be recalled that in 1995 four schools in the sample changed methodologies and were, therefore, excluded from the following analyses.

Table 31: Student Participation in Active Learning Contexts in Region II

	NEU		EU	
Year/Context	Small Group (with Teacher)	Small Group (no Teacher)	Small Group (with Teacher)	Small Group (no Teacher)
1993	34%	19%	5%	1%
1994	12%	43%	1%	2%
1995*	10%	44%	2%	3%

* Does not include schools which changed methodology.

In the NEU schools the teachers at first preferred the context of a small, teacher-directed group, however, as time passed, small groups of students working alone became dominant. This shows a better understanding of the NEU methodology among teachers, as it implies a gradual transfer of power over learning from the teacher to the students, and this is consistent with students working with the self-instructional guides.

Table 32: Student Participation in Active Learning Contexts in Region IV

	NEU		EU	
Year/Context	Small Group (with Teacher)	Small Group (no Teacher)	Small Group (with Teacher)	Small Group (no Teacher)
1993	22%	18%	6%	1%
1994	10%	28%	8%	2%
1995*	14%	29%	3%	0%

* Does not include schools which changed methodology.

In Region IV the same trend seen in the NEU schools in Region II can be seen, although it is not as marked. As Tables 31 and 32 show, in traditional schools work in active learning contexts is almost non-existent. The following tables present the percentage of time used in traditional, teacher-centered contexts.

Table 33: Student Participation in Traditional Learning Contexts in Region II

	NEU		EU	
Year/Context	Large Group (with Teacher)	Seatwork	Large Group (with Teacher)	Seatwork
1993	11%	35%	31%	62%
1994	5%	40%	10%	86%
1995*	3%	41%	10%	82%

* Does not include schools which changed methodology.

As shown in Table 33, in the NEU schools work with the class as a whole tends to diminish and almost disappear over time, and seatwork varies only slightly. It should be noted that the self-instructional guides include sections in which the students must work individually. In the EU schools, work with the class as a whole decreases, but seatwork increases greatly. This may be due to the fact that in the third year of the study the children were in higher grades and, therefore, worked alone on more lessons more frequently.

Table 34: Student Participation in Traditional Learning Contexts in Region IV

	NEU		EU	
Year/Context	Large Group (with Teacher)	Seatwork	Large Group (with Teacher)	Seatwork
1993	14%	46%	25%	68%
1994	10%	52%	17%	72%
1995*	2%	54%	16%	80%

* Does not include schools which changed methodology.

As seen in Table 34, in Region IV a similar pattern to that seen in NEU schools in Region II is found, although the percentage of seatwork is approximately 10% higher in this region. Among the comparison schools the trend is almost identical to that observed in the traditional schools in Region II.

B. ACADEMIC PERFORMANCE

1. Comparison of NEU and Traditional Schools

In order to analyze achievement in reading across the years, covariance analyses with repeated measures were conducted. These analyses were conducted for the total sample, as the number of cases would have been too small if the data were desegregated by department. Among the students who were tested upon completing first grade it was found that, although the effect of time was statistically significant ($F(231,3)=32.18$, $p=.000$), the interaction of time by group was not. That is to say, that the reading achievement of both groups improved over time, but there was no significant difference across the years between students in experimental schools and those in the comparison schools. For second grade the covariance analysis with repeated measures indicated that time had a statistically significant effect ($F(236,3)=28.08$, $p=.000$), but that the interaction of time with group was not statistically significant.

Upon examining the statistically adjusted measures, that is those controlled by value at the start of the analysis, for reading of the students who enrolled in 1993, no

differences exist between the two groups at the beginning of the study (25.23 in NEU versus 25.09 in EU). In 1994, 1995, and 1996, however, an increase in the scores of students in the traditional schools becomes apparent, at the same time as the number of students in these schools falls noticeably. In 1996 the adjusted average in NEU is 41.02, while it is 43.75 in EU for total reading. There are many more students in the NEU schools than in the traditional schools at this same time. This phenomenon repeats itself among second graders, where the adjusted averages for total reading in both types of schools are very similar at the beginning of the study (41.47 in NEU and 42.78 in EU). In 1996 there is a greater difference in favor of the traditional schools (47.66 in NEU and 49.47 in EU). In this grade there was also a notable decrease in the number of students in the traditional schools by 1996.

The covariance analysis with repeated measures for the results obtained in mathematics showed that among students who enrolled in first grade in 1993 and remained in school through 1996 time had no statistically significant effect. There was also no significant effect between the interaction of group (NEU-EU) and time. Again it was discovered that the averages of the experimental and comparison groups were practically the same when the implementation of the NEU program began (10.62 NEU and 10.25 EU), but in 1996 the averages for the students in the NEU schools were lower than those for students in the traditional schools (10.62 in NEU and 13.15 in EU). The results obtained from the covariance analysis with repeated measures for children who enrolled in second grade in 1993 showed that there was a statistically significant effect for time ($F(177,3)=10.49$, $p=.000$) as well as the interaction of time with group ($F(177,3)=9.08$, $p=.000$). In this case, examining the adjusted averages for 1993 indicates that the NEU students had a higher average (15.50 in NEU versus 11.84 in EU), however, in 1996 the opposite was found (14.74 in NEU and 17.26 in EU). Analyzing the descriptive statistics for the longitudinal sample, those students who had reading test scored from 1993 to 1996, showed that in all cases there were more students in the NEU schools.

The following table presents the percentages of students who were tested every year and who, therefore, were include in the longitudinal analysis, by type of school and by region. The percentages were calculated based on the number of students in the first year of the study.

Table 35: Percentage of Students Included in the Longitudinal Sample

	NEU		EU	
Region/Grade	First Grade	Second Grade	First Grade	Second Grade
Alta Verapaz	38%	50%	21%	38%
Baja Verapaz	47%	64%	38%	31%
Region IV	45%	53%	34%	29%

Table 35 shows that the percentages for the NEU schools are higher in all cases than those for the comparison schools, although at the beginning of the study the number of students in the schools was very similar. As one of this study's findings is related to the percentage of NEU students included in the longitudinal sample in all regions, and in both grades the percentages were consistently higher than in the traditional schools, the data were analyzed by comparing the group of children in the sample who dropped out in both types of schools with the group who remained in school through 1996. This comparison was conducted taking the reading test administered at the end of 1993 as an indicator of the students' general ability.

Table 36: Comparison of Reading among Students who Did and Did Not Drop Out in NEU and EU in 1993

		First Grade			Second Grade	
Program	"t"	Dropped Out	Did Not Drop Out	"t"	Dropped Out	Did Not Drop Out
		n=106	n=14		n=64	n=22
NEU	**	X=16.96	X=33.07	*	X=47.07	X=56.09
		s=11.84	S=19.6		s=17.72	s=11.41
		n=95	n=10		n=47	n=12
EU	**	X=18.3	X=41.3	*	X=44.0	X=57.25
		s=14.83	S=16.92		s=16.83	s=15.25

As shown by the data for reading presented above for first and second grade, the differences between the means of students who dropped out and those who stayed

in school and advanced at a normal pace are highly significant. The averages for children who did not drop out are much higher in all cases than those of the children who dropped out during the three years of the study. This finding is interesting as it indicates that there is a self-selection mechanism in the schools which leaves the students who apparently have a greater academic ability in school.

Another interesting issue is that, especially in first grade, the averages for NEU students who did not drop out are lower than those of students who did not drop out in traditional schools. As these students are the same ones who entered school when the NEU program began, this is an important finding. The same trend is seen among second graders, although it is not as marked.

These three findings combined seem to indicate that NEU schools retain a greater percent of average students, while the traditional schools retain only the best students. The students who are unsuccessful, perhaps due to less ability from the start, leave school before completing the primary cycle through a process of natural self-selection.

2. Comparison between the Group of Students at the Beginning and the End of the Study

FIRST GRADE

The results for students who completed first grade in 1993 were compared with those in first grade in 1996. Students who were repeating first grade in 1996 and had enrolled in school in 1993 were excluded. The covariance analysis conducted showed that there was no statistically significant difference in achievement in reading between these two groups, however, in mathematics there was a statistically significant difference ($F(264,1)=17.41$, $p=.000$) in the effect of the group (NEU versus EU) and the year (1993 versus 1996) in which they attended first grade ($F(264,1)=4.24$, $p=.000$). In both cases these differences favor the NEU schools. There was no significant interaction found between these two factors.

Therefore, it was found that for reading students in both types of programs had achievement very similar to that obtained three years earlier, but in mathematics the

students attending schools in the NEU program had a higher achievement level in 1996 than they had in 1993.

SECOND GRADE

The results obtained for the original second grade sample in 1993 were also compared to those for students in this grade in 1996, excluding those students who had been repeating the grade since the beginning of the study. The covariance analysis by year and by group showed that in reading there was no significant effect in either of these factors, nor in the interaction of year with group. However, the covariance analysis conducted for mathematics showed that group ($F(253,1)$-9.61, $p=.002$), year ($F(253,1)=66.66$, $p=.000$), and the interaction of these two factors ($F(253,1)=12.45$, $p=.000$) had a statistically significant effect, favoring NEU schools in all cases. Students in both types of programs have achievement levels in reading similar to those obtained by the group in second grade in 1993, but in mathematics the students in NEU schools had higher achievement than students enrolled in second grade the year that the study began.

3. Language Comparison

INTERACTIONS IN Q'EQCHI' AND SPANISH AND NON-VERBAL INTERACTIONS

The following table presents the frequencies of interactions in the classroom observations of the children in the subsample in the region of Alta Verapaz across the three years of the study coded to show if they were in Spanish, Q'eqchi', or non-verbal.

Table 37: Frequency of Language Use in Alta Verapaz

NEU									
School/Language	Maya %			Spanish %			Non-Verbal %		
	1993	1994	1995	1993	1994	1995	1993	1994	1995
Sanimlaha									
1st to 3rd grades	32	48	48	.20	34	34	48	18	18
2nd to 4th grades	36	57	51	15	32	31	49	11	18
Secuchil									
1st to 3rd grades	54	38	54	26	42	40	20	20	6
2nd to 4th grades	50	52	48	24	34	40	26	14	12
EU									
School/Language	Maya %			Spanish %			Non-Verbal %		
	1993	1994	1995	1993	1994	1995	1993	1994	1995
Sigualom									
1st to 3rd grades	59	41	46	13	36	46	28	23	8
2nd to 4th grades	54	43	28	20	35	52	26	22	20
Seocox									
1st to 3rd grades	36	57	53	18	28	27	46	15	20
2nd to 4th grades	30	58	49	12	27	25	58	15	26

The percentage of use of the Q'eqchi' language in the two NEU schools which remained in the sample in 1995 varied only slightly across the years, and in one school the percentage is the same that was observed in 1993. In general, interactions in this language account for approximately 50% of all interactions. In the traditional schools there was a tendency for the use of Q'eqchi' to decrease as the years passed.

In the NEU schools a slight increase in the percentage of interactions in Spanish took place since the beginning of the project. In one of the traditional schools the use of Spanish in the schools increased substantially, and in the other in remained almost constant.

There is a slight decline in non-verbal interactions across time in the NEU schools, and in the comparison schools there is no consistent trend.

SPANISH LANGUAGE PROFICIENCY

In order to determine the impact of the NEU program on children whose first language was not Spanish, the indigenous students in the sample were examined by level of Spanish language proficiency. The 1993 sample of Q'eqchi' children was divided by their relative proficiency in Spanish at the beginning of the 1993 school year. As can be seen from Table 38, significant differences were found in terms of children by level of language proficiency for the sample as a whole.

Table 38: Percentage of Students by Spanish Language Proficiency and Retention in School

Proficiency	In School	Drop-out
Low	5%	95%
High	22%*	78%

* Significant at p =.01

More than three times as many children with some degree of Spanish ability on school entry were making normal progress in school when compared to children of low proficiency. However, the drop-out rate is extremely high for both groups of indigenous children as 95% of those with low Spanish proficiency and 78% of those with relatively greater Spanish proficiency had dropped out by 1996.

When the Q'eqchi'-speaking children were examined by program, it was found that NEU has been more successful in keeping children who entered school with some ability in Spanish in school than traditional schools. As can be seen in Table 39, 33% of the NEU children in this group remained in school compared to only 9% of EU children. Of the three children with low Spanish proficiency that continue in school, two are in the NEU program. However, in terms of the sample as a whole, the relative frequency of children of low beginning Spanish proficiency is similar. That is, 5% for NEU and 6% for EU.

Table 39: Percentage of NEU and EU Students by Spanish Language Proficiency and Retention in School

Proficiency	NEU		EU	
	In School	Drop-out	In School	Drop-out
Low	5%	95%	6%	94%
High	33%*	67%	9%	91%

* Significant at p=.01

4. Malnutrition

The analyses with repeated measures conducted do not show a significant effect between academic performance and malnutrition, despite the fact that this variable was related to student performance in both types of schools at the beginning of the study. Due to this finding, malnutrition was examined among students in the longitudinal sample with respect to their retention in the school system. Analysis of this data was restricted to the inferior quartile (>25%), taking as an indicator of malnutrition height by age in "z" scores. The following table shows the percentages obtained for malnourished children and their retention in school from 1993 through 1996.

Table 40: Percentage of Malnourished Students who Remained in School

Program	First Grade	Second Grade
NEU	11%	29%
EU	6%	10%

As seen in Table 40, children with more acute malnutrition were retained more frequently in the NEU program. The difference for first grade is only 4%, but in second grade the difference is much greater, reaching 19%. Therefore, it can be said that the NEU program retains more children with severe malnutrition than the traditional schools where, due to their traditional methodology, passive children receive less attention than more active children. The total percentage of NEU students in the inferior quartile for malnutrition who remained in school is 40%, while in the traditional unitary schools it is

only 16%. As the total level of malnutrition is high in rural areas in Guatemala, this is truly troubling, and a possible solution may be the use of education programs with active learning methodologies, such as that provided by the NEU program. The following vignette provides an example of a malnourished girl in a NEU school who remained in school through 1996.

Gloria is a malnourished girl attending third grade at a NEU school in Alta Verapaz. She is in a small group working with five other classmates.

9:30 AM The students look up words indicated in the Social Studies guide in the dictionary. Gloria stands up and walks over to the library to get the big dictionary. She returns and says to Elisa, a classmate in her group, "Now all we need is '*granizo*' (hail)." She opens the dictionary to look for the word while she hums. Gloria finds the word and says to Elisa, "Here it is." Elisa looks closely while Gloria turns the pages saying "*granizo, granizo.*" They both discuss what they are reading and stop to look at some drawings that catch their attention. Gloria finds the definition and says, "I found it." Elisa asks her, "Really?" Then Gloria continues saying "*granizo, granizo*" while she prepares her pencil and notebook to copy the definition. Gloria begins to copy while she reads the definition, "Hail is like a rain of little ice crystals, ice that forms when water...." Elisa interrupts her, asking, "Are you done?" Gloria doesn't answer her and continues copying while she reads aloud. Then she talks to Elena, saying, "We're already on '*granizo.*'" Her classmate answers softly, and Gloria continues to write while humming a song that the older children sing. 9:13 AM

The next example presents an observation of a boy with the same grade of malnutrition who dropped out of a traditional school after the first year of the study.

Edgar is in first grade at a traditional school in Alta Verapaz. At the start of this observation he is sitting at his desk in Spanish Language class.

