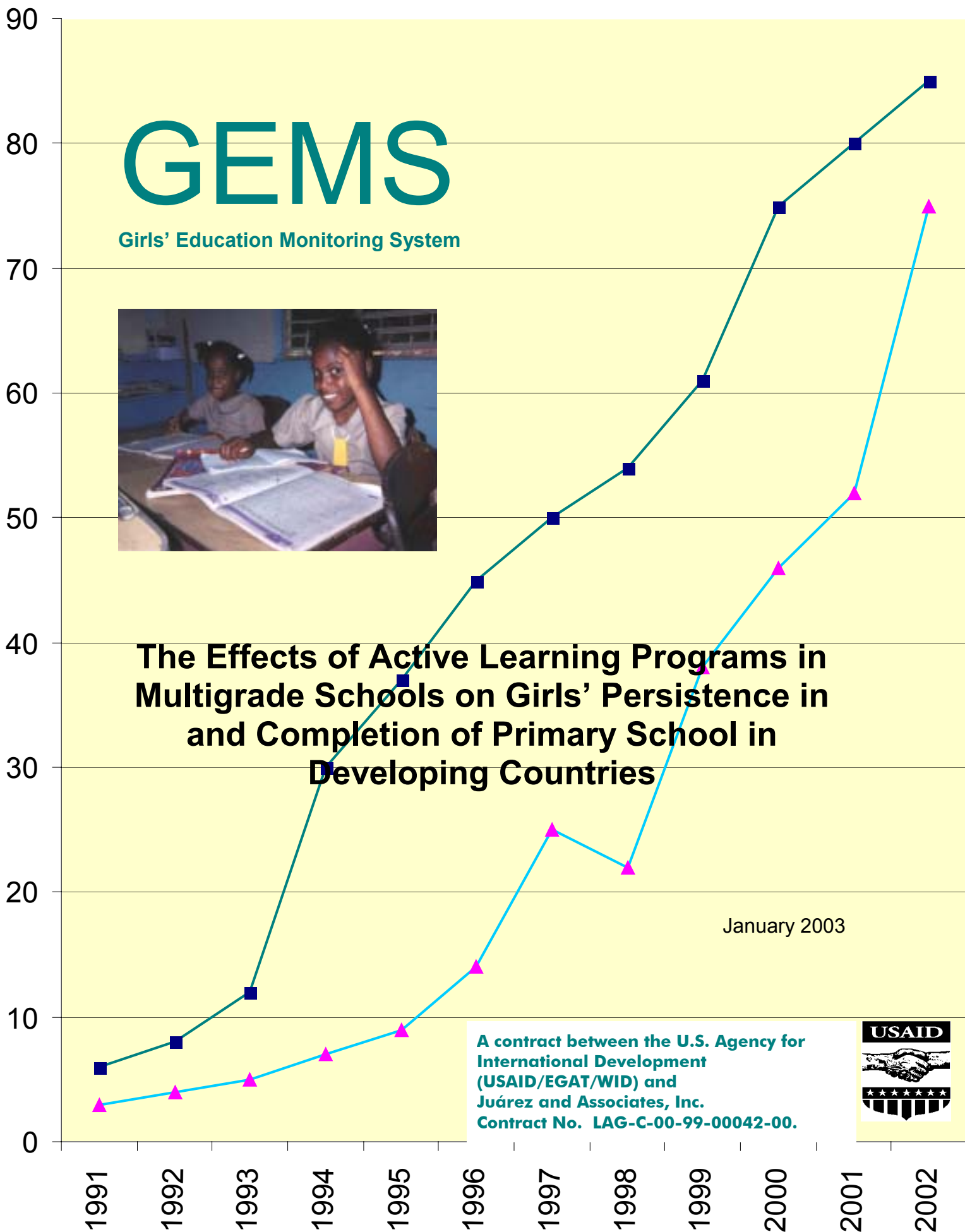


# GEMS

Girls' Education Monitoring System



## The Effects of Active Learning Programs in Multigrade Schools on Girls' Persistence in and Completion of Primary School in Developing Countries



January 2003

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*Prepared for:*

**United States Agency for International Development  
Bureau of Economic Growth, Agriculture, and Trade/ Office of Women in Development**

*Project Undertaken by:*

**Juárez and Associates, Inc.**

**January 2003**

*Contract #:*

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## List of Acronyms

BASE- Basic Education Strengthening Project  
BEST- Basic Education Strengthening Project  
DECS- Department of Education Culture and Sports  
EM- *Escuela Modelo* (Model School)  
EMIS- Education Management Information Systems  
EU- *Escuela Unitaria* (Unitary School)  
FUNRURAL- *Fundacion Rural* (Rural Foundation)  
GDP- Gross Domestic Product  
GEMS- Girls' Education Monitoring System  
GNI- Gross National Income  
MINEDUC- Ministry of Education- Guatemala  
MPPE- Multigrade Program in Philippine Education  
NEU- *Nueva Escuela Unitaria* (New Unitary School)  
NGO- Non Governmental Organization  
PLEP- Pupil Learning Enhancement Program  
PRONERE- *Programa Nacional de Evaluacion de Rendimiento Escolar* (National Education Results Evaluation Program)  
UNDP- United Nations Develop Program  
UNICEF- United Nations International Children's Emergency Fund  
USAID- United States Agency for International Development  
WID- Women in Development  
ZPD- Zone of Proximal Development

## **Executive Summary**

This document presents a summary of the results of a study of the effects of participation in multigrade schools with innovative learning programs on female students. Educational policy makers are turning increasingly to multigrade schooling strategies that involve community participation and active learning methodologies in isolated rural communities in the hope of improving quality and access to primary school. Such strategies encourage the participation of students, community members and school staff in managing the school and preparing teachers to handle multiple grades thereby increasing the opportunity of children to complete primary school. While there is some evidence that programs of this type are especially successful in encouraging girls to remain in school, the reasons for girls' persistence in school have not been investigated systematically.

The results presented are from the countries of Guatemala, which has a 10-year history of developing active learning programs for multigrade schools, Nicaragua, which is in the fourth year of developing an active learning program for both multigrade and graded schools, and the Philippines, where the Department of Education, with UNICEF support, has been working to expand and improve multigrade schooling for about eight years. The rural areas of these countries have been hard hit by economic downturn and other difficulties such as natural disasters or internal conflict in the last five years. The study combined analysis of existing historical data on the selected multigrade education programs with ethnographic assessment in schools and communities to determine elements of such programs that promote girls' persistence in primary school.

### **WHAT IS MULTIGRADE SCHOOLING?**

Multigrade schooling is a strategy to increase the educational opportunities of children in situations where because of the limited size of the student population, a teacher for each grade of primary school is impractical. In a multigrade school, teachers manage two or more classes simultaneously and a single teacher may be responsible for all primary grades. Multigrade schooling is used in isolated rural areas of both developed and developing countries. Many developing countries, however, are often reluctant to overburden teachers, who are poorly trained, with the management of multiple grades. Thus, many multigrade schools do not offer a completely primary program. For example, in Guatemala, Nicaragua, and the Philippines, 22%, 52%, and 29% of all primary schools, respectively are incomplete in that they do not offer sixth grade.

### **WHAT IS ACTIVE LEARNING IN MULTIGRADE SCHOOLS?**

Active learning involves “doing” and “thinking.” It is an approach that encourages students to take responsibility for their own learning, thereby increasing the ability of multigrade teachers to manage more than one grade at a time. Activities can include collaborative group work, investigation with materials inside or outside the classroom, and peer teaching, as well as self-guided instruction, and individual seatwork. Such activities provide opportunities for learners to integrate new information, concepts or skills into their own mental schema through rephrasing, rehearsing and practice. To be



actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis and evaluation.

In the programs studied, *Nueva Escuela Unitaria* (NEU) in Guatemala, the *Escuela Modelo* in Nicaragua, and the Multigrade Demonstration Schools Project in the Philippines, active learning is seen as a set of activities that encourage collaboration among and between students, teachers, and parents. This set of activities involves: a series of in-service training workshops for teachers at which they reflect on their own experience as students and teachers, develop the materials to be used by students, and form “teachers circles” that meet regularly to help one another with issues in implementing the program; parent involvement activities such as participation in the classroom as resources for local customs and agricultural pursuits, and as members of the school governing boards; and a series of active learning strategies such as the use of self-instructional guides, learning corners, small group work and peer teaching, as well as flexible promotion and participation in elected school government. The programs stress the role of the teacher as a facilitator who encourages children to be active, creative, participative and responsible through collaboration in small groups and individual use of a variety of learning contexts. Such learning experiences are seen to lead to both the construction of knowledge through social interaction and democratic attitudes and behaviors such as comradeship, cooperation, solidarity and participation.