8:25 AM Edgar is writing in his notebook. He leans over his notebook and continues copying the words in the list he has been given by the teacher. He continues copying for another five minutes without interacting with anyone. Finally, he finishes the exercise, closes his notebook, and begins to look around. A classmate sitting behind him asks, "Did you finish already?" Edgar smiles, but doesn't respond verbally. Then he doesn't do anything but look at the other children. 8:35 AM

As shown by these two vignettes, the girl in the NEU school remained in school for three years and is now in third grade. On the other hand, the boy in the example

above with the same degree of malnutrition as Gloria dropped out of school at the end of first grade. There is a great difference in the interactions of these two students. In the NEU school Gloria is so involved in looking for information that she needs to interact actively with her classmates due to the nature of the task. Edgar, however, copies words passively, without interacting with others nor paying much attention to what he is copying. Edgar is a child who does not attract attention because he works silently and doesn't ask questions or interact with anyone. Therefore, his motivation to stay in school is minimal, and, because of his malnutrition, his performance will be low without special help from the teacher. The reading comprehension and benefits in terms of learning which can be derived from this activity are very minimal.

The NEU schools retain more malnourished children, however, in both types of schools few children with serious malnutrition continue in school beyond the first few years. These analyses showed that of first graders in the inferior quartile for height by age, only 9% remained in school. Among children who reached second grade, 23% of those who were severely malnourished remained in school. All of the others left school during the course of this study.

5. Gender Analysis

Using the longitudinal sample, a covariance analysis with repeated measures was conducted, taking sex as one of the factors. However, no statistically significant differences were found in any of the performance variables. Then whether the program had had an effect on the equality of interactions in the classroom was analyzed.

EQUALITY OF INTERACTIONS BY GENDER

In order to analyze equality, two indicators designed to examine the children's classroom participation were used: the frequency with which boys and girls initiated interactions with classmates of the same sex and of the opposite sex and the relative frequency with which children of the same gender interacted with the teacher in classrooms free of gender restrictions. The percentage of boys' and girls' interactions with classmates of the same sex was expected to be about the same. It was also

expected that children of each sex would interact the same with the teachers. The following table shows the frequencies of interactions initiated by children in the sample with their classmates, both male and female, in Alta and Baja Verapaz and Region IV over the three years of the study when classroom observations were conducted.

Table 41: Interactions Initiated by Girls and Boys with Classmates of Both Sexes in NEU and EU schools

	NEU				EU			
Region	Initiated by Girl		Initiated by Boy		Initiated by Girl		Initiated by Boy	
	with a girl	with a boy	with a girl	with a boy	with a girl	with a boy	with a girl	with a boy
Alta Verapaz	62%	38%	16%	84%	97%	3%	1%	99%
Baja Verapaz	65%	35%	36%	64%	85%	15%	21%	79%
Region IV	77%	23%	37%	63%	72%	28%	27%	73%

As shown in the Table 41, in the NEU schools the percentage of interactions initiated by girls with classmates of the same sex is more balanced than in the traditional schools, where there is little equality. Interactions initiated by boys with their classmates also show more equality in the experimental schools, although in Alta Verapaz the percentages are quite similar to those found in the traditional schools. In the schools in Baja Verapaz and Region IV there are few interactions initiated by boys with female classmates, but in Alta Verapaz boys almost never address girls. Upon comparing the NEU schools with the traditional schools in this region a great change in behavior is observed.

The following table presents the percentages of interactions initiated by teachers with children of both sexes in the departments of Alta and Baja Verapaz and in Region IV.

Table 42: Interactions Initiated by the Teacher with Students of Both Sexes in NEU and EU Schools

Region	NEU		EU	
	Initiated by the Teacher		Initiated by the Teacher	
	with a girl	with a boy	with a girl	with a boy
Alta Verapaz	40%	60%	43%	57%
Baja Verapaz	57%	43%	30%	70%
Region IV	50%	50%	48%	52%

As shown in Table 42, teachers in the NEU schools have achieved a pattern of fairly equal interactions with girls, even in Alta Verapaz, where the percentage is a bit lower. A similar pattern is seen in the traditional schools, with the exception of Baja Verapaz, where the teachers interact more frequently with boys. Table 43 shows the percentages of observed interactions initiated by students of both sexes with teachers.

Table 43: Interactions Initiated by Girls and Boys with Teachers in NEU and EU Schools

Region	NEU		EU	
	Initiated by Girl	Initiated by Boy	Initiated by Girl	Initiated by Boy
	with the teacher		with the teacher	
Alta Verapaz	25%	75%	50%	50%
Baja Verapaz	27%	73%	45%	55%
Region IV	36%	64%	43%	57%

The table above shows that in the traditional schools there is more equality in the percentage of interactions initiated by students of both sexes with teachers in all regions. In the experimental schools there are fewer interactions initiated by girls than by boys with teachers, especially in the department of Baja Verapaz.

C. PARTICIPATIVE BEHAVIORS

Part of the *Nueva Escuela Unitaria* approach is directed at training children to be active, creative, participative, and responsible. Such learning experiences are felt by program developers to lead to democratic attitudes and behaviors, such as comradeship, cooperation, solidarity, and participation (Colbert, et. al., 1990). Thus, the IEQ research examined such behaviors over the three years in which classroom observations were conducted.

Several dimensions of participatory behaviors and observable indicators of these dimensions for young children were developed. They included: egalitarian beliefs- takes turns and assists other students in an activity; interpersonal effectiveness- expresses opinions or attitudes to peers and adults and chooses among viable options; leadership/involvement- participates in school organizations (e.g. student government) and directs fellow students in an activity. The corpus of observations for each child was coded and the occurrence of each indicator with individual children was tabulated.

During the first two years of the study, when observations were conducted over a number of days at several times during the year, a chi-square analysis was used to make overall comparisons between groups of children as well as comparisons by region and gender. In almost all analyses, NEU students exhibited significantly more participatory behaviors than children in traditional schools. In the final year of classroom data collection, requests by program implementers for different types of research led to only one observation being made of individual children and the observation period was limited to a single day for each child. Thus, there was less opportunity for children to be observed participating in a variety of contexts that support democratic behavior. As a result of the limited data, only relative frequencies were calculated to examine consistency in trends. The limited data also prevented meaningful regional comparisons from being made.

1. EGALITARIAN BELIEFS

Turn-Taking

Throughout the three years, more than two thirds of the observed occurrences of children allowing other children the opportunity to participate in an activity took place among NEU children (See Table 44). The trend found for overall occurrences of the behavior was generally consistent for both genders. In both 1993 and 1994, significant differences were found between NEU and traditional schools favoring both boys and girls in terms of turn taking. In 1995, while NEU boys engaged in 93% of the observed behaviors by males, and NEU girls accounted for only 47% of the observed occurrence of turn-taking among girls. This appears to be the result of a relatively high percentage of turn-taking at one traditional school in Region II, which had always stressed student participation, and a change in teachers at one NEU school in the same region which led to a decrease in the participation of girls in that school.

Table 44: Longitudinal Comparison of Turn Taking

Years	NEU	EU
1993	80%	20%
1994	89%	11%
1995	67%	33%

Much of the turn-taking behavior observed in the NEU program took place in student-directed small group learning contexts. The self-instructional guides provided collaborative exercises for children. As the NEU children advanced in school, exercises evolved from simply taking turns into working together. The following example of Juanito's behavior illustrates this trend.

Juanito was a second grader at NEU Pantanal in Region IV when the study began. He has made normal progress through school and regularly been observed to participate in democratic behaviors, including turn-taking, directing other students, and expressing his opinions to others. In the first example from 1993, Juanito and William take turns individually looking up words in the dictionary. In the second, occurring in

1995 when Juanito was in fourth grade, he forms part of a group of students who work collaboratively to conduct a Natural Science experiment.

> Juanito is looking up words in the dictionary with other students. William holds the dictionary and points to figure saying, "Those are lions." He passes the dictionary to Juanito who says, "Let's see." Juanito looks at the dictionary and says "I have bears," showing William the drawing of bears on the page.

> Juanito flips the pages of the Natural Sciences guide and says to Oswaldo, "Look, we have to do the tortilla experiment now." "Let's go get it," replies Oswaldo. "We need to make a list of what we're going to use," says Juanito and begins to read aloud from the guide: "a tortilla, a bowl, some water, and a plate." Then, the four fourth graders get up and tell the teacher that they are going to get some things for an experiment. Juanito and Oswaldo return first and say to the observer, "We did it." The observer asks, "Where?" The children reply, "At home and we left it uncovered. We're going to go back in two hours and cover it." The teacher comes over to the group and asks if they finished the experiment. Juanito tells him, "Yes." The teacher walks away and Paola says, "Let's read." Juanito replies, "Let's discuss what will happen to the tortilla."

While turn-taking was observed in EU schools as well, it tended not to be the guided collaboration exemplified above. It was either teacher-directed or involved children drilling one another on class assignments. The following example of Carmen, a fourth grader at EU Sigualom in 1995, illustrates the latter behavior.

> Carmen's classmate takes her notebook and says in Spanish, "Nine times nine?" Carmen answers, "Eighty-eight." Carmen's classmate laughs and says, "That's wrong. It's eighty-one, not eighty-eight." Carmen smiles and takes her notebook from the girl. Then she tells her in Q'eqchi', "I'd better ask you instead." The girl replies, "Okay, then, ask me." Carmen begins, "Three times seven?" The girl responds, "Twenty-three." Carmen tells her, "No, it's twenty-one." Her classmate says, "Instead we should review the table."

Assisting Others

The second indicator of egalitarian behavior was that of assisting others in their academic work. Although, only 10 instances of this behavior were observed among first and second graders in the 1993 data, 70% involved NEU students. In 1994, the general trend favored NEU children as 59% of the overall occurrences involved NEU

children and the patterns were similar among girls and boys. As shown in Table 45, in 1995, the same trend continued with 73% of the observed occurrences taking place among NEU children. No differences by gender were found as over 70% of the occurrences with both boys and girls took place in NEU schools.

Table 45: Longitudinal Comparison of Assisting Others

Years	NEU	EU
1993	70%	30%
1994	59%	41%
1995	73%	27%

2. INTERPERSONAL EFFECTIVENESS

The indicators for interpersonal effectiveness were intended to show children's opportunities to develop solutions and give explanations for their solutions. The indicator of choosing among viable options appears to reflect behaviors that may require several years to develop, and may not be an appropriate indicator for children of this age. Throughout the three years of the study, less than five incidences of children choosing among viable options were observed. All of these incidences occurred in NEU schools.

In contrast, children expressing opinions or attitudes about school content or social norms became relatively common after 1993, when no occurrences were recorded. In 1994, a majority of the instances of children expressing opinions (59%) occurred in NEU schools, with 62% taking place among NEU boys and 55% occurring among NEU girls. As shown in Table 46, the same trend continued in 1995. Again, the majority of the occurrences for both boys and girls took place among NEU children.

Table 46: Longitudinal Comparison of Expressing Opinions

Years	NEU	EU
1993	0%	0%
1994	59%	41%
1995	87%	13%

3. LEADERSHIP/INVOLVEMENT

The NEU program student government activities encourage the involvement of the children in the management and governance of the school. In addition to a school president and vice-president, there are committees responsible for the maintenance and organization of the learning corners, the library, classroom clean-up and the like. The responsibilities related to these activities take place largely outside of academic lessons. The program attempts to involve all children in the committee work. However, school officers and committee members are elected by the students. Thus, older children were generally elected to these positions, especially during the early years of program implementation. The comparison schools also have student committees with the clean-up committee being universal in all schools.

Student Government

As the research focused on children in the context of academic lessons, little participation in school government would be expected to be observed. This, in fact, was the case. However, all instances of an observed child participating in some way with student government activities occurred in NEU schools as opposed to traditional multigrade schools over the three years of study.

Directs Others

Significantly greater incidents of directing peers were found to take place among NEU children than among children in traditional rural multigrade schools. As can be seen from Table 47, more than three-fourths of the total observed occurrences took

place among NEU children. In each year, a greater percentage of the behaviors were engaged in by NEU students. This reflects a greater willingness of children in the NEU program to offer directions to their peers when compared to students in traditional multigrade schools. In each year, percentages were similar for both boys and girls.

Table 47: Longitudinal Comparison of Directing Classmates

Years	NEU	EU
1993	74%	26%
1994	89%	11%
1995	95%	5%

Much of the opportunity to lead or direct others is provided by the NEU program, through the use of "monitors." These children often direct small groups or serve as models for the exercises provided by the self-instructional guides. The example that follows illustrates this type of situation. It shows a girl at NEU Carrillo who remained in school through all six observation periods and was observed to frequently direct activities and help other students.

Florencia is a third grader at NEU Carrillo. Here she is in Spanish language class working with a small group. She says to her classmates in the group, "I'm going to dictate to you" *(Les voy a dictar)*. The other students open their notebooks, and she says, "Write 'Stories have three very important parts'" *(Escriban 'Los cuentos tienen tres partes muy importantes')*. She repeats this three times, then continues, "Now, two little dots. Look" *(Son dos puntitos. Miren)*, and she writes a colon on her hand. She continues dictating to the group.

Directions provided in the traditional schools tended to be of a different type. They are largely commands about individual behavior of children involved in a particular interaction. The following example, taken from a 1994 observation, shows a student in an EU school in Region II who was not observed to participate in democratic behaviors in any of the six observation periods and dropped out of school after the 1995 observation period.

Josué, a third grader at EU Achigual, is in Spanish language class, copying from a book. He stops writing for a minute and looks towards the teacher, who is sitting with first grade. A girl walks by and knocks the book off his desk. He says, "Pick up that book since you knocked it down" (*Recojame el libro ya que lo botó*). His classmate ignores him, and he picks up the book and continues copying.

4. CLASSROOM ENVIRONMENT

Feedback to children was also examined. Although this is a form of teacher behavior, feedback in the form of praise and further explanation can be seen as an indicator of a classroom environment which encourages participatory behaviors. It is contrasted with feedback that did not encourage participation among children.

Positive Feedback

As shown in Table 48, NEU schools consistently offered a more positive environment for children. Positive feedback was received with relatively greater frequency by children in NEU than by students in the comparison schools. Conversely, children in traditional multigrade schools received the bulk of the observed negative feedback given by teachers. This type of feedback included telling children their work was wrong or bad without giving explanations, not replying to requests for feedback and ridiculing the students.

Table 48: Positive and Negative Feedback Received by Sample Children

	Positive		Negative	
	NEU	EU	NEU	EU
1993	64%	36%	40%	60%
1994	64%	36%	45%	55%
1995	54%	46%	36%	64%

5. PARTICIPATORY BEHAVIORS AND Drop-out

Given the difference in drop-out rates between NEU and traditional schools, the participatory behavior of students in relation to their permanence in school was examined. In order to control for differences in the number of overall observations of individual children, a ratio of frequency of occurrence of each type of behavior in a given observation period was created. This allowed comparisons of children who dropped out after one observation period in the first year of the study with children who were observed six times over the three years. As the ratio is based if a behavior occurred in a given observation period, rather than how often it occurred, the percentages are much lower than those presented earlier in this section. The ratios might be thought of as the likelihood of a child engaging in a particular behavior at any observation period.

As can be seen from Table 49, there is a small but consistent trend across all behaviors favoring the NEU children who remained in school. These children engaged in each type of participatory behavior 2%-4% more frequently than the children who dropped out. The trend was similar for children in the traditional programs. Those who stayed in school engaged in a higher percentage of participatory behavior at each observation period than the children who dropped out. Percentages in this case varied between 3% and 10%, depending on the type of behavior. The consistency of the results suggests that involvement in collaborative activities may contribute to some degree to children remaining in school.

Table 49: Participatory Behaviors and Drop-out Rates

	NEU		EU	
	In School	Drop-outs	In School	Drop-outs
Takes Turns	22%	19%	8%	5%
Directs Others	20%	17%	7%	3%
States Opinions	12%	8%	8%	6%
Helps Others	17%	15%	16%	6%

The classroom environment was also examined in relation to drop-out. Little difference was found in terms of the positive and negative feedback provided to children in the NEU program. Children who remained in school were slightly more likely to receive both positive (23% to 22%) and negative (7% to 6%) than their peers who dropped out. The difference is, however, minimal. In the EU program, where the teacher plays a more prominent role, feedback seems to be more consistently related with continuance in school. Children who did not drop out were more likely to receive positive feedback (20% to 15%) and less likely to receive negative feedback (11% to 15%).

When children were examined by nutritional status, the trends supporting participation were not found. No consistent patterns were found favoring either undernourished children who stayed in school or those that dropped out. The percentage of engagement for all undernourished children was, however, consistently lower than for their better nourished peers.

CHAPTER IV: ANALYSIS AT THE SCHOOL LEVEL

At the start of the 1995 academic year two of the schools in the sample left the NEU program. This was due, in one case, to a teacher with health problems who decided that involvement in active learning which required greater activity in the classroom, work with the community, and participation in teachers' circles was too much work. In the second sample school there was a disagreement between the two teachers in which one teacher, who spoke Q'eqchi', convinced the community to continue working with the traditional methodology and request that the other teacher, who spoke only Spanish and had been trained in the NEU methodology, be transferred. Also, two of the comparison schools joined the NEU program during 1995. This was part of the natural expansion of NEU in which the teachers who joined the program in 1993 attempted to reach out to teachers from nearby schools who wished to adopt the NEU methodology. This section of the report examines the experiences of these four schools. Case studies from all 20 schools involved in this study can be found in Appendix A.

ACHIEVEMENT:

The two schools which left the NEU program in 1995 had a relatively lower achievement level than the average for the region in which they were located. Talud had an average reading achievement level of 22.1, and the regional average was 34.67. In Chirrepim, the average for reading was 10.8, and the regional average for Alta Verapaz was 26.2. The opposite is seen in the case of the schools which joined the NEU program during the expansion. These two schools had a higher achievement level than the regional average in their respective regions. Barrial had an average total of 36.8 in reading, and the overall average for Region IV was 33.0. In the case of Chiraxsi, the difference is smaller but is still higher than the regional average (24.3 versus 23.8 for all schools in Alta Verapaz).

In the schools which left the NEU program the teachers' work and motivation did not change or, at least, did not reflect a tendency towards improvement. The cases of the two schools which joined NEU in the expansion may be due to the fact that the teachers were motivated and dedicated to working better with their students.

ACCESS:

The greatest impact of the change in methodologies was seen in the issue of school access. As shown in Table 50, the new NEU schools experienced an appreciable increase in student enrollment during their first year in the program. The schools which left the NEU program, in contrast, experienced a substantial drop in their enrollment after the year they left the program. These schools had a slight increase in enrollment in 1996, but they did not reach the average level of enrollment they had during the years when they participated in the NEU program.

Table 50: Average Enrollment in Schools which Changed Methodologies

Schools/Year	1993	1994	1995	1996
NEU Expansion	30	29	43	43
Formerly NEU	40	38	27	34

The expansion schools have not had the same percentage of increased enrollment in the higher grades which the NEU schools in general have experienced. As shown in Table 51, the NEU expansion schools had more students in the higher grades in 1995, however, this percentage was not maintained in 1996. Enrollment in higher grades was consistently lower than the average of 29 to 30% in the schools which entered the NEU program in prior years. The schools which left the NEU program had enrollment levels in the higher grades similar to those of the other traditional schools in the sample.

Table 51: Percentage of Students in Higher Grades in Schools which Changed Methodology

Schools/Year	1993	1994	1995	1996
NEU Expansion	0%	0%	20%	16%
Formerly NEU	0%	0%	15%	19%

CONTEXT:

An analysis of contexts in which learning takes place showed that a low percentage of the small group activities which characterize the NEU program were observed in the NEU expansion schools in 1995. The small group activities declined in the expansion schools during their first year in the NEU program. This type of activity decreased from 17% to 10% at Chiraxsi and from 11% to 2% at Barrial. This compares to an average of 48% in the schools which were already in the NEU program. Little of the NEU methodology remained in the schools which left the program. Group work fell from 14% to 0% between 1994 and 1995 at Talud. At Chirrepim small group work dropped from 32% to 4% of the total learning contexts.

INTERACTIONS:

In the case studies, the relationship of teachers with students in terms of equality was also analyzed to determine if equality had changed in the schools which had joined the NEU expansion. This was analyzed using the observations conducted from 1993 to 1995 in all of the sample schools.

Table 52: Percentage of Teacher Interactions with Students

Program	1993		1994		1995	
	girl	boy	girl	boy	girl	boy
NEU Expansion	45%	55%	37%	63%	54%	46%
Formerly NEU	40%	60%	46%	54%	24%	76%

During 1995, in Barrial a more equal relationship towards students was established, although the teacher in this school was male. The same occurred in Chiraxsi, where three teachers of both sexes taught. In the following table it is seen that a change occurred after the change in methodology. In the schools which left the NEU program a tendency towards less equality was observed in 1995 when the methodology was changed. As seen inTable 52, Talud and Chirrepim returned to a

traditional pattern where the teacher, regardless of gender, prefers to interact with male students in the class.

CHAPTER V: PARENTS AND TEACHERS

A. PARENTS

At the end of the first year of the study the parents of observed students in both types of schools were interviewed in order to obtain baseline information on different socio-demographic variables, their general perception of the importance of schooling, and whether they had noticed any changed in the school after the implementation of the program began. In 1993 it was found that generally parents felt that it was important for their children to attend school, and significantly higher percentage of parents with children in NEU, rather than traditional, schools had noticed positive changes in the schools after program implementation began.

In 1994 the parents were interviewed again, but the types of questions asked were substantially different. This time the purpose was to identify the changes parents had noticed in their children as a result of the NEU methodology. Questions were also asked about changes in the schools, expectations that their children would continue in school, and their contact with other parents and teachers.

In all three years the parents of children in NEU schools consistently reported seeing a higher percentage of positive changes in the schools than parents of children attending traditional schools. The following table shows that, in general, parents across the three years when they were interviewed perceived positive changes in the experimental schools. These percentages diminish with the passing of time, possibly due to the fact that they had already become familiar with the methodology and materials used by the NEU program. In the traditional schools, in 1994 parents mentioned seeing positive changes in the schools. A possible explanation for this is that parents perceived changes as these schools had observers present during most of the year. As seen in Table 53, in 1995 this percentage declines, however, it is still almost double that found in the first year of the study.

Table 53: Parents' Perceptions of Change in the Schools

Changes	NEU			EU		
	1993	1994	1995	1993	1994	1995
Positive Change	86.7%	83.5%	78%	20%	76%	43%
No Change	13.3%	16.5%	22%	80%	26%	57%

The findings from the 1994 interviews allow one to conclude that there were positive changes in the academic and socio-emotional behaviors perceived at home among children attending both types of schools. The socio-emotional behaviors provide by NEU in the classroom produced changes in children's behavior at home, and the parents of NEU students tended to speak about school issues more than parents of students in traditional schools.

During 1995, interviews were again conducted in order to compare the results found in 1994 and 1995. In terms of perceived changes of their children's behavior, it was found that a higher percentage of parents with students in NEU schools saw positive changes in academic and socio-emotional behavior, although, in general the percentages do not differ significantly. With respect to parents' perceptions of children's behavior at home, the results show more similarity between the two groups than was found in the previous year. There were qualitative differences, however. A higher percentage of parents with NEU students reported that their children talked about their work and issues not related to school more, and a slightly higher percent thought that their children interacted more with other members of the family. Similarly, parents of children in NEU schools had more contact with other parents and spoke more about issues related to their children's education.

B. TEACHERS

During 1993, teachers in both NEU and traditional schools were interviewed. The data obtained in that year was used principally to examine differences in the experience and age of the teachers. It was found that the teachers were fairly similar on these variables. The NEU teachers, on the average were slightly younger than the

teachers in traditional schools (34 years versus 39 years) and, as a result, had less years of experience in teaching (9.7 years in NEU compared to 12.9 years in EU).

Teachers were also asked their general impressions of the program in which they were working. As shown in Table 54, teachers in NEU were consistently more positive about their program than teachers in comparison schools. Similarly, a higher percentage of NEU teachers felt that the program improved their ability to work in a multi-grade environment. However, despite the higher percentage, only half of the teachers felt this way. Seventy-eight percent of NEU teachers also felt that the NEU program facilitated their ability to work with the community, whereas only 30% of teachers in traditional schools saw working with the community as part of their program's goals.

Table 54: Percentage of Teacher Satisfaction with Programs

	Overall		Classroom Management		Community Involvement	
	1993	1995	1993	1995	1993	1995
NEU	82%	87%	55%	60%	78%	70%
EU	50%	25%	30%	9%	30%	55%

In 1995, teachers were asked specifically about their implementation of certain aspects of the program. Thus, with the exception of overall satisfaction with the program, which was expressed by all but one of the NEU teachers, percentages were slightly lower. However, they continued to be higher than those in traditional schools. The indicator of satisfaction in 1995 was what a teacher would like to change about the program. Eighty-seven percent of the NEU teachers said that there was nothing they would change. Only 25% of the teachers in traditional schools felt that they would not change anything. The 75% who wanted changes felt that the program would be more effective if teachers taught only one grade.

The question about classroom management in 1995 was specific to how many grades a teacher felt he/she could work with successfully. Forty percent of the NEU teachers felt that they could work well with three grades and an additional 20% felt that

they could work well with all six. Only 9% of the teachers in traditional schools felt that they could work effectively with more than one grade.

The interviews also showed that NEU teachers were more involved with the community than teachers in traditional schools. When asked if they had projects with the community, 70% of the NEU teachers responded affirmatively compared to 55% of the EU teachers.

In 1994, a teacher interview was designed that examined the changes that teachers perceived in their students, what aspects of the material taught was most useful for students, personal satisfaction with being a teacher, and views on how the project was functioning. The results of the interviews showed that NEU teachers had a greater concern for the socio-emotional development of their students, as well as academic development, than did teachers in traditional schools. This could be seen in the changes that they identified in their students, including greater curiosity, greater facility of expression, and greater interaction with their classmates than in previous years.

Throughout the research, observations showed that in both types of schools approximately two hours of the four-hour school day were spent in instruction. The context of instruction was, however, different as NEU teachers consistently dedicated more time to small group work than teachers in traditional schools. As a result, they had more direct interactions that was related to the subject matter with students than teachers in traditional schools.

Over the three years of study, the use of small groups rose in the NEU schools. This was especially true for small groups without the teacher, as when children gained reading ability they could work in a group setting with the self-instructional guides. In traditional schools, the teacher working with all the students and individual seatwork by the students remained the main instructional contexts.

CHAPTER VI: CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. Academic Success

The NEU program has had a positive impact on access by attracting additional school age children in isolated rural areas to enroll in schools.

NEU has been successful in attracting children to school. The program had an average annual increase of enrollment more than four children per school compared to an increase of about one child per year on the average in traditional schools. The difference in increased attendance is a result of increases in enrollment in Region IV where NEU schools have grown in size from an average of 42 children in 1993 to 66 children in 1996. EU schools, on the other hand have averaged around 30 children per year.

The NEU program has been successful in increasing the number of children staying in school, especially in indigenous areas among girls.

Over the three years that dropout was measured, dropout rates have consistently been lower in NEU schools than in similar schools without the NEU program. In 1994 and 1995 dropout rates were significantly lower than in the comparison group. Rates averaged about twelve percentage points less than those in the comparison schools. The greatest impact was among indigenous girls in Alta Verapaz where dropout rates were significantly lower for NEU students in all three years of the investigation.

The active learning methodology of the NEU program has had a significant impact on the number of children making normal progress toward sixth grade completion.

In the cohorts of children in first and second grade in 1993, at the beginning of the longitudinal study, 30% of the NEU first graders had advanced to fourth grade and 54% of the second grade children were in fifth grade in 1996. This compares to 10% of the first grade cohort and 26% of the second grade cohort, respectively, in the comparison group. Thus, the percentage of children who advanced a grade each year was twice as high in NEU as in the comparison group. The percentages were similar for both boys and girls and the differences were significant in all cases. Not only are greater numbers of children making yearly progress toward completion, but consistently greater percentages of children have been enrolled in the higher grades of NEU schools than in those grades of traditional schools. In 1995 and 1996, respectively, 9% and 13% more children were in fourth, fifth and sixth grade in NEU schools.

NEU has achieved increased enrollment and greater progress toward primary school completion with no loss of quality as measured by achievement tests.

NEU students in the longitudinal study performed significantly better in mathematics than did the children in the comparison group. This is despite the fact that NEU a greater number of students with a broader range of abilities than the comparison schools, where only the better students remained in school. NEU students also performed as well as comparison groups students on the measure of reading.

Children with poor nutritional status have a somewhat higher probability of remaining in school in NEU than in traditional schools. This would appear to be in part because the active methodology employed in NEU encourages children to participate rather than remaining passive. However, most malnourished students dropout out.

A higher percentage of the most undernourished children in the NEU schools remained in school over the course of the study. These children were observed to take

a more active part in the classroom learning contexts than their counterparts in the traditional schools. However, the dropout rate for most undernourished children was over twenty percentage points higher than that of other children in both types of schools. Only 10% of the most undernourished children who began first grade in NEU and 29% of those who were in second grade at the start of the study remained in school four years later. The percentages of undernourished children remaining in traditional schools were 6% and 10% respectively, for first and second grade.

The NEU program has been relatively effective with Indigenous children who enter school with some knowledge of Spanish. It has, however, had little impact on monolingual Mayan children.

A significantly higher percentage of NEU children who entered school with at least rudimentary knowledge of Spanish remained in school at the end of the study than did comparison children. Thirty-three percent of the children in NEU who had some knowledge of Spanish were still in school and in the appropriate grade, compared to 6% in traditional schools. With students who understood little Spanish on entering school, however, only 5% in either type of school were still enrolled after four years.

2. Socio-emotional Development

The NEU active learning methodology contributed to significant socio-emotional development in terms of participatory behaviors such as taking turns, guiding other students in their academic work and expressing opinions in class.

The NEU program promoted the participation of children of different sexes and ethnicity. Boys and girls in the NEU program in the indigenous region and in the *ladino* region exhibited these behaviors with significantly greater frequency than children in comparison schools during all three years of the study. Participatory behaviors were not only more frequent but were also different in quality in NEU and traditional schools. In the NEU schools, the behaviors were generally observed with peers in the naturally occurring classroom contexts. In the traditional schools, on the other hand, where these behaviors occurred, they were generally directed by the teacher.

THE NEU program had a limited effect in developing cross-sex interaction among children.

Consistent trends in the indigenous areas of Alta and Baja Verapaz suggest that the NEU program encourages greater interactions between girls and boys in cultures where such interactions in school have not been common. The significant differences in the mean number interactions between boys and girls found in Alta Verapaz support this contention. In the *ladino* region, the children in NEU schools interacted less with their peers of the opposite sex than did comparison children. Teachers did not favor the students of one sex over those of another in either experimental or comparison schools when initiating interactions. However, girls initiated a greater percentage of interactions with teachers in comparison schools than in NEU schools.

3. Program Implementation

The Nueva Escuela Unitaria program has been successful in decentralizing the learning experience of children by creating small group learning contexts. However, teachers were not always able to take advantage of such contexts by encouraging exploratory, collaborative learning experiences.