## **DOES ACTIVE LEARNING IN MULTIGRADE SCHOOLS WORK FOR GIRLS?**

**Yes.** In terms of classroom participation, achievement and primary school completion, girls in active learning programs outperform girls in multigrade classrooms where the teachers have not been trained in active learning techniques. Generally girls also outperform their male classmates. In the Indigenous areas of Guatemala, where female access is historically low, girls in active learning programs also show gains in enrollment.

**Enrollment:** In Guatemala, NEU overall female enrollment increased by 47% from 1991 to 1999. This compared to 39% for girls in traditional schools and 31% for NEU boys. In 2000, enrollment dropped in both groups. However, NEU children’s overall enrollment remained higher than 1991, whereas comparison schools’ enrollment fell below this level. In Nicaragua, enrollment increased in Model Schools. However, the increase has been far less than increases in other multigrade schools. In the Philippines, both girls and boys had net gains in enrollment, while average enrollment of students in other multigrade schools declined.

**Participation:** In Guatemala, girls in active learning multigrade programs initiated a greater percentage of interactions with the teacher than girls in traditional schools (19% versus 9%), or than NEU boys (19% versus 8%). In Nicaragua, girls in *Escuela Modelo* initiated 18% of the interactions with the teacher compared to 6% for girls in traditional schools and 10% for boys in the active learning program. In the Philippines, girls in the Multigrade Demonstration Schools Project initiated 3% of the interactions with teachers, whereas girls

in the comparison group did not initiate any interactions with the teacher. Boys in the Demonstration project also initiated more interactions with the teacher than boys in comparison schools.

**Achievement:** Sixth grade girls in the Guatemala NEU program had average gains of 11 points and 7 points in reading and mathematics, respectively from 1998 to 2001. This compared to gains of 5 points in reading, and a loss of 1 point in mathematics for girls in traditional multigrade schools. NEU girls also had greater gains on the subtests of concept development and problem solving. In each case, average scores for NEU girls in 2001 were higher than the comparison group. NEU boys showed greater gains than boys in the comparison group. However, their average scores were generally lower than those of NEU girls.

Philippine students in the Multigrade Demonstration Schools Project also had greater gains in achievement than comparison schools and other schools in general in the regions under study. From 1999 to 2000, Demonstration Project students gained an average of 9 points whereas comparison school students gained one point and students in all schools gained 7.5 points. Data were not disaggregated by gender. No achievement test data were available for Nicaragua.

**Completion:** In Guatemala, NEU girls' overall completion rates were higher than those of the comparison group for each cohort of sixth graders completing primary school in 1996 through 2000. Completion rates also rose by 1.8% compared to 0.7% for girls in traditional schools. In 2000, NEU girls' completion rates were higher than those of NEU boys. NEU boys, however, had higher completion rates in every cohort than students of either gender in the comparison group.

Overall completion for Nicaragua was estimated using apparent cohort analysis. Girls in active learning programs showed a gain of 2.6% over the two available cohorts compared to 1.3% for the girls in traditional multigrade schools. Boys in the project schools had a decrease in completion rates and a gap of 6% when compared to boys in traditional schools.

Girls in the Philippine program had completion rates that were 11% higher than other multigrade schools in the regions studied. Girls in the Demonstration schools that were visited during the study also had higher completion rates than girls in comparison schools. Boys in the project schools, on the other hand, had somewhat lower completion rates than boys in other multigrade schools.

## **WHAT ARE THE MOST IMPORTANT ELEMENTS OF ACTIVE LEARNING PROGRAMS?**

Developers, teachers, school directors, and parents in all countries identified the learning materials as the most important element of the program. Although all elements of the programs were seen as important, in Guatemala and Nicaragua the self-instructional guides were cited as facilitating students' interactions with other program elements and allowing students who were forced to miss school the opportunity to catch up on their studies without being held back for a year. In the Philippines, flashcards and games that allowed children to study interactively were identified as important. Students, parents and teachers also felt that participation in student government helped students, especially girls, build confidence to express themselves in public.

## **WHY DO MULTIGRADE ACTIVE LEARNING PROGRAMS WORK FOR GIRLS?**

**Emphasis on each child's experience from the first grade onward involves girls.** The acceptance of each learner's personal experiences and perspectives has been shown to facilitate girls' learning. Teachers in the active learning programs in both Guatemala and Nicaragua began demonstrating the importance of personal experience by soliciting "significant expressions" from all children as a basis for teaching initial reading skills in first grade. In the Philippines, teachers built elements of the local area into the instructional materials used. The emphasis on local experience was continued in each program by encouraging each child to report on individual and group investigation and by exhibiting examples of children's work throughout the school years.

**Focus on verbal participation in front of the class/school helps girls realize that they can participate.** Group songs and games in the first years of schooling that later become exercises in which children had to interact before a group in a large group context encouraged girls to express ideas or make choices publicly.

**Girls are grouped together and support one another in doing assignments.** In almost all of the classrooms studied, girls sat together and formed working groups within small group contexts. Girls consistently stated their preference for working with other girls. This prevented isolation and is consistent with the same-sex friendships and a preference for single-sex work groups generally found among elementary school students.

**The programs encourage collaborative learning, which girls prefer.** Girls, when interviewed, consistently talked about how they enjoyed working together to carry out a task and to learn from one another. This is consistent with research that argues that successful learning for girls takes place in an atmosphere that allows students to deal with the subject matter empathetically by helping one another, asking questions, and negotiating strategies and procedures to complete the work.

**The modular nature of self-instructional guides allows children who have to miss school the opportunity catch up.** In Guatemala and Nicaragua, parents, teachers, and the students themselves, recognized the expectations on girls within their households. They consistently cited the importance of the instructional guides that enabled children to

work at their own pace and catch up, so as to not “lose the year” when they were forced to miss school for family obligations.

**Student government allows girls to expand collaborative behavior and build on organizational responsibilities that they have in the household.** Participation in student government provided opportunities for leadership, teamwork and development of citizenship. Scheduling activities, overseeing projects, and monitoring the behavior of younger classmates were the principal responsibilities of student government members. These were similar to the responsibilities that girls have in the home.

### **ARE ACTIVE LEARNING PROGRAMS IN MULTIGRADE SCHOOLS COST EFFECTIVE?**

**Yes.** Data from Guatemala showed that for children who had the full benefit of the NEU project, it was less expensive to produce a sixth grade graduate than in traditional unitary schools, despite the higher annual average per student cost. Also, NEU children who began the program in its later years had significantly lower costs per graduate than students in traditional schools, as development costs had been ameliorated. Differences in costs were greatest among girls, especially girls in the Indigenous regions where the project operated. Overall lower costs per graduate were also found for cohorts of NEU boys beginning school in the later years of the project. However, costs per graduate for boys in the Indigenous regions were slightly higher than in traditional schools.

In the Philippines, a recent study by the University of the Philippines (University of Philippines 2002) looked at cost-effectiveness in relation to student achievement in five subjects and to students’ attitude toward schooling. It used average teacher salary, building, furniture and equipment, instructional materials, and maintenance operating expenses to calculate an average cost per student for multigrade programs with active learning approaches, regular multigrade programs, where teachers had not been trained in innovative approaches, and monograde programs. Findings showed that innovative multigrade programs were, on the average, more cost effective than the other types of programs. Neither cost data nor completion data to estimate cost effectiveness were available for Nicaragua.

### **ARE ACTIVE LEARNING PROGRAMS IN MULTIGRADE SCHOOLS SUSTAINABLE?**

**Yes.** In Guatemala the NEU program has had lasting benefits beyond the life of the project. The program has expanded from the 200 schools of the project to 398 schools where the program is fully implemented. The program also began in an additional 1,908 schools, after training during the 2001 school year. As mentioned previously, overall enrollment in the original schools has increased by 38% compared to 33% among traditional schools. The greatest increases in enrollment have been among girls (47% compared to 39%). Completion rates for NEU students have been consistently higher than those of children in traditional multigrade schools. NEU girls’ completion rates surpassed those of boys in the 2000 cohort, the last year for which data were available. Although test results varied, NEU girls had consistently higher overall test scores in

mathematics, reading and use of conceptual thinking than girls in traditional multigrade schools.

These positive benefits were the result of the commitment of teachers and administrators who were in the original program and have continued supporting the active learning methodology, despite a lack of Ministry of Education interest for a number of years following the completion of the project. These individuals continued to use the methodology in the classroom, moved the national textbooks toward more active involvement of students and advocated for Ministry investment in active learning in multigrade schools. Recent in-service training and Ministry partnerships with NGOs have come about through such advocacy, combined with a change in government.

In Nicaragua, the lasting benefits of the program cannot be judged, as it is still in the process of development. However, all of the teachers and administrators interviewed were strongly committed to the active learning program. The *Escuela Modelo* program is situated officially within the Ministry of Education and Culture, although it is sustained largely through Basic Education Strengthening Project (BASE) project funds. The Minister of Education has been impressed enough with the program to order the development of a plan to incorporate elements of the active learning methodology throughout the primary school system.