In NEU schools, between 40%-50% of students' interactions took place in small group learning contexts. This compares to between 3%-10% in traditional schools. However, in some cases, the learning strategies that were used in small groups included copying, practicing models supplied by the teacher, and reading in unison. These were the same strategies used by teachers in large group contexts in traditional schools. Thus, although the setting and materials employed differed in the two types of schools, the actual practice with academic content was similar owing to teachers lack of complete mastery of the NEU methodology.

The organization of the school day in both NEU and traditional schools resulted in a limited amount of instruction time.

Observations made in classrooms throughout a three year period showed that the school day was organized in a similar fashion in both types of schools. Slightly more than two hours a day was devoted to instruction, and close to an hour is devoted to recess. Much of the remaining time involved transition from one activity to another or teachers attending to tasks outside the classroom.

Expansion of the NEU program did not result in immediate change in traditional schools.

With the exception of increased enrollment and somewhat more classroom participation of girls, the new schools entering the NEU program exhibited few of the NEU characteristics. Small groups were not prominent, children did not perform better and did not exhibit greater participatory behavior (WE NEED TO CHECK ON DEMOCRATIC BEHAVIORS). This suggests that more than one year is needed to master the NEU methodology and to show results in children's academic success. NEU schools that left the program were generally those that had teachers who were not committed to the program.

4. Teachers

Teachers trained in the NEU methodology are generally more confident about their ability to work with several grades than are teachers in traditional multigrade schools.

When asked about the number of grades that they could work with successfully, 60% of NEU teachers responded that they could work successfully with three or more grades. Only 9% of comparison teachers felt that they could work with three or more grades and 75% of the teachers in traditional schools stated that they would prefer to work with only one grade.

5. Parents

NEU has had an impact on parental attitudes toward the school.

Throughout the study, greater percentages of NEU parents felt that positive changes were occurring in the school than among comparison group parents. The majority of parents of children in both experimental and comparison schools, however, felt that positive changes had taken place in their children's behavior at home. The most commonly cited changes were that children read more and exhibited generally better conduct at home.

Socio-emotional behaviors encouraged by the NEU in the classroom resulted in changes in the children's behavior at home.

Parents reported consistently higher frequencies of NEU children engaging adults in conversation and asking adults questions than did parents of comparison children. Thus, there appeared to be a process of transference of behaviors learned in the school to contexts outside the school environment.

B. DISCUSSION

Over four years of study, the NEU program has proved itself to be a relatively effective program for improving the efficiency and quality of primary education in isolated rural schools. The NEU program consistently encouraged significantly more children to stay in school and make yearly advances in grade level than did traditional rural multigrade schools. Significantly greater progress was made toward primary school completion by Indigenous and ladino children of both genders, as well as by children who entered school with poor nutritional status. This success suggests that the NEU program should continue to be expanded among the isolated multigrade rural schools in Guatemala.

The results of this investigation show that academic achievement tests must be used in combination with other measures of quality and effectiveness in making decisions about programmatic outcomes. The greater success of the NEU program

encouraged more children with a wider range of abilities to stay in school, as opposed to the traditional schools, where most of the children who remained in school were those who had initial academic success. Despite the wider range of abilities represented by greater numbers of children, the NEU sample performed, on the average, as well or better on measures of reading and mathematics as control group children. Simply comparing mean differences on the achievement measures, without examining the numbers of children successfully advancing toward primary school completion could lead to the erroneous conclusion that the two groups were performing similarly.

The success of the NEU program appears to be a result of the changes in the classroom environment that has taken place in NEU schools. Successful NEU schools have created a classroom environment that allows students to engage in a variety of participation contexts (e.g. small groups with the teacher, small groups without the teacher, small groups with an appointed monitor, pairs, large groups, learning corners, individual work). These contexts decentralize classroom interaction patterns to bring about greater cooperation among the students and more meaningful participation in learning activities. This type of participation has lead to greater prosocial or democratic behaviors on the part of NEU students.

Despite the relative success of the NEU program, the percentage of children making normal progress through school remains low. Only 30% of the cohort of first grade children in the initial study sample had made normal progress through school. While this was three times as high as children in the traditional schools, it still represents a high wastage rate. Observations showing that teachers were at times unable to determine the reading abilities of their students and had children engage in traditional learning activities in small group contexts, suggests that continued monitoring and feedback is necessary if teachers are to improve their mastery of the program elements. Such improved mastery can come about by the mentoring relationships established between successful NEU teachers and new teachers in the expansion, program, through the continued use of teachers circles, and through training of supervisors to carry out systematic classroom observations.

The relative success of Indigenous children with some knowledge of Spanish shows that the NEU active learning methodology is culturally appropriate for Mayan children. However, the lack of impact of the NEU program on monolingual Indigenous

and the generally high dropout among such children in rural schools, argues for bilingual versions of the NEU materials. Thus, the efforts underway by the Ministry of Education through UNICEF- and USAID-funded projects to develop NEU materials in Mayan languages and to train bilingual teachers should be completed.

In rural areas of Guatemala, the NEU active learning methodology must be combined with consistent efforts to improve nutritional status of severely undernourished students if greater efficiency is to be achieved. Although NEU has been more effective than traditional schools in maintaining undernourished children's normal progress toward primary school completion, such children's success rate remained low. Thus, providing nutritional supplements in a consistent manner should be part of planning expansion of the NEU program or similar active learning methodologies.

CHAPTER VII: REFERENCES

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APPENDIX A

CASE STUDY OF ACHIGUAL SCHOOL

Description of the school:

Achigual is a school in the comparison sample and is located in a village 5 kms. from Jalapa, the capital of the department which has approximately 300 inhabitants.

This site has a moderate and humid climate. The principal products are corn and beans for consumption and, for sale, the residents grow fruit and other produce. The village is accessible via a road made of hard-packed earth which is passable during most of the year, although there is no public transportation available.

The school is located in the center of the village, surrounded by pastures. Generally, the houses are located at the entrance to the village and on the hills around the school.

The school is made of cement blocks, with a tin roof, and a cement floor. It has two rooms. Classes are held in one room, and the other is used as an administrative office and storage room, and sometimes as additional space for the fourth and fifth grade students to work in. The school has latrines in good condition which were recently constructed. It does not have electricity nor drinking water.

Only one teacher works at the school, teaching approximately 45 students in first to fifth grade. The students' ages range from 6 to 15. The following table shows fluctuations in student enrollment at Achigual across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	17	16	26	33
Girls	13	12	13	14
Total	30	28	39	47

As shown in Table 1, the school's total enrollment has risen across time. This increase is largely due to an increase in the number of boys enrolled.

Teacher:

The teacher at this school lives in the capital of the department and travels to school on her bicycle every day. She began teaching at Achigual when the previous teacher was transferred to the capital of the department. The current teacher has been teaching here for ten years.

This teacher works with the traditional methodology, using reading and mathematics text books. A good student-teacher relationship can be observed at this school, which is reflected in the students' comments: "The teacher helps us when we don't understand," "the teacher tells us that we have to learn well so that it will be useful to us when we grow up or move to another school."

Strategies used by the teacher:

The teacher groups the students by grade: two grades with the same material and the higher grades, fourth and fifth grade, which are taught separately in another room. When she works with first and second grade, the other grades work on previously assigned tasks.

On a typical school day the teacher works with each group and gives individual attention to the first graders. Sometimes she teaches the whole class together. The following are the percentages found for the different contexts used by the teacher.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	14%	86%	69%
1994	20%	80%	70%
1995	8%	91%	67%

Despite the fact that this is a traditional unitary school, the teacher works with small groups of students approximately 20% of the time. Her allocation of instructional time did not vary much during the three years of the study.

Drop out and repetition in the school:

The data on drop out and repetition rates at Achigual across the years were analyzed and are presented in Table 3.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	9%	14%	27%	43%
1994	11%	33%	22%	50%
1995	0%	0%	0%	0%

At Achigual there were no drop outs, and no students repeated grades in 1995. This seems very unusual when compared to the data from previous years. In general, it can be observed that in the first two years drop out and repetition rates were higher among girls than among boys.

Equality in classroom interactions:

The different interactions realized by children at Achigual with classmates of both sexes and the teacher, as well as teacher-initiated interactions with students, were analyzed to determine whether more equitable relationships with girls had developed over the years. The following table presents the percentages of interactions across the years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	74%	26%	17%	83%
1994	59%	41%	16%	84%

	Initiated by Girls		Initiated by Boys	
Year 1995	79%	21%	21%	79%

Table 4 shows that the pattern of interactions at Achigual is quite traditional, as both girls and boys tend to prefer to interact with classmates of the same sex, although a little more equality is seen among the girls.

The following table illustrates the interactions initiated by the teacher with students of both sexes and also the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	22%	78%	41%	59%
1994	42%	58%	30%	70%
1995	38%	62%	33%	67%

As seen in Table 5, the teacher addresses boys more frequently than girls. In general, there is wide variation across time. Also, the percentages of interactions initiated by boys with the teacher are higher than those for interactions with the teacher initiated by girls.

CASE STUDY OF AGUAZAL SCHOOL

Description of the school:

Aguazal is a traditional unitary school located 13 kms. from the municipal capital and 30 kms. from the department capital, Santa Rosa. The village where the school is located has approximately 150 inhabitants.

The site has a warm climate. Corn and sorghum are the principal agricultural products, the first for consumption and the second to feed birds raised for sale.

The village is accessible via a road made of hard-packed earth which is passable year round. Public transportation is available, but only one round trip is made to the village daily.

The school is located along the edge of the road, approximately one km. from the beginning of the village. The houses are situated along the road, and there are several houses close to the school inhabited by people who work at the dairy farms and whose children attend the school. The school is made of cement blocks and has two rooms. In one room classes are taught, and the other room serves as living quarters for the teacher. The school does not have latrines, but there is a bathroom which the teacher fixed for his own use, as he has lived at the school with his family for approximately 25 years. There is no electricity nor drinking water. Water is obtained from a public well.

One teacher works at the school and teaches approximately 15 children in first to fifth grade. The children range in age from 7 to 11 years old.

The following table shows the variation of school enrollment at Aguazal over four years. As can be seen in Table 1, the enrollment has declined greatly over the years, especially for girls.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	13	15	13	10
Girls	10	11	12	3
Total	23	26	25	13

Teacher:

The teacher who works at Aguazal lives on the school grounds and began working there when he was appointed 25 years ago.

The teacher works with the traditional methodology and uses some books donated by the Ministry of Education to supplement his classes. It was observed that the teacher is not enthusiastic about his work, does not motivate his students nor modify his methodology.

The teacher's relationship with parents is bad. The majority of parents have removed their children from the school and transferred them to a different one because they feel that the teacher does not teach their children well.

In an interview the teacher said, "I am aware that the children have left, but I can't change my teaching style, because I'm used to it (*Estoy consciente de la deserción de los niños pero no puedo*

cambiar mi forma de trabajar, proque así estoy acostumbrado)." The teacher seems to be waiting to complete 30 years of work in order to retire and, therefore, does not care how he teaches.

Strategies used by the teacher:

The teacher has the children arranged in rows with the grades mixed together, all seated at wooden desks facing the blackboard. Generally, he begins the day by giving the first graders exercises to copy. Then he tells the other grades to copy a lesson from a book and memorize it so that they can recite it in front of the class after recess. The teacher does this while sitting at his desk. After most of the morning has gone by, he gets up to write some mathematical equations (addition and subtraction) on the board for the fourth and fifth graders. Then he returns to his seat and from there asks some of the first graders for their notebooks so that he can correct them. After that, classes end. The following are the percentages found for the different contexts used by the teacher.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	0%	100%	58%
1994	3%	97%	60%
1995	2%	98%	64%

As seen in Table 2, during all three years the teacher taught in the same fashion, using seatwork and work with the entire class almost exclusively. The total percentage of time dedicated to instruction is low and does not vary much over the three years.

Drop out and repetition in the school:

The drop out and retention rates over three years were also analyzed. The table below shows the findings.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	20%	0%	30%	14%
1994	25%	50%	25%	50%
1995	33%	75%	14%	0%

As seen in Table 3, the drop out rates for the later years are very high, especially for girls. Repetition tends to decline, as more students in the higher grades remained in school.

Equality in classroom interactions:

The following tables display the percent of interactions initiated by students with classmates of both sexes and those initiated by the teacher with boys and girls and vice versa, to study whether across time interactions are more equitable between both groups.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	74%	26%	25%	75%
1994	81%	19%	22%	78%
1995	42%	58%	48%	52%

Interactions initiated by students with classmates of the same sex predominate, but in 1995 the percentages of interactions for both groups are almost equal, probably due to the small number of students attending the school.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	29%	71%	31%	69%
1994	37%	63%	41%	59%
1995	57%	43%	32%	68%

During the first two years the teacher preferred to address boys and became a little more equitable in the final year. Boys also addressed the teacher more often than girls. In 1995 the percentage of interactions that boys initiated with him rose.

CASE STUDY OF BARRIAL SCHOOL

Description of the school:

Barrial school was part of the comparison sample schools until 1995 when it joined the NEU expansion program. It is located in a village which is 6 kms. from the municipal center and 14 kms. from the departmental capital of Santa Rosa. The village had approximately 180 inhabitants in 1993

The site has a moderate climate. The terrain is rough and the earth is rocky, with clay for the most part. The village is accessible via two roads, both of which are unpassable in the rainy season.

The school is located at the end of the village, approximately 3 kms. from the road. The school is made of cement blocks with a tin roof and a brick floor. It has only one classroom and a kitchen. There is no electricity, nor plumbing, in the school. Drinking water is obtained from the public well.

This school has one teacher, but in 1994 and 1995 a teacher's aide assisted the teacher. The average enrollment during the study has been 35 to 40 students. They range in age from 7 to 15 years old.

The following table shows the variation in enrollment at Barrial across the years. A constant increase in the enrollment is maintained.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	17	18	23	26
Girls	13	13	24	25
Total	30	31	47	51

Teacher:

The teacher at Barrial began teaching there in 1991. At the beginning of this study in 1993 this school was included in the sample as a traditional school with the teacher's consent. In 1995 the NEU program expanded the number of schools it included. The teacher at Barrial, upon seeing how a nearby school worked, decided to join the NEU program. The teacher felt that the NEU methodology was helpful and simplified his job and also felt it would enable him to teach all grades better.

Strategies used by the teacher:

As mentioned above, during the first two years of the study the teacher used the traditional, teacher-centered methodology based on memorization and the use of textbooks. Although the school joined the NEU program in 1995 and the teacher began to attend training sessions, there were no visible changes in the classroom.

This is reflected in the following table which shows the use of different learning contexts. There is a slight increase in use of small groups in 1994 which may indicate the teacher's interest in NEU methodology. In 1995 he continued to use this context, however, no notable change is seen. There were also no large variations in the amount of time he dedicated to instruction over the years.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	2%	98%	69%
1994	12%	88%	67%
1995	5%	93%	68%

Drop out and repetition in the school:

The drop out and repetition rates at Barrial were also analyzed across the years

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	0%	10%	93%	80%
1994	21%	0%	79%	33%
1995	9%	22%	64%	33%

As shown in Table 3, no consistent trend in the drop out rates for the school is observable. In 1995 there is a noticeable increase in the female drop out rate and a decrease in the male drop out rate. Repetition declines over the years, although this trend is more marked among the girls.

Equality in classroom interactions:

At Barrial the different interactions which students initiated with classmates of both sexes and the teacher, as well as the teacher's interactions with boys and girls, were analyzed to determine if more equitable relationships with girls had been established over the years. The following tables show the percentages of these interactions over time.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	55%	45%	19%	81%
1994	62%	38%	10%	90%
1995	60%	40%	33%	66%

Table 4 shows that no consistent pattern was found in interactions. For girls, there is a fair balance in the percentage of interactions that they initiated with male and female classmates. For boys, interactions directed towards members of the same sex predominate in 1993 and 1994, with a notable change in 1995.

The following table shows the percentages of interactions initiated by the teacher with children of both sexes and interactions initiated by children with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	20%	88%	31%	69%
1994	15%	85%	36%	64%
1995	33%	67%	29%	71%

As seen in Table 5, during the first two years the teacher addressed boys most of the time. This changed in 1995 when he showed more equality towards girls in his interactions. There is no great variation over time in the student-initiated interactions with the teacher, however, boys always interacted more frequently with him than girls did.

CASE STUDY OF CANALITOS SCHOOL

Description of the school:

This is a NEU school located in a village 7 kms. from the municipal center and 45 kms. from the departmental capital of Jutiapa. The village has approximately 300 inhabitants.

The climate is warm. The principal agricultural products are corn and beans, for consumption, and secondary crops of rice, sorghum, and coffee are grown for sale.

The village is accessible via two roads a road made of hard-packed earth which are virtually unpassable in the winter. Public transportation is available only two days per week, once per day. The other days the residents must walk approximately 1.5 kms. to another village where public transportation is available daily.

The school is located in the center of the village, surrounded by houses and hills. The school is made of cement blocks, with a tin roof, and cement floor. It has three classrooms, two of which are used for classes and one which serves as a library and storage room. There is no drinking water nor electricity. The school has a latrine which is in good condition and is used by the teachers and students.

Two teachers work at the school and teach approximately 60 students in first through sixth grade. The students' ages range from 7 to 15. The following table shows variations in school enrollment at Canalitos across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	20	17	28	36
Girls	24	25	29	29
Total	44	42	57	65

The number of students enrolled rose constantly across the years, with the number of boys increasing even more steeply.

Teachers:

The teachers at Canalitos live in the municipal center and travel to the village every day. The teacher who also serves as the director was transferred to the school approximately three years before the NEU program began. The other teacher arrived in 1995, two years after the program had begun, and was also transferred there.

In 1996, the teacher who serves as the director was on leave for several months due to health problems and a high-risk pregnancy. Her sister replaced her during that period.

Although the teachers at Canalitos were still following the NEU methodology in 1996, they had not been trained in the methodology, as one teacher did not arrive at the school until 1995 and the interim teacher was on leave in 1996.

The teacher who also serves as the director was observed to have great enthusiasm for teaching during her first year working with the NEU methodology. One aspect of this teaching style which the teacher maintained was increasing work in small groups, until the other teacher arrived in 1995.

Strategies used by the teachers:

In 1993, when the NEU program began in the schools, the teacher at Canalitos arranged the students into groups by grade, except for the first graders, who still sat in rows of benches in the traditional style during the first year. In the second year, when the NEU furniture was installed, they were arranged in circles around the tables, and some of the older children sat at wooden desks, also in circles.

The teacher generally started classes by explaining things to the first and second graders. Then she addressed the higher grades, explaining a point from the guide to them, then returning to the first and second graders with whom she spent most of the morning.

With the arrival of the new teacher, she divided the class, so that she taught first, second, and third grades, and the new teacher taught fourth, fifth, and sixth grades. Her teaching style did not change, as she always spent the most time with first grade.

The new teacher arranged his students in the same manner as the other teacher did. He handed out guides to each grade and answered their questions when they asked for help.

The following table shows which contexts the teachers worked with and the total percentage of class time spent on instruction. It is important to note that this does not represent the teaching strategies used by the teacher's sister who served as a substitute as it was not possible to observe her.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	34%	60%	73%
1994	45%	55%	65%
1995	61%	37%	69%

As shown in Table 2, the percentage of time spent in small groups, with or without a teacher, increased greatly in 1995. The time dedicated to instruction decreased in the second year, but rose again in the final year, although the fluctuation is slight.

Drop out and repetition in the school:

The drop out and repetition rates at Canalitos across the years were analyzed, and the results are presented in the following table.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	7%	5%	36%	37%
1994	8%	6%	31%	33%
1995	25%	18%	25%	12%

Drop out rates were very low in 1993 and 1994, but in 1995 they rose significantly for both sexes, as shown in Table 3. Repetition rates declined gradually over time, and fell considerably for girls.

Equality in classroom interactions:

At Canalitos the different interactions initiated by the students with classmates of both sexes and the teachers were analyzed, as well as those initiated by the teachers with students, in order to determine if more equitably relationships with girls had been established over time. The following table shows the percentage of interactions initiated by boys and girls with classmates of both sexes.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	88%	12%	52%	48%
1994	78%	22%	60%	40%
1995	83%	17%	41%	59%

Boys show more equality in initiating interactions with both girls and boys. Girls, on the other hand, preferred to interact with classmates of the same sex.

Table 5 shows the percentage of teacher-initiated interactions directed at boys and girls and those initiated by students of both sexes with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	31%	69%	43%	57%
1994	68%	32%	53%	47%
1995	80%	20%	67%	33%

Interactions initiated by the teachers do not show a consistent pattern across the years. Although there are slight variations in interactions initiated by the students with the teachers, boys and girls have a more equitable relationship with the teachers.

CASE STUDY OF CARMELO SCHOOL

Description of the school:

Carmelo school is part of the sample of NEU schools. It is located in a village approximately 11 kms. north of the departmental capital of Baja Verapaz. In 1993, the village's population was 350. The site has a warm and humid climate due to a river which crosses the village. The village is accessible by a road made of hard-packed earth year-round.

The school is located at the entrance to the village, about 10 meters from the road. It is made of cement blocks with a tin roof and cement floor. It has two classrooms and a storage room, however, only one of the classrooms is used. The school does not have electricity. It does have latrines which are in good condition, and drinking water can be obtained close by.

This school has had only one teacher who worked with first to fifth grade since the study began. In 1993 the teacher joined the NEU program. The average enrollment over these years was 25 students. The students range in age from 7 to 14 years old. The following table shows variations in the enrollment at Carmelo across the years. As shown, almost no changes have taken place in the enrollment.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	16	16	16	16
Girls	8	8	9	10
Total	24	24	25	26

Teacher:

The school was constructed in 1990. Before then, a student teacher, named by the community, had taught the children. After the school was built, this teacher was replaced by the current teacher at the community's request, as they had noticed that the student teacher did not treat the children well. Thus, the current teacher at Carmelo arrived to work there in 1990. In 1993, at the start of this study, the school was selected as part of the sample of NEU schools with the teacher's permission. In mid-1994 the teacher was promoted to supervisor and, therefore, left the school.

The authorities took months to appoint another teacher. Occasionally the teacher's wife came to teach, but many parents who were upset with this situation withdrew their children from the school. In 1995 the educational authorities finally formally assigned the wife of the previous teacher as the teacher and director at Carmelo.

Strategies used by the teacher:

From the beginning of the NEU program, the teacher at Carmelo began to implement all of the program's elements. He worked with small groups, established study corners, and began working with self-instructional guides. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	52%	44%	60%
1994	65%	34%	70%
1995	88%	11%	77%

As seen in Table 2, work in small groups, with or without the teacher, increases over time. This reflects a much more child-centered methodology, in accordance with the principles of NEU. Also, the percentage of instruction time increases consistently from 1993 on.

Drop out and repetition in the school:

The drop out and repetition rates at Carmelo were also analyzed over time. The table below shows these rates. The school's drop out rate is fairly low overall, although it increases slightly for boys and markedly for girls in 1995. Repetition is moderate in 1993, however, in later years it falls to the point of disappearing. This corresponds to the principles of flexible promotion supported by the NEU program.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	0%	0%	18%	17%
1994	9%	0%	9%	0%
1995	10%	17%	0%	0%

Equality in classroom interactions:

The different interactions initiated by students at Carmelo with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	64%	36%	34%	66%
1994	59%	41%	30%	70%
1995	75%	25%	27%	73%

Table 4 shows that there are variations across the three years, but that they are not substantial. More equality is seen in the interactions initiated by girls in the first two years than in 1995. There is no dramatic change for boys, and interactions with male classmates predominate.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	44%	56%	28%	72%
1994	45%	55%	42%	58%
1995	23%	77%	46%	54%

As the table above shows, in 1993 and 1994 the pattern of interactions shows virtually equality in teacher-initiated interactions with boys and girls, however, in 1995 there is a notable decline in the percentage of interactions directed towards girls, reflecting the traditional pattern.

In the student-initiated interactions it can be seen that after 1993 there is more equality, although the percentages of interactions initiated by girls with the teachers are slightly lower than, but very similar to, those for boys.

CASE STUDY OF CEREZAL SCHOOL

Description of the school:

Cerezal school is part of the NEU program. It is located in a village approximately 10 kms. from the municipal center of Cuilapa. The village has approximately 300 inhabitants.

The site has a moderate climate. The primary crops are corn, beans, and coffee. The secondary crops include plantains and bananas. The majority of these products are for family consumption. The community is accessible via a road made of hard-packed earth which is virtually impassable in the winter. There is no public transportation to the village, only to the municipality, and it can be reached by walking approximately 3 kms.

The school is located almost at the end of the village, surrounded by a few houses, although most houses are located at the village entrance. The school is made of cement block and has a tin roof and a cement floor. It has two classrooms One is where classes are held, and the other serves as a sick room for students who are not well and also as the teacher's bedroom. This is also where school supplies are stored. It has two latrines which are not in good condition. There is no electricity nor drinking water. Water is obtained from two springs which are located in the community.

The school has only one teacher who teaches approximately 45 students in first to sixth grade. The students ages range from 7 to 15. The following table shows variations in the enrollment at across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	17	15	28	25
Girls	12	11	23	24
Total	29	26	51	49

As seen in Table 1, the enrollment has increased over the years for both boys and girls.

Teacher:

The teacher who works at Cerezal lives in the school, using one of the classrooms as a bedroom, as mentioned above. The teacher was assigned to Cerezal in 1989. He was the school's first teacher, as it was built in 1988. Before the school was built, the children walked 3 to 4 kms. everyday to attend school in neighboring villages or in the municipal center.

The teacher feels that working with the NEU methodology has allowed him to create good students. He expressed this by saying, "I use the NEU methodology because it is easy to use, it's effective, and it helps the teacher," and "What I like most about my job is to see a child develop his/her creativity." Up to this point in time, the teacher works with the NEU methodology, and the children and their parents accept this program.

Strategies used by the teacher:

When the NEU program began at Cerezal, the teacher organized the students into circles by grade, subdividing the grades with numerous students into two groups. He began to work with the self-instructional guides, putting into practice NEU elements, such as the sand table, word searches (*sopa de palabras*), etc.

In 1995 the teacher used the guides for most grades, also using reading texts for the first graders. In a typical day of classes the teacher does the following: He seats the students in their respective groups, he calls the group monitors to get their guides and begin work, then he goes to the first graders' blackboard and reviews some significant expressions with them, next he corrects the notebooks of some children in first grade and leaves them assignments. He then addresses the higher grades to explain the content of the guides and returns to the first graders with whom he spends most of the morning. The following table presents the teacher's use of different instructional contexts and the total percentage of time dedicated to instruction.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	38%	63%	72%
1994	36%	64%	67%
1995	14%	80%	71%

As seen in Table 2, the teacher used the small group contexts from 1993. In 1995 there is a slight decline in the use of this context. The percentage of instruction time does not vary greatly during the three years of observation.

Drop out and repetition in the school:

The drop out and repetition rates at Cerezal were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	17%	30%	25%	40%
1994	0%	0%	44%	28%
1995	25%	22%	16%	11%

Table 3 shows that in 1994 there were no drop outs among girls, nor among boys. The repetition rate increases for boys and girls in the second year, but falls again in the final year. There seem to be no trends in the drop out and repetition rates at this school, which may indicate that factors external to the school are intervening.

Equality in classroom interactions:

At Cerezal the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	78%	22%	22%	78%
1994	79%	21%	28%	72%
1995	33%	67%	0%	100%

Table 4 shows that there is a marked pattern of students initiating interactions with classmates of the same sex, however, in 1995 girls initiated more interactions with boys.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	44%	56%	41%	59%
1994	60%	40%	46%	54%
1995	57%	43%	50%	50%

As seen above, the teacher was very equitable in initiating interactions with girls and boys, and the children also followed an equitable pattern in addressing him.

CASE STUDY OF CHIRAXSI SCHOOL

Description of the school:

Chiraxsi, a traditional school, is located in a community approximately 2 kms. from the departmental capital of Alta Verapaz. The community had approximately 200 inhabitants in 1993, the majority of Q'eqchi' origin. This community is surrounded by coffee and cardamon plantations. The community is hard to access due to the sloped terrain and the poor condition of the road, especially in the rainy season.

The school is located in the center of the community, on top of a hill. The school is made of wood and has a tin roof and a concrete floor. It has only one classroom which has a wooden divider to separate the class, so that third to fifth grades are on one side of the divider. It also has a kitchen constructed of wood.

The school has one teacher who speaks Q'eqchi'. The average enrollment during the study years was 30 students, who ranged in age from 6 to 15. The following table shows variations in the enrollment at Chiraxsi across the years. As shown, there were variations over time, but the average enrollment has risen since 1993.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	15	13	19	19
Girls	14	14	21	16
Total	29	27	40	35

Teacher:

The teacher at Chiraxsi has worked at the school since 1990. Years ago there were problems between parents and the former teacher. Therefore, this teacher has tried to maintain close contact with the parents and consults them about school-related decisions.

In 1993 Chiraxsi was selected as one of the schools in the sample of traditional schools. In 1995, when the NEU program expanded to 100 more schools, the teacher consulted with parents and decided to join the NEU program. The teacher felt that the NEU methodology could help him to improve student learning, and he began to attend the NEU training sessions.

Strategies used by the teacher:

The methodology used by the teacher at Chiraxsi during the first two years of the study was eminently traditional. When Chiraxsi joined the NEU program in 1995, certain elements of this new way of teaching were visible in the school, although the methodology was only partially implemented. The teacher grouped the students by grade, established study corners, and made a sand table. Also, the school now has a minimum library donated by the NEU program, however, the teacher still does not work with the self-instructional guides. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	22%	66%	67%
1994	14%	86%	70%
1995	15%	80%	68%

As seen in Table 2, there were no major changes in the use of instructional contexts nor in the amount of time the teacher spent on instruction

Drop out and repetition in the school:

The drop out and repetition rates at Chiraxsi were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	22%	11%	11%	0%
1994	33%	13%	14%	0%
1995	25%	57%	60%	13%

As shown above, the drop out rate rose from 1993 to 1995. A greater percentage of girls dropped out. Repetition also increased, but here there is a higher percentage of boys repeating grades than girls.

Equality in classroom interactions:

At Chiraxsi the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	83%	17%	6%	94%
1994	68%	32%	19%	81%
1995	87%	13%	2%	98%

Table 4 shows that girls tended to initiate interactions with female classmates in all three years. In 1994 there is a slight move towards equality, although the following year the interactions returned to the 1993 level. For boys, interactions with classmates of the same sex predominated. In 1994 this changed slightly, but in 1995 it returned to the level observed in 1993.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	70%	30%	54%	46%
1994	73%	27%	82%	18%
1995	75%	25%	2%	98%

As seen above, there is not much variation in the percentage of interactions initiated by the teacher over the three years of the study, and, in general, he addresses girls more frequently. Interactions initiated by students with the teacher show great variability, and no consistent pattern can be found.

CASE STUDY OF CHIRREPIM SCHOOL

Description of the school:

This school was part of the sample of experimental schools until 1995. Chirrepim is located in a community of the same name. The community is approximately 20 kms. from the municipal center of Cobán and is very difficult to access. To reach the school, one must walk 4 kms. The community of Chirrepim has approximately 350 inhabitants, all of whom are farmers of Q'eqchi' origin. According to the teacher who worked at the school in 1993, there is a high rate of illiteracy (95%) among the community's residents.