In the Philippines, the institutionalization of an office to address multigrade primary schools showed the importance given to this strategy. Higher overall enrollment, achievement and completion rates together with greater cost-effectiveness demonstrated that innovative learning programs have a pay-off for the investment made. The expansion of the Multigrade Demonstration School approach and adaptation of the approach by other programs such as the Little Red Schoolhouse suggested that coverage can be increased. The generally positive view of the program by the teachers, parents, and students supported the idea voiced in the Demonstration Schools Project that multigrade schooling does not have to be a “second best” alternative to single grade schooling.

## **DO ACTIVE LEARNING PROGRAMS IN MULTIGRADE SCHOOLS WORK FOR BOYS?**

**Yes, but questions remain.** In Guatemala, NEU has been effective for boys as well as girls. Boys in NEU schools have had greater increases in access (32% versus 29%) and sixth grade achievement (4 points versus 0 points in mathematics and 17 points versus 4 points in reading), as well as consistently higher completion rates than boys in traditional multigrade schools. However, classroom participation is similar for NEU boys and boys in comparison classes.

In the Philippines, boys in the Multigrade Demonstration project had positive net enrollment increases and greater classroom participation when compared to boys in other multigrade schools. However, completion rates for boys in the Demonstration Schools project were lower than for boys in the comparison schools.

In Nicaragua, where the program is still being developed, boys in the Model School project sample had an increase in enrollment of 5% compared to a drop of 8% in

traditional multigrade schools. However, projected completion rates for project boys dropped by 5% whereas those for boys in traditional schools increase by 2%, and classroom participation was similar for both groups of male students.

These mixed results suggest that further study should be undertaken on the experience of boys in multigrade active learning programs and the influence of economic downturn, such as that experienced in all three countries, on the persistence of rural boys in primary school.

### **ARE ACTIVE LEARNING PROGRAMS IN MULTIGRADE SCHOOLS A PANACEA FOR RURAL AREAS?**

**No, but they can improve primary completion and skill acquisition, especially for girls.** The active learning strategies of collaborative small group work that allow for single sex work groups, when combined with other strategies that promote verbal participation by students will promote persistence in primary school among rural girls. Available cost data suggest that the increases in completion and the lasting effects on completion beyond the initial intervention make active learning programs for girls in multigrade schools a worthwhile investment. This is true for the three distinct culture areas of the Mayan Guatemalan Highlands, Spanish-speaking *ladinos* in Central America, and the multilingual Philippines of Asia.

The extreme poverty in which isolated rural communities live, combined with the devastating effects of economic downturns or natural disasters heavily influence family decisions about keeping children in school. Such decisions are exacerbated by fluctuations in Ministry of Education support for programs with changes in administration, as seen in Guatemala and Nicaragua. Although, completion rates were universally higher for girls in all the innovative programs, differences in completion rates were found. Girls' completion rates ranged from 71% in the Philippines to 15% in Guatemala. As the Guatemala program had a track record of improved completion over its ten-year history, other factors outside of the school appear to limit the effects of successful programs. This does not mean that investment in active learning programs should not be made, only that gradual improvement rather than substantial increases in completion may be the result.

# **The Effects of Active Learning Programs in Multigrade Schools on Girls' Persistence in and Completion of Primary School in Developing Countries**

## **I. Overview**

The international literature on active learning methodologies suggests that such strategies can be an effective means of improving educational quality in multigrade schools of the rural hinterlands of developing countries. However, little is known of the effects of such programs on girls in rural areas. This study, financed by the USAID Office of Women in Development, examines the effects of three programs, *Nueva Escuela Unitaria* in Guatemala, *Escuelas Modelo* in Nicaragua, the Multigrade Demonstration Project in the Philippines. The study provides detailed information on the elements and processes of these innovative programs that are related to permanence in rural primary schools. It is hoped that the study will serve as a resource in planning educational interventions to improve quality, especially in those countries where participation of girls in formal school is low. The objectives of the study were to: determine the relationship between participation in multigrade, active learning education programs and girls' persistence in primary school; identify elements/processes in active learning strategies that are related to girls' persistence in primary schooling; identify elements/processes of community participation strategies that are related to girls' persistence in primary schooling; determine the consistency of such elements and processes over time in different social and political contexts; and provide information on multigrade, active learning schooling that can contribute to the dialogue on educational quality as it pertains to girls, and inform the planning of future education initiatives.

Active learning is an approach that allows students to take responsibility for their own learning thereby facilitating the management of more than one grade by teachers. It uses a variety of methods to create different contexts in which students interact with subject matter. The common goal is the provision of opportunities for learners to integrate new information, concepts or skills into their own mental schema through rephrasing, rehearsing and practice. Activities can include collaborative group work, investigation with materials inside or outside the classroom, and peer teaching, as well as self-guided instruction, lecture and individual seatwork. To be actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis and evaluation.

Active learning has its roots in three bodies of education literature. The first is the constructivist approach to the acquisition of knowledge, which argues that learning is a process of knowledge construction through social interaction that builds on a learner's previous experience. The second is cooperative learning, which supports cooperative small group problem solving as a means to improve student learning, increase student motivation, and serve as a tool to help manage large numbers of students. The third is sociolinguistic research, which suggests that students use discourse strategies in classroom settings to promote and interpret verbal interaction with teachers and other students. (See Appendix A: Literature Review for a more detailed discussion of these areas.)

The study used rapid ethnographic appraisal methods for school and classroom research to collect data in a sample of 21 schools. The study used the qualitative methods of maps, inventories, structured observations, and in-depth interviews with school directors, teachers, students, and principals to conduct cases studies of a sample of multigrade schools with active learning programs, as well as programs using traditional teaching methods. (See Appendix B: Methodology for a complete discussion of research methods and instruments.)

## **II. Setting: Multigrade Schooling and the Rural Poor**

**Guatemala.** Although Guatemala is relatively well off compared to other Central American countries, as it accounts for nearly one-third of the GDP of all the Central American republics, it is home to some of the poorest people in the Latin American and Caribbean Region. The distribution of wealth in Guatemala is highly skewed with the poorest 20% of the population receiving only 1.9% of the total disposable income. The poorest families usually are subsistence cultivators who supplement their production with seasonal day labor. The country also has the lowest school enrollments in Latin America and public expenditures on education has been one of the lowest in the region for the last three decades—1.8% of GDP as compared to an average of 4%.<sup>1</sup> Guatemalan female illiteracy was 38.4% in 2000 as compared to 23.9% for males. About 16% of infants suffer from low birth weight due to poor maternal nutrition, and 50% of all children have some degree of malnutrition. These indicators are worse for the Mayan population, the bulk of who live in rural areas.

The approximately 40% of the Guatemalan population that is Mayan live in poverty and were the most adversely affected by the 35 year civil war which ended with the Peace Accords signed in December 1996. After the signing of the Accords, many Mayan refugees returned to Guatemala and account, in part, for recent population increases near urban areas in the Western Highlands and in Alta and Baja Verapaz. These areas have been hard hit by the economic downturn of the late 1990s that has been brought about both by the decrease in international investment with the ascent of a populist administration in 2000, the continued decline of coffee prices over the last four years, and recent droughts. The schools visited are located in K'ekchi speaking areas that are among the poorest in Guatemala. These communities are very traditional and families continue to be male-dominated with extensive restrictions on the behavior of children outside of the household. For example, the first duty of girls and women is to the household and sending girls to school is a relatively recent phenomena. Within the household girls are often restricted from meeting people outside the immediate family until the father gives his consent.

**Nicaragua.** In the early 1990s, Nicaragua began to make a modest recovery from the war that wreaked economic havoc during the decade of the 1980s. However, even

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<sup>1</sup> World Bank Country Brief, May 1999, online:  
<http://lnweb18.worldbank.org/external/lac/lac.nsf/412657d72e240425852567d6006b2721/43145249ae1fea1d852567d90070cbd9?OpenDocument>



though economic growth continued steadily until the destructive effects of Hurricane Mitch in October of 1998, Nicaragua continued to be one of the poorest countries in the region. The rural areas of the countries were particularly affected by the hurricane as it damaged some of Nicaragua's most productive land and cut many transportation links. Much of the populace lives on less than two dollars a day, as the country had a per capita GNI of only \$400 in 2000. One-third of all males and females are illiterate, one-half of the population lives in poverty and almost one-fifth in extreme poverty.<sup>2</sup>

The schools visited in Nicaragua are located in rural areas of Matagalpa to the northeast of Managua, which were severely affected by Hurricane Mitch and poor rural regions of Carazo, Leon and Granada.

**The Philippines.** The highly centralized nature of public services has led to disparities in this a country of 70 million people distributed over more than 7000 islands. The more isolated rural areas are least likely to have public schooling and these are also the areas where poverty is highest. The government of the Philippines is aware that the existence of large concentrations of poverty and low level of education is not only inequitable, but also poses a threat to social stability, investor sentiment, and economic competitiveness. Poverty reduction has been one of the country's highest priorities for over ten years. Despite government efforts, more than a fourth of the population remains in poverty.