Chirrepim school is located to the northeast of the community. The school is made of cement blocks and has a tin roof and a cement floor. It has one classroom which is divided in two, a kitchen, a room which serves as the teacher's bedroom, and a storage room. There is no electricity at the school, but is does have drinking water and latrines.

In 1993 there were two teachers: a teacher who served as principal and was trained in the NEU program and a teacher who had never wanted to be part of the NEU program. Pre-primary to sixth grade students, between the ages of 6 and 14, attended the school. The following table shows variations in the enrollment at Chirrepim from 1993 to 1996.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	32	32	18	25
Girls	18	14	8	17
Total	50	46	26	42

As shown in Table 1, in 1995 there was a great decline in the number of students enrolled, and in 1996 the enrollment rises again. This, no doubt, is due to the problem between the teachers and parents at the school, which is explained below.

Teachers:

As mentioned above, at the beginning of this study, there were two teachers at Chirrepim: a teacher who decided to join the NEU program and one who did not want to receive training in the NEU methodology. During the first year, the first teacher prepared a large quantity of material in accordance with the NEU methodology. She organized the students into groups and began to use the self-instructional guides approximately mid-term. The NEU methodology, however, was never completely implemented at the school.

In 1994, this teacher began to encounter problems with the parents, first of all due to her constant absences and secondly because she did not speak Q'eqchi'. The other teacher tried to turn the parents against the teacher/principal, as he could speak Q'eqchi' and communicate easily with them. By the end of the school year, both teachers were continually absent, and this made the parents quite dissatisfied and caused many of them to withdraw their children from the school. The conflict was so serious that the parents finally opposed having the two teachers work at Chirrepim, and they were transferred to other schools.

At the beginning of 1995 the educational authorities sent another teacher, and the parents accepted him with the condition that he work in the traditional methodology, as they did not want to continue with the NEU methodology. Therefore, in 1995 Chirrepim returned to being a traditional unitary

school. In 1996 parents began to send their children to the school again, after seeing that the teacher worked with the traditional methodology and used books in Q'eqchi'.

Strategies used by the teachers:

From the beginning of the NEU program, the teachers at Chirrepim changed little about their teaching style.

The teacher/principal organized the students into groups named after animals and distributed the self-instructional guides, but, even then, she still used text books.

The following table presents the teachers' use of different instructional contexts and the total percentage of instruction time.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	12%	88%	51%
1994	32%	68%	58%
1995	16%	84%	79%

As seen in Table 2, the use of small groups, with or without a teacher, rose a little in 1994, probably because the teacher/principal had a better handle on the NEU program. However, in 1995 the percentage of use of this context dropped again to the 1993 level. This seems to indicate that the program was only partially implemented in 1994. If the percentages for time spent on instruction are analyzed, it can be seen that it was very low for the first two years and, after the traditional teacher took over, more time was spent on instruction.

Drop out and repetition in the school:

The drop out and repetition rates at Chirrepim were also analyzed over time.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	18%	42%	56%	50%
1994	14%	50%	100%	100%
1995	0%	0%	60%	0%

As shown in Table 3, in 1995 there were no drop outs, in contrast with the high drop out rates in 1993 and 1994, which may be due to the change in teachers. Repetition for boys reaches its maximum level in 1994 and returns to its previous level in 1995. The same occurs for girls, except in that in 1995 repetition is eliminated.

Equality in classroom interactions:

In order to determine if more equitable relationships towards girls had been established over time, at Chirrepim the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	85%	15%	8%	92%
1994	96%	4%	2%	98%
1995	91%	9%	2%	98%

Table 4 shows that in all three years interactions, for girls and for boys, follow a traditional pattern that lacks equality, as the majority of interactions are directed towards classmates of the same sex, and there is little variation over time.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	50%	50%	11%	89%
1994	46%	54%	57%	43%
1995	14%	86%	2%	98%

As seen above, the teachers treated students equally in 1993 and 1994, however, in 1995 this changes drastically, as the teacher seems to have preferred to interact with boys. This may be due to the fact that in the first years a female teacher was in charge and in the last year a male teacher was.

CASE STUDY OF LAZARO SCHOOL

Description of the school:

Lazaro school is part of the sample of traditional unitary school. It is located in a village approximately 2 kms. from the departmental capital of Jalapa. The village has approximately 450 inhabitants.

The site has a moderate climate. The primary crops are corn and beans for consumption, and in the higher parts of the village there are some fruit trees. The community is accessible via a partially paved road which is passable all year round. There is no public transportation.

The school is located in the center of the village, surrounded by the majority of the community's houses. The school is made of adobe and has a tin roof and a cement floor. It has two classrooms, which are used for classes. It also has a small kitchen made of bamboo with a tin roof which is in poor condition and a small storage room which holds furniture that is in bad condition. The school has a latrine, but it cannot be used because it is sinking. Therefore, students return to their homes to use the bathroom. There is no electricity nor drinking water despite the fact that the majority of homes in the community do have electricity.

The school has one teacher who teachers approximately 40 students in first to third grade. The students' ages range from 7 to 13. The following table shows variations in the enrollment at across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	24	20	19	29
Girls	28	22	18	22
Total	52	42	37	51

As shown in Table 1, there are slight variations in three years and a decline in the total enrollment in 1995 which may be due to a problem that the teacher had with the parents that year.

Teacher:

During 1993 to 1995 one teacher worked at the school. Her attendance was very irregular, and this gradually caused problems with the parents.

The teacher who works at the school in 1996 lives in the departmental capital. She arrived when she was transferred to Lazaro by a supervisor and has been at the school for approximately 5 months. The teacher was transferred to another school because of problems she had with the community.

The traditional methodology is used in this school. The previous teacher did not pay enough attention to the students. Little time was spent on instruction and, generally, the students were observed doing nothing.

The current teacher spends more time with the students, although she still works with the traditional methodology, using textbooks. For first grade, she uses the blackboard to write down significant expressions. The teaching strategies used at this school are described below.

Strategies used by the teacher:

The teacher placed first and second graders in the large classroom, as there were many students. She worked with them for most of the morning. She spent little time with third grade (approximately 20%). She assigned them exercises on the blackboard or had them work with text books in the other classroom.

In the morning she addressed both groups, correcting homework and putting exercises on the blackboard. In general she sat at her desk and corrected and assigned words and sentences to copy. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	4%	95%	46%
1994	18%	80%	36%
1995	0%	100%	44%

As seen in Table 2, little time is spent working in small groups, and the majority of time is spent with the entire class or individual students. In this school the instruction time was less than 50% in all three years.

Drop out and repetition in the school:

The drop out and repetition rates at Lazaro were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	23%	43%	12%	14%
1994	57%	63%	41%	62%
1995	57%	50%	45%	75%

In Table 3 it can be seen that repetition and drop out rates rose notably at Lazaro in the last two years, for both girls and boys. Repetition, in 1994 and 1995, is much higher for girls than for boys.

Equality in classroom interactions:

At Lazaro the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	82%	18%	50%	50%
1994	70%	30%	57%	43%
1995	84%	16%	*	*

* No boys were observed.

Table 4 shows that girls tend to prefer to interact with classmates of the same sex. A slight change took place in 1994, but the following year the percentages return to almost the same levels as in 1993. During the first two years boys interacted almost equally with male and female classmates. No boys were observed in 1995.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	53%	47%	77%	23%
1994	67%	33%	76%	24%
1995	100%	*	100*	*

* No boys were observed.

As seen above, the teacher addressed girls more frequently. Girls also initiated more interactions with the teacher each year than boys did.

CASE STUDY OF LIMONARES SCHOOL

Description of the school:

Limonares is a traditional school which is located between several farms and villages, approximately 27 kms. from the departmental capital of Baja Verapaz. The village has approximately 1,336 inhabitants.

The primary crops are corn, beans, and sugar cane, 60% of which are sold at the market in the capital. The site has a moderate and humid climate. The school is easily accessible, as it is located along the side of the principal asphalt highway which leads to Salamá. The residents can use buses or trucks for transportation.

The school has two large classrooms, a room used as a bedroom, and a room used for administration. Limonares also has a wooden kitchen behind it. The school has three latrines which are in good condition and drinking water, but it does not have electricity nor plumbing.

Two teachers work at Limonares. One is in charge of first and second grade, and the other teaches third to sixth grades. At the last count, 85 students were enrolled, ranging in age from 7 to 15.

The following table shows variations in the enrollment at across the years. As shown, there was a slight decline in the enrollment, especially in 1994. After that point enrollment increased, with almost the same rate of increase for both sexes.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	53	39	42	44
Girls	40	27	29	41
Total	93	66	77	85

Teachers:

In 1993 the school was managed by two teachers who were married, but in 1994 they were transferred to other schools due to conflicts with the community. One teacher arrived to work with all six grades. In the meantime there were many drop outs, as the school as closed.

The new teacher worked at Limonares for almost two years and then requested a transfer to the departmental capital, but her request was denied. In 1996 another teacher was appointed so that they could both teach all of the students.

According to several parents, the two teachers at Limonares take turns missing work, so that one group of students always is left without receiving instruction. The teachers' irresponsibility has caused a negative attitude toward school activities.

Strategies used by the teachers:

The teaching methods used by the two teachers at Limonares is based on writing exercises on the blackboard for the students to copy and having students memorize paragraphs. They do not use any supporting materials.

The teachers spend most of the time reviewing exercises, assigning words/sentences to copy and grading these. This shows a lack of lesson planning.

The children work individually most of the time, writing almost entirely, and have low levels of participation. This is reflected in the following table which presents the teachers' use of different instructional contexts at Limonares.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	3%	97%	22%
1994	0%	100%	64%
1995	0%	95%	69%

As seen in Table 2, the percentage of time spent working in small groups was small or non-existent (in 1994 and 1995). Seatwork and work with the entire class rose as a result of this, reflecting a more traditional, teacher-centered methodology. The amount of time spent of instruction, however, tripled over the three years of observations.

Drop out and repetition in the school:

The drop out and repetition rates at Limonares were also analyzed over time. In the table below which shows these rates, it can be seen that the drop out rate for girls has fallen, while the rate for boys rose in 1995. There is still a generally high drop out rate, though.

Repetition was high for both sexes across the years, which may due to the teachers' irregular attendance.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	36%	50%	36%	30%
1994	38%	31%	54%	28%
1995	47%	25%	41%	46%

Equality in classroom interactions:

At Limonares the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	99%	1%	10%	90%
1994	90%	10%	16%	84%
1995	95%	5%	21%	79%

Table 4 shows a traditional pattern of interactions between students in which students prefer to initiated interactions with classmates of the same sex. Although slight variations are noted across the years, no consistent pattern emerges.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers at Limonares.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	26%	74%	43%	57%
1994	82%	18%	70%	30%
1995	9%	91%	41%	59%

As seen above, the teachers preferred to address boys, especially in 1995, although in 1994 more interactions were initiated with girls by the teachers. In students' interactions with the teachers, boys initiated interactions more frequently than girls in 1993 and 1995, and girls initiated more contact with the teachers in 1994.

CASE STUDY OF MARISCAL SCHOOL

Description of the school:

Mariscal is a school in the NEU sample. It is located in a village approximately 6 kms. from the municipal center of Salamá. In 1993 the village has approximately 250 inhabitants of Achí origin, but the majority speak Spanish. The school is accessible by two roads made of hard-packed earth, both of which are about one and a half kilometers from the asphalt highway.

The school is located in the center of the community. The school is made of cement block and has a tin roof and a packed dirt floor. It has two classrooms, a room used for administration, and a kitchen.

The school had two teachers during three years of the study. One of the teachers serves as a principal and teaches from fourth grade up. The other teacher teaches first through third grade. There has been an average enrollment of 50 students during this study. The students range in age from 6 to 15. The following table shows variations in the enrollment at Mariscal across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	20	20	36	27
Girls	20	18	23	18
Total	40	38	59	45

Teachers:

As mentioned above, since 1993 Mariscal has had two teachers, one man, who also serves as the principal and teaches fourth through sixth grade, and a woman who teaches first through third grade. The man has been working at the school for approximately 15 years, and the woman has taught there for 10 years. Both teachers joined the NEU program in 1993 and attended all of the training sessions from the start. They began implementing program elements immediately with great enthusiasm, however, in 1995 they seemed less motivated in their work.

Strategies used by the teachers:

The grades observed as part of the sample during the first two years of the study included the female teacher's students. After 1993 she was observed implementing study corners, small group work, and using the self-instructional guides, as well as the other NEU program elements. In 1995 both teachers were observed, as in that year some of the observed children were in fourth and fifth grade.

The following table presents the teachers' use of different instructional contexts and the percentage of time spent on instruction at Mariscal.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	55%	40%	69%
1994	51%	49%	74%
1995	46%	51%	67%

As seen in Table 2, there were no major changes in the use of instructional contexts. From the beginning the teachers used about half of the instruction time working in small groups, with or without their presence, and spent the rest of the time on work with the class as a whole or seatwork. There was no significant variation in the amount of time dedicated to instruction, although in 1994 this percentage rose slightly.

Drop out and repetition in the school:

The drop out and repetition rates at Mariscal were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	0%	15%	14%	23%
1994	0%	20%	21%	10%
1995	14%	25%	7%	0%

Table 3 shows that there is variation in the drop out rate and that it increased. Among boys, there were no drop outs in the first two years, and the rate for 1995 is lower than that for girls. The repetition rate for boys increased in 1994, but fell again in 1995. For girls, the repetition rate declined during the first two years until it disappeared in 1995. This may be due to the use of flexible promotion in the NEU schools.

Equality in classroom interactions:

At Mariscal the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	52%	48%	37%	63%
1994	73%	27%	47%	53%
1995	57%	43%	29%	71%

Table 4 shows that there is a change towards less equality in 1994 in interactions initiated by girls, but in the other years girls addressed girls and boys almost equally. In 1994 there is also a change for boys. They moved toward greater equality than in 1993, but then return to the previous level of interactions initiated with others boys.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	44%	56%	52%	48%
1994	26%	74%	46%	54%
1995	42%	58%	36%	64%

As seen above, there is again a marked variation in teacher-initiated interactions with students in 1994, where fewer interactions were initiated with girls. A more equal relationship is seen in the other years. There is not much variation observed in student-initiated interactions with the teachers, although in 1995 the percentage of interactions initiated with the teachers by girls falls somewhat.

CASE STUDY OF PANTANAL SCHOOL

Description of the school:

Pantanal school is part of the NEU program. It is located in a village approximately 21 kms. from the municipal center and approximately 52 kms. from the departmental capital of Santa Rosa. The village has approximately 200 inhabitants.

The site has a warm climate which sometimes becomes moderate, depending on the season. The primary crops are corn, sorghum, and chilies, the first for consumption and the others for sale. The community is accessible via a road made of hard-packed earth which is passable all year. Public transportation is available once a day, so the residents generally get around on foot, bicycle, or moped.

The school is located in the center of the community, surrounded by the majority of the village's houses. The school has walls made of cement block and has a tin roof and a concrete floor. It has two classrooms, one for instruction and the other for storage and the library. There is one latrine in the rear of the school building, but there is no electricity nor drinking water.

The school has only one teacher, a man, who currently teaches 40 students, between the ages of 7 and 15, in first to sixth grade. The following table shows variations in the enrollment at Pantanal across the years. As shown, the total enrollment rose.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	11	10	15	14
Girls	19	20	26	26
Total	30	30	41	40

Teacher:

The teacher lives in the municipal center and travels to the school daily. This teacher was transferred to the school in 1995 to replace the previous teacher, who was promoted to supervisor of the NEU program. By the middle of the year, the new teacher who had come from a traditional school, was familiar with the NEU methodology and worked with guides.

According to the teacher, he prepares his material with time in order to work effectively, with the goal of being throughly familiar with it. He also has received help with his teaching from his work in circles and workshops.

Strategies used by the teacher:

The teacher begins class by explaining to students in the higher grades some points from the guide which they worked with the previous day. Then he goes over to the second graders to do the same. Finally he works with the first graders, with who he spends the most time, grading notebooks, going over significant expressions, and doing practice exercises in groups.

This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	49%	50%	75%
1994	40%	59%	75%
1995	55%	45%	73%

As seen in Table 2, the teacher has dedicated and maintained almost the same percentage of time to work in small groups and with the entire class. There is a slight increase in the final year in small group work, with or without the teacher. Also, the amount of time spent on instruction remained at the same level all three years.

Drop out and repetition in the school:

The drop out and repetition rates at Pantanal were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	0%	0%	11%	40%
1994	22%	7%	44%	13%
1995	14%	7%	0%	29%

Table 3 shows that the drop out rate reached its highest level in 1994, especially for boys who dropped out at a higher rate than girls. In the first year there were no drop outs among boys nor girls. For boys, repetition reaches its highest rate in 1994, but in 1995 no boys were repeating a grade. Although repetition among girls dropped in 1994, it rose again in 1995.

Equality in classroom interactions:

At Pantanal the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	74%	26%	36%	64%
1994	80%	20%	22%	78%
1995	69%	31%	36%	64%

Table 4 shows that in the first two years girls' rates of initiating interactions with classmates of both sexes did not vary much, but in 1995 their interactions with boys rose slightly. Boys have maintained almost the same rate of initiating interactions with girls each year, except in the second year where most of their interactions were initiated with other boys.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	62%	38%	40%	60%
1994	42%	58%	40%	60%
1995	57%	43%	37%	63%

CASE STUDY OF SANIMLAHA SCHOOL

Description of the school:

Sanimlaha school is part of the NEU program. It is located in a village approximately 5 kms. from the departmental capital of Alta Verapaz. In 1993, the community had approximately 500 inhabitants.

The site has a moderate climate which fosters agriculture. The road made of hard-packed earth to the village is passable all year, but no public transportation is available.

The school is located in the center of the community, a short distance from the majority of the village's houses. The school is made of cement block and has a tin roof and a concrete floor. In 1993 the school was a wooden building with only one cramped classroom. In 1994 a new school was built with the collaboration of parents. This new school building has two classrooms where the pre-primary and first grade students are taught and another classroom for second to fifth grades. It also has a room for school administration, a library, and a storage room. There is no electricity at the school. Its latrines are in good condition and drinking water can be obtained close to the school.

The school has had two teachers during this study, who joined the NEU program in 1993. The average enrollment has been 45 students, ranging in age from 6 to 14. The following table shows variations in the enrollment at Sanimlaha across the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	34	25	32	39
Girls	11	12	13	20
Total	45	37	45	59

As shown in Table 1, more boys were enrolled every year, and in 1996 there was a noticeable increase in the total enrollment.

Teachers:

The two teachers at this school decided to join the NEU program in 1993, after having regularly attended all of the training sessions. Over the years, the teachers implemented all of the elements of the NEU program, especially the student government, which operates with the support of students in almost all of the grades. From the start, they worked with guides, sand tables, significant expressions, and established study corners with items from the community. Both teachers speak Q'eqchi'.

In the beginning, the parents were not very familiar with the new methodology, but later they began to understand it more, and it was accepted by them and their children.

Strategies used by the teachers:

From the beginning of the NEU program, the teachers at Sanimlaha implemented the diverse elements of the program. They immediately began to work with small groups named after animals. They grouped the students according to their grade level and achievement. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	52%	48%	69%
1994	45%	53%	64%
1995	45%	53%	69%

As seen in Table 2, work in small groups, with or without the teacher, was implemented from the beginning of the project, which reflects a much more child-centered methodology, in accordance with the principles of NEU. There is not much variation in the amount of instruction time from 1993 to 1995.

Drop out and repetition in the school:

The drop out and repetition rates at Sanimlaha were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	37%	0%	13%	50%
1994	33%	0%	13%	0%
1995	20%	25%	0%	0%

Table 3 shows that the school's drop out rate is not that high, and drops for boys over time. It rises for girls in 1995, but there were no female drop outs in the previous years. Repetition rates drop until they disappear in 1995, consistent with the policy of flexible promotion used in NEU.

Equality in classroom interactions:

At Sanimlaha the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	20%	80%	9%	91%
1994	61%	39%	7%	93%
1995	53%	47%	2%	98%

Table 4 shows a great difference in the frequency with which girls address classmates of both sexes in 1993. More equality in girls' interactions appears in the following years. Boys followed a consistent, traditional pattern of interacting primarily with male classmates.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	40%	60%	33%	67%
1994	30%	70%	33%	67%
1995	52%	48%	22%	78%

Although there is some variation in the pattern of interactions initiated by the teachers with the students, as seen above, in general an equitable relationship with students is apparent, especially in 1995. Male students addressed the teachers more frequently than girls did, and this tendency was more acute in 1995.

As seen above, in the first and third years the teacher addressed girls more frequently, but in 1994 this changed, and he interacted more with boys. Although the variations are slight. Boys initiated interactions with the teacher more than girls did every year, and little variation is apparent.

CASE STUDY OF SAN SIMON SCHOOL

Description of the school:

San Simón, one of the traditional schools, is located in a village approximately 35 kms. from the departmental capital of Baja Verapaz. The village has approximately 500 inhabitants.

The primary crops are corn and beans for consumption and trade with neighbors. Other crops include tomatoes, sugar cane, and coffee which are produced for sale in the municipal center. The climate is moderate with constant precipitation due to the altitude of the village. Primary access to the village is via a road made of hard-packed earth, approximately 5 kms. long, which is unpassable in the winter.

The school is located almost in the center of the village. It has two classrooms, one large and another medium-sized, as well as a room for t
he teacher. Prior to 1994 the school was a structure with adobe walls, a tile roof, and a dirt floor. The school is now made of cement block and has a tin roof and a concrete floor. The most important source of drinking water is a well which provides water for almost 95% of the population.

The school currently has one teacher who teaches the first to third graders in the large classroom and the fourth through sixth graders in the other classroom. He is responsible for 53 students. The following table shows variations in the enrollment at San Simón across the years. As shown, there is a fairly considerable increase in the total number of students of both sexes, especially in 1995, which may be due to the new school building.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	16	16	25	24
Girls	21	17	28	29
Total	37	33	53	53

Teacher:

The teacher at San Simón has been teaching since 1993. He was observed to have a close relationship with the committee for the improvement of the village and with parents.

Strategies used by the teacher:

The teaching method used by the teacher is traditional, but is fairly systematic and allows for the separation of the students by grade, allowing them to work together, but always seated in rows. When he groups the students together, he gives them a book and asks a volunteer to read to the class in order to later discuss the text. He uses some posters, especially with the first grade. He does oral and written evaluations.

Some of the aspects of his teaching style described above are reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	12%	84%	51%
1994	5%	94%	69%
1995	13%	87%	79%

As seen in Table 2, the amount of time that the teacher spends with the students working in small groups, with or without his presence, is very small, especially in 1994, however, it is noteworthy that he uses this context even though San Simón is a traditional school. The amount of time spent on instruction also rose over the years.

Drop out and repetition in the school:

The drop out and repetition rates at San Simón were also analyzed over time. In the table below which shows these rates, it can be seen that the drop out rate has fallen and that after 1994 no boys dropped out.

On the other hand, repetition among boys has risen, while girls have accounted for low levels of repetition, especially in 1993 and 1995 when no girls dropped out.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	13%	30%	13%	0%
1994	0%	14%	29%	14%
1995	0%	17%	25%	0%

Equality in classroom interactions:

At San Simón the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	71%	29%	43%	57%
1994	80%	20%	22%	78%
1995	91%	9%	10%	90%

Table 4 shows that a traditional interaction pattern is followed by the students, in which they prefer to interact with students of the same sex. The percentage of interactions initiated with a classmate of the same sex increased over the years for boys and for girls.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher at San Simón.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	14%	86%	67%	33%
1994	42%	58%	56%	44%
1995	33%	67%	14%	86%

As seen above, the teacher prefers to address boys, although in 1994 he interacted with students of both sexes almost equally. Over the years girls have initiated far fewer interactions with the teacher, while the percentage initiated by boys has risen, especially in 1995.

CASE STUDY OF SECUCHIL SCHOOL

Description of the school:

Secuchil is one of the NEU schools in the sample. It is located in a village approximately 3.5 kms. from the municipal center and approximately 12 kms. from the departmental capital of Alta Verapaz. The village has approximately 400 inhabitants.

The site has a moderate climate. The primary crops are corn and beans for local consumption. The community is accessible via a road made of hard-packed earth which is virtually impassable in the winter. There is no public transportation, and, due to the narrow path, one can only enter on foot, bicycle, or moped.

The school is located in the center of the community. The majority of the village's houses surround it. The school's walls are made of wood, and it has a tin roof and a concrete floor. It has two classrooms, a kitchen in disrepair, and two latrines behind the building. There is no electricity nor drinking water.

The school has two teachers, a man and a woman, who teach 70 students at present, from first to sixth grade. The students range in age from 6 to 14 years old. The following table shows variations in the enrollment at Secuchil across the years. As shown, an increase in the enrollment for boys and girls is seen.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	24	21	36	36
Girls	26	23	31	35
Total	50	44	67	71

Teachers:

Both teachers are from Alta Verapaz, live in the municipal capital, and travel to the school daily. The male teacher was appointed to his current post by the Ministry of Education, while the female teacher was transferred to her position. The first teacher has nine years of experience to date, and the female teacher arrived at the school almost seven years ago.

The teachers decided to work with the NEU methodology because it allows them to constantly evaluate the teaching-learning process, as well as providing greater technical support. However, despite being included as a pilot school, the program has not been fully implemented at Secuchil. The teachers continue working to improve some of the processes which are considered weak. Among some of the problems encountered in the implementation figure the following:

-Difficulty in getting students of both sexes to interact with each other;
-Lack of proficiency in Spanish language among students;
-The female teacher is not completely fluent in Q'eqchi';
-The majority of the students are very shy.

Strategies used by the teachers:

Since Secuchil joined the NEU program as an experimental school, the teachers began to modify their teaching styles. At the beginning of each school day they group the children by grade, distribute the

guides, and give them instructions. The first graders work independently and later, they work on group activities with the teacher. The children copy significant expressions into their notebooks and then share them with their classmates and the teacher. The female teacher spends almost 70% of her time with first grade. The second and third graders sit in groups and work with guides. The female teacher spends the other 30% of her time with these grades.

The fourth through sixth graders are taught by the male teacher who uses the same method as the first teacher and spends an equal amount of time with each grade. The teachers were constantly observed moving around the classroom to oversee the children's work. This is reflected in the following table which presents the teachers' use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	44%	55%	58%
1994	56%	44%	60%
1995	42%	56%	71%

As seen in Table 2, the teachers spend the same amount of time working in small groups as they do working with the entire class or having children work individually. Also, the time they dedicate to instruction has increased over the years.

Drop out and repetition in the school:

The drop out and repetition rates at Secuchil were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	14%	12%	5%	35%
1994	21%	0%	41%	40%
1995	27%	27%	27%	27%

As shown in Table 3, the drop out rate reached its highest point in 1995 for both sexes, although over the years a higher percentage of boys have dropped out than girls. No girls dropped out in 1994. Repetition reaches its highest rate in 1994 and falls in 1995 for both sexes, who have the same rate that year.

Equality in classroom interactions:

At Secuchil the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	68%	32%	32%	68%
1994	67%	33%	26%	74%
1995	71%	29%	9%	91%

Table 4 shows that in general the students have increased their interactions with classmates of the same sex. At the same time, girls initiate more interactions with boys than boys do with girls.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	43%	57%	25%	75%
1994	55%	45%	23%	77%
1995	23%	77%	32%	68%

As seen above, during the first two years the teachers addressed boys and girls at almost the same rate, but in 1995 this changes significantly, as the teachers interacted more frequently with boys that year. Boys initiated more interactions with the teachers than did girls in every year.

CASE STUDY OF SEOCOX SCHOOL

Description of the school:

Seocox is one of the traditional schools in the sample. It is located in a village approximately 8 kms. from the municipal center of Cobán, Alta Verapaz. The village has approximately 300 inhabitants.

The site has a moderate climate. The primary crops are corn and beans for consumption. The residents work at nearby farms, harvesting cardamon and coffee. The community is accessible via a fairly steep road which is rarely passable in the winter, as are other nearby roads. There is no public transportation, and, due to the narrow nature of the path leading to the community, it can only be traveled on foot or bicycle.

The school is located a few meters from the entrance to the community of Seocox. There are few houses immediately surrounding it, as the majority of the dwellings are located in the center of the community. The school is made of cement block and has a tin roof and a brick floor. It has two classrooms: one for first and second grades and another for pre-primary, third, fourth, and fifth grades. It also has a kitchen and a storage room. There are two latrines which are in poor condition, and there is no electricity nor drinking water.

The school has three teachers: two men and a woman. The two male teachers teach the students in one classroom, while the female teacher teaches those in the other room. Over the course of this study, there was an average of 40 students enrolled at Seocox in first to fifth grade, ranging in age from 6 to 15 years old. The following table shows variations in the enrollment at Seocox across the years. As shown, there is a fairly stable and uniform trend, without significant variations in enrollment over the years.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	22	22	30	23
Girls	23	20	23	21
Total	45	42	53	44

Teachers:

The teachers live in the departmental capital and travel to the school daily. Two of them have been teaching for 10 years. The other teacher arrived at the school in 1996 as a loan, while he awaits relocation in another community. All three teachers work with the traditional methodology, using these books: Cenaltex, Oscar de León, Barbuchín, and Victoria.

Strategies used by the teachers:

The teachers work in a completely traditional manner. They assign exercises to be copied to the first graders. Then they have the other grades copy exercises from the blackboard while they sit at their desk and correct homework from the previous day. They arrange the students in rows, one bench after another, or at individual wooden desks. They answer questions while sitting at their desk and call students to bring them their notebooks to be corrected.

The following table presents the teachers' use of different instructional contexts at Seocox.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	3%	97%	62%
1994	1%	97%	68%
1995	5%	90%	62%

As seen in Table 2, the majority of the teachers' time is spent with the class as a large group or with students working individually. Active learning contexts are almost non-existent. There are no notable changes in the amount of time dedicated to instruction, although there is a slight increase in 1994.

Drop out and repetition in the school:

The drop out and repetition rates at Seocox were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	6%	25%	17%	25%
1994	35%	36%	41%	17%
1995	36%	25%	0%	22%

Table 3 shows that the drop out rate rose in 1994 for boys and girls, although this rate fell again for girls in 1996 but remained at the same level for boys in the same year. Repetition reaches a high point in 1994, but disappears for boys in 1995, while remaining constant for girls.

Equality in classroom interactions:

At Seocox the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	99%	1%	1%	99%
1994	98%	2%	1%	99%
1995	94%	6%	0%	100%

Table 4 shows that the students prefer, almost absolutely, to interact with classmates of the same sex. This mirrors the cultural pattern of the community.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	50%	50%	52%	48%
1994	44%	56%	25%	75%
1995	60%	40%	69%	31%

As seen above, in the first year teachers addressed boys and girls equally. In 1994 they addressed boys slightly more often, and in 1995 they initiated more interactions with girls. In 1993 students of both sexes address the teachers with almost equal frequency. In 1994 boys interacted more frequently with the teachers, and this proportion is reversed in 1995, when girls initiated more interactions with them. There is no consistent trend in the pattern of interactions initiated by students with the teachers. This may be due to the fact that there is more than one teacher at Seocox.