Throughout the 1990s, the government has emphasized increasing coverage of primary education and participation in primary school increased from 92.7% in the 1995/1996 school year, to 97% in the 1999/2000 school year. As the government emphasized increasing coverage, the quality of education was not necessarily addressed with the same resources and attention. As coverage increased, completion rates have decreased. At the primary school level, completion rates went from 72.1% in the 1996/1997 school year to 69.3% in the 1999/2000 school year. [World Bank Report Sept 2002]. Although worsening economic conditions and social unrest in parts of the country contributed to lower completion rates, the lack of complete primary schooling in a region also denies children the possibility of completing primary school. *Barangays* without a public elementary school have been reduced from 4234 in 1996/1997 to 1612 in 2001/2002 (DECS 2002b). However, the number of primary schools that do not offer all grades has increased. As many of the incomplete schools are multigrade schools in isolated rural areas, improvements in multigrade schooling is seen as a strategy to allow children to receive a complete primary education.

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<sup>2</sup> World Bank Country Brief, May 1999, online:  
<http://lnweb18.worldbank.org/external/lac/lac.nsf/54a7bf01c0a0900a852567d6006b59b4/9e3eaf8c524cbcf0852567d9006b47f3?OpenDocument>

### III. Active Learning in Multigrade Schools: *Nueva Escuela Unitaria*, *Escuela Modelo*, and the Multigrade Demonstration School Project

**Guatemala.** The *Nueva Escuela Unitaria* program began in 1992 with 100 schools developing the NEU innovation on a pilot basis. The project was developed as part of the USAID-funded Basic Education Strengthening (BEST) project. The objective of the program was to provide a complete primary education for children in remote rural areas by preparing teachers to handle a number of grades simultaneously. During the first year teachers developed a series of self-instructional guides for students under the direction of specialists in active learning methodology and began to implement the student government in pilot schools. The guides were completed and full implementation of the program was begun in February-March 1993. In 1995, the program was expanded through each of the 100 schools “adopting” a neighboring school that had expressed interest in using the NEU methodology. The original teachers of the NEU program were the principal trainers of their colleagues in the neighboring schools.

The new government that took office in 1996 felt that the pace of expansion was too slow. Thus, they developed new textbooks that had a self-learning aspect in their format. When completed for the 1998 school year, these texts were widely distributed. However, little in-service training was provided to teachers on the use of the books or the strategies they suggested.

Intensive efforts at developing active learning methodologies based on the NEU were carried forward by NGOs. In 1996, FUNRURAL, the philanthropic foundation of the association of coffee growers, began applying active learning methodologies in plantation schools. By 2001, the program, renamed *Escuela Rural Activa* (Active Rural School), consisted of 202 primary schools with 17,171 students (FUNRURAL 2001). It had expanded to government multi-grade primary schools, which made up about 60% of the total number of schools.

Plan International, an NGO working in 43 countries, has also spent the last five years working with the NEU active learning program in primary schools. Plan has kept the original name and concentrated on schools in departments of Guatemala where the organization is working in a variety of development efforts. It currently supports 195 schools with teacher training, school furniture, teacher guides, self-instructional guides for teachers and school libraries.

With the change in government in 2000, the Ministry of Education also began to develop more intensive programs to move forward active learning methodologies in multigrade schools. With World Bank funding, the original NEU self-learning guides and teacher manuals were modernized to reflect curricular changes and the national university developed a program for training rural teachers in the active learning multigrade methodology. The program was carried out prior to the 2002 school year over a five-month period. Approximately 4,000 teachers, representing 1,908 schools were trained in 20 sessions.

**Nicaragua.** The *Escuela Modelo* multigrade program in Nicaragua began in 1997, five years after NEU. It formed part of a larger Ministry of Education and USAID-supported

effort to promote active learning methodologies and initially consisted of 26 multigrade schools. The multigrade program began through workshops at which teams were formed to develop student self-instructional guides and other elements of the program. The USAID-funded BASE II project continued the development of self-learning guides, began the reform of bilingual education in the country, and added an additional 25 multigrade primary schools to the model school program. Between 1999 and 2001, materials were developed and resource centers designed. The student instructional guides developed by the teachers were initially mimeographed copies during the validation process. Although it was anticipated that printed guides would be available in 2000, mass distribution did not take place until early in 2002.

In addition to the BASE multigrade model schools, Plan International began to support the implementation of active learning methodologies in schools where the organization worked. Approximately 40 schools began implementing the Plan program in 2000. It is envisioned that 140 schools will eventually be involved. The program uses the BASE-developed materials and techniques but puts great emphasis on the involvement of the community with the school. The organization conducts workshops for parents as well as teachers in its training activities.

With the change of government in 2002, there has been an increased interest in active learning methodologies in both regular and multigrade schools. The new Minister of Education has visited a number of schools and has started a planning process to determine how the program can be expanded to all the primary schools in Nicaragua.

**The Philippines.** Schools with one teacher handling more than one grade have been common in the Philippines since at least the 1920s. However, multigrade teaching as a national strategy to improve access to and the quality of primary schooling was formalized with the launching of the Multigrade Program in Philippine Education (MPPE) in 1993. The MPPE has the objective of improving access to primary education by providing complete grade levels in all public elementary schools through the organization of multigrade classes. It also aims to improve quality by increasing teachers' abilities to work with more than one grade simultaneously through training and instructional materials. The Program works in five areas: curriculum and materials development; staff development; physical facilities; community support; and research, monitoring and evaluation. It has developed a guide minimum learning competencies for multigrade classes, a budget of work and lesson plan for multigrade teachers to follow, a handbook for teachers and example lessons, as well as materials to be used at different grade levels within the same classroom and other instructional materials such as a 100-book library, drill cards and other teacher-made materials. Effort has also gone into preschool training in the form of a handbook for preschool teachers and a workbook for preschool pupils.

Many of the curriculum innovations for multigrade schools were developed as part of the Multigrade Demonstration Schools Project (1995-2000) carried out in partnership with UNICEF. The purpose of this project was to show that multigrade teaching can be a viable alternative to single grade classes in areas where the uneven distribution of the pupil population make the establishment of regular monograde schools with a teacher for each of the six primary grades costly and inefficient. The project established

demonstration schools in rural areas that historically received little support in terms of educational delivery. Over the course of the project, 24 demonstration schools were established that provided models of effective teaching-learning strategies, school and classroom management processes and community participation in education. The project provided observation tours to Colombia for teachers and administrators to see the *Escuela Nueva* multigrade program in that country and trained teachers through a series of workshops. Schools were provided with supplementary instructional materials for pupils and teachers in the form of handbooks, a small library, and self-instructional guides, and minimum facilities such as a water supply and toilet. Schools received furniture such as desks that could be easily moved for different activities in the classroom. The demonstration schools served as resource centers for other schools in their areas and the project generated more than 150 expansion schools by 1998. UNICEF continues to support multigrade schools under its fifth Country Programme for Children (CPC V). The Child-Friendly School focuses on better learning opportunities for children through the involvement of families and communities in promoting inclusive gender sensitive learning environments and effective methods. Multigrade schools are also included in the UNICEF Infotech project that provides computers to schools.

Other projects undertaken by the MPPE include the Pupil Learning Enhancement Program (PLEP), the Little Red Schoolhouse Project, the Multigrade Teacher Achiever and the Best Practices by Teachers in Multigrade Schools project. PLEP, which had assistance from the United Nations Development Program (UNDP), focused on the development and printing of teaching and learning materials, the training of multigrade teachers and school administrators, and creating partnerships of government, non-government and community based organizations to support improved school quality. The Little Red Schoolhouse Project, which has assistance from the Coca-Cola Foundation Philippines, is providing adequately equipped three-room school buildings in 50 priority multigrade schools in the country. In addition to the construction of school buildings and the provision of classroom furniture, the project trains teachers and community members. The Multigrade Teacher Achiever and Best Multigrade Teaching Practices recognize performance and dedication of multigrade teachers working in disadvantaged schools.

The NEU, *Escuela Modelo*, and Multigrade Demonstration programs have similar elements, although such elements have been adapted to local situations. The programs involve: in-service training workshops for teachers as which they reflect on their own experience as students and teachers and develop materials used by students (See Appendix C: Teacher Training for a description of the workshops); teacher self-support and training centers; parent involvement activities such as parent participation in classroom activities as resources for local customs and agricultural pursuits or as members of school governing boards; a series of active learning strategies such as the use of self-instructional guides (See Appendix D for a description of self-instructional guides), learning corners, small group work and peer teaching, as well as flexible promotion and participation in participation in elected school government. The programs stress the role of the teacher as a facilitator of knowledge building who encourages children to be active, creative, participative and responsible through collaboration in small groups, individual use of a variety of learning contexts and participation in school governance. In Guatemala and Nicaragua, the self-instructional guides are seen as the key element of the programs as they orient students in interacting with other program

components. Student government is an important element of all three programs, as it builds participation and responsibility and gives students a sense that the school is truly theirs.

#### IV. The Programs in Action

##### A. Classroom Organization: Emphasis on Small Groups

Thirty classes implementing the innovative learning programs were observed intensively. In all but one of the 16 classes in Guatemala and Nicaragua classes children were organized into small groups by grade. The remaining class had children organized in single file rows for much of the observation period. Teachers stated that students were

grouped by level of development (*desarrollo*). This was defined by what unit of the self-instructional guides students were working on. In the 14 Philippines classes, children were organized by grade in rows of desks or desks pushed together to form tables, facing the front of the classroom. In only one class were children arranged by ability, where the teacher put low performers in the front of the class to increase their access to the teacher. Philippine teachers used small group activities within lessons. In all of the classrooms, the organization mixed genders. However, children of the same gender sat together when they were able to choose their own seats.

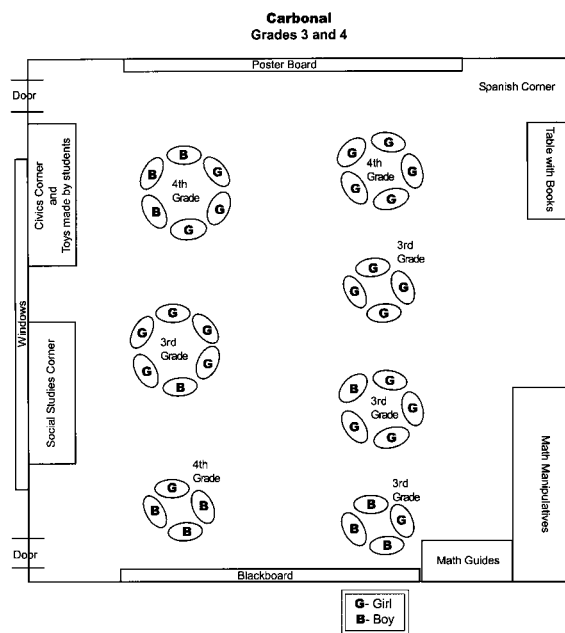
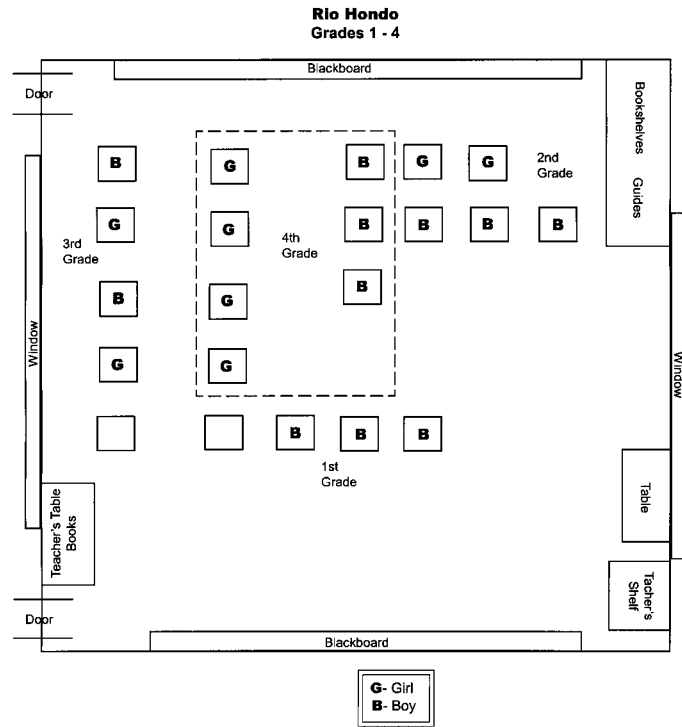


Figure 1 Multigrade Classroom in Nicaragua

Interviews and observations showed that organizing the classes in terms of small groups focused a teacher's attention on a few children at a time and allowed student participation beyond those children who continually sought attention. Teachers verified that the small groups gave them greater opportunity to involve all children in lessons and other classroom activities.

In the active learning programs there were generally learning materials in sufficient numbers for the enrolled students, at least in the core subjects of mathematics and language arts. The two exceptions were first grade and the one school in Guatemala still using the original guides from 1995. In Guatemala and Nicaragua, after first grade lessons revolved around use of the self-instruction guides. In first grade, the students developed reading and writing skills using significant expressions generated from their own experience. They only begin working with guides at the end of the school year. In the Philippines, flash cards, flip charts and instructional games were the principal learning materials. Learning corners for science, mathematics, language, social studies, civics, and at times, culture were observed in each classroom and included a variety of materials that were gathered locally.

Eleven of 12 multigrade classrooms without an active learning program were arranged in single file rows with children one behind the other. Distinct rows were for each grade and in some cases genders. Only two comparison classes were observed to use small groups for part of a class period. Although textbooks were available in all classes, learning materials utilized in all comparison classes were principally the blackboard and notebooks. In every classroom observed, children of all grades found in a classroom were observed to work on the same assignment.



**Figure 2 Traditional Classroom in Nicaragua**



**Figure 3 Girls Work together in small groups (Philippines)**

## B. Pedagogy

### 1. Interaction in the Classroom

A relatively high percentage of student-teacher interactions during lessons took place in small group contexts in each innovative multigrade program. Although the relative frequency of small group work varied by country, there was at least three times the frequency of interactions in this context in each program, on the average, than in the comparison schools. Table 1 shows the percentage of interactions between the teacher and students across all countries. Contexts include: teacher-directed small group contexts, where the teacher facilitates a small group activity; student-directed small group contexts, where students work collaboratively on an assignment, often under the direction of a classmate who serves as a monitor; large group contexts involving all of the students in the class; and seat work, where children worked individually at their desks on assignments. Twenty-seven percent of all interactions across the programs were in small group contexts. Those programs with the longest periods of implementation, support and stable student population (Limonares and Mariscal in Guatemala, Carbonal in Nicaragua, and San Juan and Saint Inez in the Philippines) had the highest percentage of interactions in small group contexts. The lowest percentage of small group work in active learning programs occurred in those schools that had the least implementation time or where teachers had less familiarity with the program (Las Vegas in Guatemala, Celaque in Nicaragua, and Tamarindo in the Philippines).

**Table 1: Percentage of Observed Student-Teacher Interactions by Context**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percent – active learning programs	10	17	41	31
Percent – comparison group	3	1	66	30

There were, however, differences in the three programs. As might be expected in a situation where children were arranged in small groups for the entire school day, like Guatemala and Nicaragua, small group participation was higher than in the Philippines. Forty-seven percent of all interactions in Nicaragua and 25% of the interactions in Guatemalan program schools occurred in small groups. This compared to 8% in the Philippines. This is in part a result of the use of the self-instructional guides as the principal instructional tool in the two Central American countries.

The following example illustrates the typical behavior in a student-led small group using the guides. Myrna, the group monitor, directs the group of two other third grade girls in Mariscal in an exercise in the self-instructional guide on using the library. Myrna directs the activity and gives each of her companions a chance to look for information and respond to the group.

Myrna reads aloud the guide instructions “With my classmates I’ll look up information in the indices of books” (*con mis compañeros busco información con la ayuda de los índices de libros*). Myrna goes to the library and brings back two books on social studies and geography, respectively. She opens the social studies book and says, “the earth is on page 10” (*la tierra está en la página diez*). Ana Maria says “Myrna tell me what to look for” (*Myrna dime cual busco*). As Ana has the geography book, Myrna responds “The mountains of El Salvador” (*las montañas del Salvador*). The girl looks and says “Here it is look.” Fatima asks “Myrna tell me what to look for” (*Myrna decirme cual busco yo*). Myrna replies “Look for the lakes of Costa Rica.” Fatima takes the book from Ana Maria and begins to look. The bell rings and Myrna says “each of you take your book to the library then go out (*cada uno va a dejar su libro a la biblioteca y sale a recreo*).

In the schools without an active learning program, the teacher working with all students in the classroom as a single group made up 66% of the interactions observed during lessons. Seatwork, where children worked alone on an assignment, was almost also frequent, making up 30% of the interaction contexts. In this context, teachers either sat at their desks and children came up and waited to be noticed to have their work corrected or the teacher walked around the classroom correcting work. The only small group contexts were in a Nicaraguan school that had recently received self-instructional guides and during the observation period children were rearranged from a traditional single file seating to small groups where the teacher went to each group and explained the assignment and a school in the Philippines that was implementing the Little Red Schoolhouse program similar to the Multigrade Demonstration Project. The following illustrates a sequence of large group and seatwork contexts.