CASE STUDY OF SIGUALOM SCHOOL

Description of the school:

Sigualom school is located in a village approximately 6 kms. from the municipal center of Cobán in Alta Verapaz. The village has approximately 500 inhabitants.

The site has a moderate climate which tends to be humid. The primary crops are corn, beans, and coffee, which are traditionally produced for daily consumption. The community is accessible via a road made of hard-packed earth which is passable almost year round. There is public transportation to nearby villages which passes only a few meters in front of the school.

The school is located is the center of the community, although hills and some houses which are somewhat far away are visible from its location. The school is made of cement block and has a tin roof and a concrete floor. It has two classrooms where classes are taught, as well as a wooden kitchen which is in poor condition and is located along the side of the school. There are also two latrines which are in bad condition. There is electricity and water, but the water cannot be used as drinking water.

The school has two teachers, one female and one male. The average enrollment at Sigualom during this study has been 40 students in first through sixth grade. The students range in age from 6 to 14 years old. The following table shows variations in the enrollment at Sigualom across the years. As shown, there is a tendency towards increased enrollment for both sexes, and especially for boys in 1996.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	13	11	17	28
Girls	13	9	15	15
Total	26	20	32	43

Teachers:

The teachers live in the departmental capital and travel to the school daily. Both teachers were transferred to Sigualom and had previously been stationed in far away villages. The male teacher, who also serves as the principal, has been at this school for approximately 13 years. The female teacher began working at Sigualom nine years ago. Both teachers use the traditional methodology.

Parents have little contact with the teachers and in the parent interviews stated that they do not have enough time to go to the school and find out about their children's education, however, they did say that the female teacher is good and that in planting and harvesting seasons they pull their children out of school, which causes them to miss part of the school year.

Strategies used by the teachers:

Individual work without the teacher predominates at Sigualom. The teacher begins class by assigning exercises to be copied to the first graders. Then he writes assignments in the blackboard for the other grades and returns to his seat. From his desk he occasionally asks the students if they have finished their work.

The students are seated in rows of benches facing the blackboard. Students of all grades are mixed together. This is reflected in the following table which presents the teachers' use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	8%	91%	58%
1994	5%	94%	67%
1995	0%	98%	62%

As seen in Table 2, the teachers spend more time with the entire class or on individual student work than work in small groups. The instruction time did not change notably, although there was a slight increase in 1994.

Drop out and repetition at Sigualom:

The drop out and repetition rates at Sigualom were also analyzed over time. In the table below which shows these rates, it is seen that the drop out rate for boys increases over time, while it falls significantly for girls, among whom there were no drop outs in 1995.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	20%	40%	20%	30%
1994	25%	33%	50%	33%
1995	50%	0%	33%	25%

Equality in classroom interactions:

At Sigualom the different interactions initiated by students with classmates of both sexes and the teachers were analyzed, as were interactions initiated by girls and boys with the teachers, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	88%	12%	0%	100%
1994	98%	2%	1%	99%
1995	100%	0%	0%	100%

Table 4 shows that students prefer, almost absolutely, to interact with classmates of the same sex. This reflects the traditional cultural in this community, which separates males from females.

Table 5 shows the interactions initiated by the teachers with children of both sexes and the percentages of interactions initiated by the students with the teachers.

Table 5: Percentage of Interactions Initiated by the Teachers and by Students of Both Sexes

Year	Initiated by Teachers		Initiated with Teachers	
	with girl	with boy	by girl	by boy
1993	41%	53%	59%	41%
1994	45%	55%	15%	85%
1995	26%	74%	27%	73%

As seen above, during the first two years teachers addressed boys more than girls, and this pattern was even more noticeable in 1995. There is also an increase in the percentage of interactions initiated by boys with the teachers in the last two years, especially in 1994.

CASE STUDY OF TALUD SCHOOL

Description of the school:

Talud was part of the sample of experimental schools until 1995. It is located in a village 7 kms. from the departmental capital of Jalapa. The village has approximately 200 inhabitants.
The site has a climate moderate, and the primary crops are corn and beans for consumption. The community is accessible via a road made of hard-packed earth year round, however, there is no public transportation, so the residents travel on horseback, bicycle, or on foot.

The school is located in the center of the village, surrounded by hills and a few houses. The school is made of cement block and has a tin roof and a concrete floor. It has three classrooms. One is used for classes and the other two serve as storage space, where furniture in bad condition and things which are no longer useful are kept. The school has three latrines in good condition, and there is no electricity nor drinking water.

The school has only one teacher who teaches approximately 30 students in first to sixth grade, ranging in age from 6 to 15 years old. The following table shows variations in the enrollment at Talud across the years. As shown, there is a slight change, as the enrollment among boys fell a little.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	16	15	13	11
Girls	15	15	15	16
Total	31	30	28	27

Teacher:

The teacher who works at Talud lives in the departmental capital and travels to the school daily. She was transferred to the school approximately two years before the NEU program began. She joined the NEU program because she thought that it would support her teaching, however, she felt that it only provided the support she needed during the first year, when the teachers' circles were functioning efficiently. In 1994 she began to lose interest, especially in the training workshops and teachers' circles. Her teaching returned to the traditional style. Then she became ill and missed work frequently, so she was replaced at the end of the year by a substitute teacher who was not familiar with the NEU program.

As a result of the dissatisfaction with the NEU, in 1995 the teacher formally withdrew the school from the NEU program, however, she continued to work with the guides provided by NEU but did not incorporate any other elements of the program.

Strategies used by the teacher:

From the start of the NEU program, the teacher changed her teaching methodology very little. Generally, she began the day by writing a sample on the blackboard for the first graders to copy. Then, after, grouping the students by grade level, she distributed the guides and gave instructions. Then she returned to her desk. From her desk, she answered questions raised by the students and reviewed their assignments. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	32%	66%	71%
1994	14%	86%	74%
1995	15%	83%	69%

As seen in Table 2, the percentage of time dedicated to work in small groups, with or without the teacher, declines markedly from 1993 to 1995. Therefore, seatwork and work with the entire class rose, reflecting a more traditional, teacher-centered methodology. The time dedicated to instruction fell slightly over the years.

Drop out and repetition in the school:

The drop out and repetition rates at Talud were also analyzed over time. In the table below which shows these rates, it can be seen that the drop out rates for boys and girls increased noticeably. In terms of repetition rates, boys have repeated grades less frequently in later years, while girls have repeated grades more frequently.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	8%	14%	50%	29%
1994	9%	17%	36%	50%
1995	40%	40%	10%	67%

Equality in classroom interactions:

At Talud the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	86%	14%	39%	61%
1994	87%	13%	23%	77%
1995	93%	7%	33%	67%

Table 4 shows a traditional pattern of interactions between students, in which both boys and girls prefer to interact with classmates of the same sex. Although there are is a slight variation over time, there is no consistent pattern.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	29%	71%	41%	59%
1994	46%	54%	46%	54%
1995	35%	65%	38%	62%

As seen above, the teacher preferred to address boys and there is little variation in her interactions over time. In the first two years, boys and girls addressed the teacher with almost the same frequency, bu tin 1995 boys addressed her more often than girls did.

CASE STUDY OF SAN FERNANDO SCHOOL

Description of the school:

San Fernando is a traditional school, located approximately 3 kms. from the departmental capital of Jutiapa. The village has approximately 600 inhabitants. The site has a moderate climate. The primary crops are corn and beans for family consumption. The primary occupation of families in the community is raising cattle, which generates the majority of their income. The village is accessible via a road made of hard-packed earth which is passable year round. There is no public transportation, so residents must walk to reach the departmental capital.

The school is located approximately 200 meters from the entrance of the village. Most of the houses are spread out, and the school is surrounded by fields which are used for grazing cattle and two houses. The school is made of adobe and has a tin roof and a concrete floor. It has one classroom and a small storage room. Its furniture is in poor condition. There is a latrine made of adobe and tin which the teacher and students use. There is no electricity nor drinking water at the school, despite its location close to the departmental capital.

The school has only one teacher who teaches approximately 20 students in first to third grade. The students range in age from 7 to 12 years old. The following table shows variations in the enrollment at across the years. As shown, there has been a decline in the number of students enrolled at San Fernando.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	12	12	8	8
Girls	12	11	9	6
Total	24	23	17	14

Teacher:

The teacher who currently works at San Fernando lives in the departmental capital. This teacher was relocated to this school and has been there for about nine years. She uses the traditional methodology, relying on text books.

Strategies used by the teacher:

The teacher arranges the students by grade, but seats them in the traditional manner. Generally, she begins class by leaving the first graders with model words and sentences to copy. Then she tells the other grades to copy a lesson from a reading text. When she has finished giving assignments to the first graders, she corrects the second and third graders' notebooks. The teacher spends most of the morning sitting at her desk reading biblical texts. The children work alone and, when they finish, they talk amongst themselves without supervision. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	6%	93%	57%
1994	1%	98%	59%
1995	0%	100%	62%

As seen in Table 2, individual seatwork and work with the entire class is the predominant way of teaching at this school. Instruction time rose slightly in the last year, although in general the percentage of time spent on instruction at San Fernando was low compared to the other schools in the sample.

Drop out and repetition in the school:

The drop out and repetition rates at San Fernando were also analyzed over time. The table below shows these rates.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	0%	13%	10%	13%
1994	60%	43%	30%	29%
1995	50%	100%	25%	50%

The drop out rate was calculated each year by noting which students had not re-enrolled, while repetition was calculated at the beginning of the school year by determining if students were enrolled in the same grade they were in the previous year. Tehrefore, although the table above shows that 100% of the girls had dropped out, there were girls in the school. However, the girls enrolled the previous year had not enrolled again.

Repetition and drop out rates in the last two years rose considerably, affecting girls more than boys, especially in 1995, where all of the girls enrolled in 1994 dropped out and half of the girls enrolled in 1995 were repeating a grade.

Equality in classroom interactions:

At San Fernando the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	64%	36%	31%	69%
1994	75%	25%	31%	69%
1995	71%	29%	6%	94%

Table 4 shows a consistent pattern of interactions in which both male and female students prefer to interact with classmates of the same sex.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	57%	43%	64%	36%
1994	53%	47%	46%	54%
1995	81%	19%	67%	33%

As shown above, during the first two years it can be seen there was equality in the interactions initiated by the teacher with the students. This is not the case in the final year where there is an increase in the percentage of interactions directed towards girls. While the percentages of interactions initiated with the teacher by boys and girls varies over the years, a fairly equal pattern is seen.

CASE STUDY OF CARRILLO SCHOOL

Description of the school:

Carrillo school is part of the NEU program. It is located in a village approximately 3.5 kms. from the municipal center and approximately 22 kms. from the departmental capital of Jalapa. The village has approximately 825 inhabitants.

The site has a moderate and humid climate. The primary crops are corn and beans. The secondary crops are sugar cane and coffee. The village also has a variety of fruit trees, such as mangos, *jocotes*, etc. The community is accessible via a road made of hard-packed earth which begins in the departmental capital and runs past the village which is impassable during most of the winter. Public transportation is available, and the trip from the departmental capital to the village takes three hours.

The school is located in the center of the community, surrounded by the majority of the houses and some hills. The school is made of cement block and has a tin roof and a concrete floor. It has two classrooms, a kitchen which is in decent shape, a bedroom for the teacher, and three latrines behind the school building. There is no electricity nor drinking water.

The school has two teachers: a woman who serves as the principal and teaches the morning classes and a man who teaches in the afternoon. These teachers serve 125 students, currently, in first through sixth grade. The students ages fall between 6 and 15 years old.

The following table shows variations in the enrollment at Carrillo across the years. As shown, there is a constant increase in enrollment which is almost the same for students of both sexes. However, there is a slight decline for girls in 1994 and 1995.

Table 1: Variations in the Number of Students Enrolled across Years

	1993	1994	1995	1996
Boys	43	31	44	64
Girls	47	46	43	63
Total	90	77	87	127

Teachers:

The teachers live in the municipal center and travel to the school daily. The female teacher, who serves as the principal, was transferred to the school in 1987. The other teacher was assigned to his post in 1996.

In terms of the NEU program, the female teacher says that she began to work with the new methodology so that she could work more effectively with the great number of students at the school. She also mentioned that at the beginning of the NEU implementation she found it difficult to use the NEU elements, but, with the training at the workshops and information exchanges at the teachers' circles, she was able to perfect her teaching. Now she feels that the methodology has been 80% implemented, as the complete program cannot be implemented due to a lack of community resources.

During the three years of the study, the teacher displayed a positive attitude toward the NEU program, although on some occasions she seems to lack motivation due to the large number of students who enrolled during the second year of NEU implementation which made her job almost impossible.

Strategies used by the teacher:

Since Carrillo became part of the NEU program, it has changed. First the children were grouped together, except for the first grade students, due to a lack of classroom space and the number of students. However, all of the NEU program's elements were observed in use during the observations. This is reflected in the following table which presents the teacher's use of different instructional contexts.

Table 2: Percentage of Use for Different Instructional Contexts

Year/Context	Small group (with / without teacher)	Whole class and seatwork	Total instruction time
1993	30%	69%	70%
1994	30%	70%	73%
1995	29%	71%	71%

As seen in Table 2, the teacher has spent a lot of time with the students in groups and this pattern was consistently maintained over the years. Although more time is spent in the traditional context, a shift toward the NEU methodology in general is observed. The amount of time dedicated to instruction did not vary over the years.

Drop out and repetition in the school:

The drop out and repetition rates at Carrillo were also analyzed over time. In the table below which shows these rates, it can be seen that the drop out rate reached its highest point in 1994 for girls, although this fell in 1995. The drop out rate for boys remained fairly constant over the last two years, with a 10% decline over the study period. The repetition rates for boys and girls dropped bruskly in 1994. With the exception of 1994, the repetition rates are higher for girls.

Table 3: Drop Out and Repetition Rates

Year	Drop Out		Repetition	
	Boys	Girls	Boys	Girls
1993	41%	8%	19%	24%
1994	33%	48%	7%	5%
1995	31%	25%	31%	33%

Equality in classroom interactions:

At Carrillo the different interactions initiated by students with classmates of both sexes and the teacher were analyzed, as were interactions initiated by girls and boys with the teacher, in order to determine if more equitable relationships towards girls had been established over time. The following tables show the percentages of these interactions across years.

Table 4: Percentage of Interactions Initiated by Students of Both Sexes

Year	Initiated by Girls		Initiated by Boys	
	with girl	with boy	with girl	with boy
1993	80%	20%	10%	90%
1994	85%	15%	15%	85%
1995	87%	13%	31%	69%

Table 4 shows that girls have not changed much in their interactions with classmates of the same sex and with boys over the years. Boys have increased their interactions with girls and reduced those with classmates of the same sex.

Table 5 shows the interactions initiated by the teacher with children of both sexes and the percentages of interactions initiated by the students with the teacher.

Table 5: Percentage of Interactions Initiated by the Teacher and by Students of Both Sexes

Year	Initiated by Teacher		Initiated with Teacher	
	with girl	with boy	by girl	by boy
1993	46%	54%	34%	66%
1994	44%	56%	15%	85%
1995	64%	36%	58%	42%

As seen above, during the first two years, teacher addressed students of both sexes almost equally, but in 1995 this changed, and she began to initiate more interactions with girls. Boys interacted with the teacher more frequently in 1993 and 1949, while girls initiated more interactions with her in 1995.