In the combined 3<sup>rd</sup>/4<sup>th</sup> grade classroom at Los Tronchos the students sit in rows of individual desks watching the teacher write a series of numbers on the blackboard. She then asks the students of both grades to write the numbers in their notebooks. The students immediately go to work on the eight numbers on the board. For the next 45 minutes the children work on the assignment, taking their work to be checked. Then the teacher tells the class to write the Roman numeral for all the alternate numbers between one and five hundred. She stands in front of the class and tells the children the correct way to write letters in their notebooks: “letters should occupy the entire space between the lines and not be tiny and illegible.” While they are still writing the Roman numerals, she goes around the class and corrects their work. This exercise goes on until recess at 10am. When class is once again in session at 11am, the writing of Roman numerals continues.

## **2. Structure of the Interactions: Involving Girls**

In 21 of the 30 classrooms where intensive observations were made, girls initiated a higher ratio of interactions than boys. This was true even when observations were adjusted for the number of children of each gender present in the classroom. Thus, girls initiated 13% of all interactions compared to 8% for boys. There was a more even



distribution of children receiving interactions from the teacher in terms of gender. Girls received 26% of the interactions across the active learning programs, whereas boys received 24%. When corrected for the percentage of children of different genders in each classroom, girls again had a higher ratio of interactions in 21 of the 30 sample classrooms.

In the comparison schools, on the other hand, the percentage of all interactions initiated by girls was 5% compared to 8% for boys. In eight of the twelve comparison classrooms boys had higher ratios of interactions when relative frequencies were adjusted for the number of children of each gender in the classroom.

Despite the emphasis on group work in active learning schools, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 2, the teacher initiated more than three-fourths of all interactions. Only in the Mariscal, the school with the longest period of ongoing program implementation, did students and teachers initiate a similar percentage of interactions (52% for teacher and 48% for students). However, the percentage of student-initiated interactions is 8% higher than in comparison schools and girls account for this greater participation. In addition, high ratios of participation were found in all the schools serving indigenous populations, where girls are generally least likely to participate.

**Table 2: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percent – active learning programs	79	8	13
Percent – comparison group	87	8	5

Interactions were also examined by the sex of the teacher in the innovative multigrade programs. Given the small number of male teachers, they were matched to female teachers by grade level and program. No gender differences were noted in teacher-student interactions. Across all three programs, female teachers initiated 75% of the interactions compared to 73% for male teachers. Girls initiated a higher percentage of interactions with teachers of both genders (16% with females and 17% with males) than did boys (9% with females and 10% with males). Boys and girls received the same percentage of teacher-initiated interactions (22% for boys and 24% for girls), regardless of the sex of the teacher. Similarly, male and female teachers had the same percentage of interactions (40%) in small group contexts, on the average across the three programs. No male teachers were found in comparison schools.

### **3. Quality of the Interactions: Building Confidence**

Verbal communication skill building is a key element of the active learning programs in both countries. Such skill building emphasizes public communication in front of the class. In 20 of the 30 classrooms that were observed intensively, verbal exercises that

required students to interpret material, explain their experiences in carrying out exercises in the guides or to make decisions, in front of class were observed. Such behavior was never observed in the comparison classrooms. Rather students, when required to give an answer in front of the class, were expected to provide a single “right” answer. The following classroom observation provides an illustration of the extemporaneous verbal practice common in the active learning classrooms:

In the combined 5<sup>th</sup>/6<sup>th</sup> grade classroom at the Escuela Modelo, Celaque, sixth graders are reading Swiss Family Robinson in Spanish fifth graders work on an exercise in natural sciences from their self-instructional guides. The teacher calls on Alfonso to read a passage. Alfonso stands and reads several paragraphs aloud. The teacher then asks “who can summarize what Alfonso read?” Several boys call out and wave their hands, two of the girls also have their hands up and the teacher calls on Ana Silvia, who stands and provides a summary in her own words. The teacher says, “Did she do a good job?” The sixth graders respond in unison, “Yes!”

In this example, the teacher is working with the entire class. He encourages verbal practice through student oral reading and elaborates on this practice by asking different students to summarize the passage in their own words. Further participation is elicited by involving the class in providing feedback to the student who offered the summary. The following example is an illustration of an oral activity in a multigrade school participating in the active learning program.

In the combined 5<sup>th</sup>/6<sup>th</sup> grade classroom at Puerto Cortés, students have been working on a social studies lesson. The teacher begins a participatory activity by having the students clear desks from the center of the classroom. He then had all students stand up and form a circle facing each other. A list of “evaluation” questions on the lesson had been prepared on strips of paper and placed face down on a desk. The teacher handed his pencil to one of the students and this was passed around in a circle while the teacher, looking away, tapped loudly on a desk. Whoever had the pencil in their hand when the teacher stopped had to pick up one of the slips of paper, read aloud the question and answer it. The whole group would loudly applaud the person who answered the question. This process was repeated for about eight questions. At the end the students enthusiastically applauded themselves, with the teacher loudly joining in.

The teacher in this classroom uses a dynamic exercise that the students enjoy to assess their knowledge of the subject matter. The material chosen and the determination of a correct response are in the hands of the teacher. No opportunities for oral rephrasing of the material were given, as was the case in the active learning school.

Student government is another example of the active learning programs providing opportunities for verbal expression of ideas in front of an audience. All of the schools with active learning programs had either a school-level student government or classroom officers. The process of determining candidates varied, but in each school slates of candidates were formed. Each individual on a slate then made presentations on his/her

platform to the student body that voted for the position; thus, creating the opportunities to develop and express ideas publicly.

Verbal communication and initial reading and writing skills were stressed in first grade in all active learning program schools. In Guatemala and Nicaragua, first grades were not generally multigrade classrooms, as only one of the nine schools with active learning programs had a multigrade first grade. The single grade structure was a result of the large number of children generally enrolled in that grade and the focus in first grade on preparing students to read. Teachers use significant expressions generated by the students as the starting place for word recognition and building sentences. The students construct flash cards and these become part of the language corner. There is also an emphasis on pre-writing skills by using a sandbox for the formation of words. The first guide is introduced late in the first grade year. Students who have not mastered the basic ability to read and follow the instructions in the guides are not failed, but are considered “in process” until the skills are acquired to the teacher’s satisfaction. In the Philippines, teachers generally worked with combined first and second grad classes. Much of the emphasis also focused on verbal practice of word recognition.

Display of student work was another strategy to build confidence. All active learning classrooms had student work displayed, whereas displays of student work were infrequent in the comparison schools. In several classes, students showed the observers their displayed work and explained the context in which the work was developed.

Perhaps the best example of the confidence built through participation in the active learning programs and following the programs’ simple guidelines of “I learn,” “I practice,” “I apply” (*aprendo, practico, aplico*), is that of several girls at Pedregal in Nicaragua.

A member of the research team interviews two sixth grade girls who are the only members of the student government present that day. He uses an open-ended questionnaire with space to write the answers to each question. As he organizes his materials after completing the interviews, the representative and another girl—perhaps a 4<sup>th</sup> grader—come up and ask if they could interview him. They explained that they were members of the journalism committee. Both are equipped with identical questions written out on sheets of paper that appeared to be patterned on those that he had used to carry out the interviews, perhaps 15 minutes earlier.

They all sit at the same table outside of the classroom that the researcher used for interviewing and the girls ask such questions as “What do you think of our school?” “What did you like most about our school?” “What did you think of the facilitation?” (“facilitation” has to do with the use of the self-instructional guides), and “How can we do things better?” They write his responses on the forms and ask him to sign their interviews. Both thank him for the interview before leaving.

#### 4. Quality of the Interactions: Instilling Citizenship



**Figure 3 Student government member monitors a teacher-less class (Guatemala)**

In all schools, groups had student monitors who were generally appointed by the teacher based on their mastery of particular subject matter. In Guatemala and Nicaragua, these student monitors developed leadership skills by facilitating exercises in the self-learning guides for their group. The exercises in the guides that encouraged collaborative group work also

promoted participatory behaviors and democratic practices among students. In addition to directing fellow students in an activity,

students were observed taking turns, helping one another, expressing opinions, choosing among viable options and participating in student government. A recent study of the Guatemala NEU program that used longitudinal data to examine students' democratic behavior of this type, showed that democratic behavior is correlated with small group participation and that the amount of democratic behavior in a classroom relates to academic achievement (de Baessa, et al 2002).

In the Philippines, students acted as “little teachers” who led large group activities in place of the teacher or served as leaders of small group activities. All children had a role to play and a set of responsibilities within the group for that role. Being a good leader and a good follower was emphasized in many of the Philippine classrooms, and the little teachers who were interviewed spoke about their responsibility to help their classmates.

Participation in school government involved students in formalizing ideas about what they could contribute to their school and expressing those ideas in public. Children of all grades were found to be members of the student government. Thus, participation was not limited to the older members of the student community. In 12 of the nine schools with active learning programs, student governments had written plans of action that they had developed or could point to projects such as school gardens, water spigots, or reforestation of trees in the school yard that the school government had developed and carried out. All of the student government members interviewed spoke of the importance of their position in serving as a role model for other students. Perhaps the case that best illustrates the possible affects of student government participation is that of Nanci:

Nanci is a sixth grade student at Las Limonares school of Baja Verapaz. She is president of the student government at the school. Nanci's mother is a single parent who works from 9 am until 9 pm as a waitress in a truck stop on the road between Guatemala City and Salamá, the capital of Baja Verapaz. The mother is

widowed and has never attended school. Nanci and her sister Karin stay at a small market next to the school from the time school ends at 1pm until the mother can pick them up in the evening.

Nanci was not promoted after her initial year in first grade. However, with the initiation of the active learning program at the school she has made normal progress through primary school. She attributes her success to the NEU program, especially the student government and the self-instructional guides.

*I was afraid, but with the guides I worked with other girls and participated more. I ran for student government, first as a speaker (vocal) then as Vice President. We had to go to the different classes and say what we would do for the school. I learned how to speak in front of other children. Now I set an example. I receive visitors, help maintain order and organize school projects. My mother is happy because I'm not afraid and have a chance to continue my studies.*

Nanci and her sister, who is in fourth grade and has not repeated a year, have taken advantage of their wait for their mother by organizing reading classes for adult women who live near the school. They are also teaching their mother to read on weekends. Despite her long hours, the mother is currently serving as president of the parent organization for the school.

Parents were highly positive toward the innovative programs in all countries. They pointed out that it allowed their children to complete primary school without leaving the community and that the new materials enhanced student learning. In Guatemala and Nicaragua parents discussed the importance of the modular student self-learning guides in allowing students, especially girls to catch up, if they were forced to miss school. The parents in comparison schools fulfilled similar responsibilities in the schools but did not articulate any programmatic elements that contributed to their children's success in school.

Although parent committees existed in all schools, they did not take the active role in school governance and student classroom activities as had been envisioned in both active learning programs. Parents came to cook, clean, or paint when called upon to do so. The exceptions were the three schools in the Philippines (Saint Inez, Navarro, and San Juan) and Carbonal in Nicaragua, where mothers either served as teacher aides or substituted for absent teachers. Parents in these schools were seen as partners in the education process.

Parents in comparison schools also fulfilled school maintenance functions in their schools. They did not, however, articulate any programmatic elements that contributed to their children's success in school. When asked about multigrade schooling, they generally stated that single grade classes were better.

## V. Program Performance: Change in Student Outcomes

### A. Enrollment

**Guatemala.** One objective of multigrade school programs in rural areas is to allow students to complete primary school. Increase in enrollment is an indicator for meeting this objective. Table 3 shows enrollment patterns in NEU and EU comparison schools over the last ten years. NEU girls have an increase in enrollment each year through 1999. Except for 1992 and 1993, NEU girls have greater increases in enrollment than girls in the comparison program. In 2000, there is a decrease in enrollment among all students in both types of schools. However, NEU girls still have positive enrollment gains from 1991, whereas girls in EU schools fall below the 1991 level. NEU boys have a similar pattern of greater gains than comparison boys in each year. They also maintain positive gains against the baseline year, while EU boys fall 10% below 1991 totals.

**Table 3: NEU and EU Enrollment by Sex and Year**

Year	Girls				Boys			
	NEU	%inc	EU	%inc	NEU	%inc	EU	%inc
1991	1430	100.0	5752	100.0	1871	100.0	7680	100.0
1992	1493	4.4	6302	9.6	2090	11.7	8403	9.4
1993	1621	13.4	6523	13.4	2141	14.4	8725	13.6
1994	1740	21.7	6426	11.7	2215	18.4	8474	10.3
1995	1777	24.3	6581	14.4	2309	23.4	8902	15.9
1996	1800	25.9	6855	19.2	2399	28.2	9063	18.0
1997	1822	27.4	7323	27.3	2421	29.4	9133	18.9
1998	1994	39.4	7953	38.3	2449	30.9	9671	25.9
1999	2107	47.3	8022	39.5	2455	31.2	9886	28.7
2000	1706	19.3	5687	-1.1	2026	8.3	6903	-10.1

Source: National School Records

**Nicaragua.** Enrollment patterns in Nicaragua differed from those in Guatemala. Table 4 shows enrollment in the model schools compared to that in all other multigrade schools in the country. It can be seen that enrollment declined for both girls and boys during the first several years of the project. It has however increased by 15.7% and 10.1% from the 1997 baseline, for boys and girls, respectively. However, enrollment in other multigrade schools in Nicaragua has increased steadily since 1997. The total increase is four to five times that of multigrade Model schools.

**Table 4: Change in Enrollments—1997-2002**

Years	Model Schools				All Multigrade Schools			
	Male Enrollments		Female Enrollments		Male Enrollments		Female Enrollments	
	Total	% Increase	Total	% Increase	Total	% Increase	Total	% Increase
1997	1117	100.0%	1075	100.0%	80828	100.0%	80216	100.0%
1998	1093	-2.1%	1049	-2.4%	84852	5.0%	84845	5.8%
1999	1108	-0.8%	1040	-3.3%	98243	21.5%	97302	21.3%
2000	1169	4.7%	1061	-1.3%	108509	34.2%	106137	32.3%
2001	1294	15.8%	1109	3.2%	119732	48.1%	116820	45.6%
2002	1292	15.7%	1184	10.1%	129183	59.8%	123782	54.3%

Source: National School Records

**Philippines.** Enrollment data were examined to identify patterns in areas served by rural multigrade schools. Department of Education data on enrollment in the three provinces visited: Antique, Guimaras, and Negros Oriental were used to examine trends in Demonstration program schools other multigrade schools. Table 5 shows that average net enrollment for all Demonstration schools increased for both boys and girls. However, there was a decline in enrollment in the last year for which national data were available. Boys had consistently higher enrollment than girls and suffered less of a decline in the 2000/01 than girls. Non-UNICEF-supported multigrade schools had a pattern similar to Demonstration schools. Average enrollment rose for three years, but declined in 1999/00. The decline was severe enough to create an overall average net decrease in enrollment for the four-year period. Data for the sample schools visited during the study, which used actual student lists to calculate enrollment had a somewhat different pattern. Boys in the Demonstration schools had higher overall enrollment but the percentage increase from the baseline was greater for girls. Data for the comparison schools visited were similar to the national trends, in that girls suffered greater net decline in enrollment than boys in the last years for which data were available.

**Table 5: Overall Demonstration School Enrollment by Year**

	Demonstration Schools					
	Boys			Girls		
	Mean	Annual %	Total %	Mean	Annual %	Total %
96/97	49.3			47.7		
97/98	57.7	16.9%	16.9%	51.3	7.7%	7.7%
98/99	61.0	5.8%	23.6%	57.4	11.8%	20.4%
99/00	60.4	-0.9%	22.5%	48.3	-15.9%	1.3%

Source: Central School Records

**Table 6: Overall Non-UNICEF-supported Multigrade School Enrollment by Year**

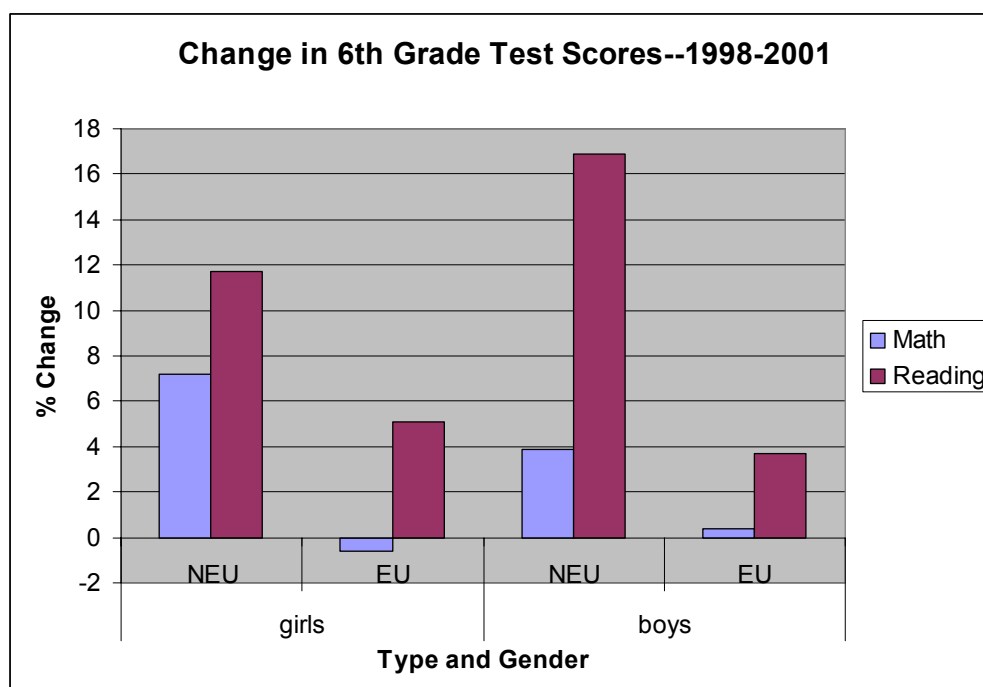
	Other Multigrade Schools					
	Boys			Girls		
	Mean	Annual %	Total %	Mean	Annual %	Total %
96/97	52.1			50.7		
97/98	56.1	7.7%	7.7%	56.2	10.9%	10.9%
98/99	59.1	5.3%	13.3%	61.2	8.9%	20.8%
99/00	53.4	-9.6%	2.5%	50.3	-17.8%	-0.8%

Source: Central School Records

## B. Achievement

Test data on multigrade schools were available only for Guatemala and the Philippines. Data for the Philippines were not disaggregated by gender but are presented to show general patterns in the Multigrade Demonstration Project.

**Guatemala.** The test data were obtained from the national testing program (PRONERE). Tests data were drawn from the same sample of NEU schools over a four-year period (1998-2001). Traditional multigrade schools included in the sample varied by year, but were selected randomly from the same regions. Figure 5 compares the results on two tests, total mathematics and total reading for sixth graders. It can be seen that girls in the NEU program had greater improvement on all tests than girls in the traditional multigrade program. In each case, NEU girls also had higher average mean scores in 2001 than the comparison group. In addition, NEU girls had higher average mean scores on the two tests than either group of boys. NEU boys also had greater improvement in test scores than EU boys. However, their average mean scores were slightly lower in mathematics.





**Philippines.** Test data were available for two school years, 1998/1999 and 1999/200, as the national testing program was recently halted. Scores are presented in terms of the aggregate average scores on the different subjects covered by the NEAT tests. As can be seen in Table 7, the Demonstration schools had higher mean scores than the other groups in 1999. However, results were similar for all groups of schools in that year. In 2000, the Demonstration schools made gains that were higher than those made by all other schools in the three provinces. The Demonstration schools made gains of 9 points compared to gains of 7.5 points for all other schools in the provinces. As it was not possible to extract non-UNICEF multigrade schools from the sample, the comparison schools that were visited were extracted by name. As can be seen, these schools had a one point aggregate gain over the two years.

**Table 7: Student Academic Performance by School Type and Year**

TYPE		MEAN99	MEAN00
Demonstration schools	Mean	38.98	48.03
	N	7	7
	Std. Deviation	6.77	8.40
Comparison schools	Mean	38.55	39.62
	N	1	2
	Std. Deviation	.	3.09
Others	Mean	38.18	45.70
	N	827	845
	Std. Deviation	8.01	11.79

Source: Central School Records

### C. Completion

**Guatemala.** Table 8 presents the percentage of children in NEU and EU schools that reach sixth grade in six years. As can be seen, both boys and girls in the active learning program have higher completion rates than children in the comparison schools in each cohort. Although completion rates for girls do not go up each year, the NEU girls have a gain in completion of 1.8% over the five cohorts compared to a gain of .7% among EU girls. NEU girls had a higher completion rate in the final cohort than NEU boys.

**Table 8: Percent of Students Making Normal Progress to 6<sup>th</sup> Grade Guatemala**

Cohort	Boys		Girls	
	NEU	EU	NEU	EU
1991-96	18.4	10.1	12.8	8.8
1992-97	16.8	9.5	13.9	8.1
1993-98	12.2	11.0	10.6	8.5
1994-99	12.6	11.5	11.2	10.2
1995-00	13.1	11.3	14.6	9.5

Source: National School Records

NEU boys in each cohort had consistently higher rates than boys in the comparison group. However, the completion rates for the NEU boys drop over time, whereas there is an increase of 1.2% in completion for EU boys. For all children, normal progress to sixth grade is very low. Less than 20% of the children who begin first grade in a given year reach sixth grade, five years later.

**Nicaragua.** As the *Escuela Modelo* program for multigrade schools is relatively recent, fifth grade was used as an indicator of completion to allow the examination of two cohorts. See Appendix B for an explanation of cohort calculations. As can be seen in Table 9, girls in the active learning program have a gain in completion rates of 2.6% compared to 1.3% for girls in the national sample of multigrade schools. The girls in the model program also have a slightly higher completion rate in the second cohort.

**Table 9: Percent of Students Making Normal Progress to 5<sup>th</sup> Grade  
Nicaragua**

Cohort	Boys		Girls	
	Model	Control	Model	Control
1997-01	43.4	42.3	53.0	53.8
1998-02	38.9	44.6	55.6	55.1

Source: National School Records

Boys in the model school program, on the other hand, have a decrease in completion rates of 4.5%, whereas boys in the comparison group have an increase of 2.6%. Both groups of boys have completion rates that are more than ten percentage point lower than those of girls.

**Philippines.** Completion was examined using apparent cohort methodology with the 98/99 and 99/00 data for Antique, Guimaras, and Negros Oriental to estimate the percentage of the 98/99 cohort that would make normal progress to sixth grade. Table 10 presents the results of this analysis by school type and gender. As can be seen, the Demonstration schools had a higher percentage of girls reaching sixth grade than either the UNICEF pilot schools or other multigrade schools. This rate of 71.3 was slightly lower than that for monograde schools at 72.2. Higher completion might be expected in these schools as they include urban schools, which traditionally have higher completion rates. Rates for boys, however, were lower in both Demonstration and pilot schools than in other multigrade and all remaining schools.

**Table 10: Program-level Estimated Completion for the 98/99 Cohort by School Type**

Grade	Demonstration		Other Multigrade		Other	
	Boys	Girls	Boys	girls	boys	girls
1	100	100	100	100	100	100
2	82.7	83.6	75.8	82.1	81.8	88.1
3	67.7	76.0	64.2	71.2	70.2	85.6
4	69.0	67.2	52.1	63.4	61.5	80.2
5	56.8	69.6	63.9	60.9	60.8	75.6
6	50.4	71.3	56.7	60.3	54.1	72.2

Source: Central School Records

#### **D. Cost-effectiveness**

Cost data at the project level were only available for the NEU project in Guatemala. Data from secondary sources that provided some information on the cost-effectiveness of the UNICEF-funded multigrade program were available for the Philippines. No data related to costs were available for Nicaragua.

**Guatemala.** The cohort data on completion in the NEU project and among the *Escuela Unitaria* comparison schools were used to examine cost-effectiveness. Cost effectiveness was defined as the total cost to produce a sixth grade graduate in six years. During its operation period, the active learning component of the BEST Project was directed towards a total of 39,170 students in the Departments of Alta and Baja Verapaz, Jalapa and Jutiapa. The total project costs for these activities were Q. 8,186,742<sup>3</sup> for the 1992 through 1996 school years. This amount was divided by the total number of students in the program to obtain a cost of Q. 209 per student per year. For each of the students in a NEU cohort, this cost was added to cost per student incurred by the Ministry of Education (MINEDUC). This cost varied from year to year between 1992 and 2000, but in 1992 the MINEDUC cost was Q. 220, giving a total of Q. 429 for students beginning school in the first year of the NEU program. For the corresponding number of EU control schools, the cost per student was the Ministry expenditure.

There were five cohorts of students that entered school between 1991 and 1995 for which data on sixth grade entry are available. The calculation began with the 1991-96 cohort. As NEU had not yet begun, the boys and girls in the schools that would become program schools were assigned MINEDUC costs per student for that year. In 1992, the number of children in second grade was multiplied by the cost for the Ministry plus the project cost per student in NEU schools. Control children in second grade were assigned only the Ministry costs. The same procedure is followed for third grade in 1993, fourth in 1994, and so on. A cumulative cost for the cohort over the six years from 1991-1996 was then calculated. This figure was divided by the total number of NEU students in sixth grade in 1996, giving the cost to produce a sixth grader in six years. Calculations were made

<sup>3</sup> Due to fluctuation in exchange rates, the local Guatemalan currency, the Quetzal, has been used to show the comparative trends in cost-effectiveness.

separately for boys and girls. This procedure was repeated for the EU control schools and Table 11 below shows that the cost to produce a female NEU 6<sup>th</sup> grader was Q. 398.72 less than in the control schools. This was the period of operation of the NEU program under BEST, when children received the benefit of the full implementation of the program.

The same calculations were made for the next four cohorts, but for the 1992-97 cohort, the project costs were excluded from the 6<sup>th</sup> grade in 1997 when the project activities had ended. Accordingly, the project costs were excluded from the 5<sup>th</sup> and 6<sup>th</sup> grade in the 1993-98 cohort, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> in the 1993-98, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> in the 1994-99, and just the 1<sup>st</sup> and 2<sup>nd</sup> graders were included in the project costs for the final 1995-00 cohort.

**Table 11: Cost Effectiveness by Cohort - Girls**

Cohorts	Cost/Student		
	NEU	EU	Difference
1991-96	9,530.14	9,928.86	-398.72
1992-97	9,653.09	8,977.19	675.89
1993-98	12,404.02	10,484.06	1,919.96
1994-99	12,540.53	10,831.18	1,709.35
1995-00	16,497.64	18,721.85	-2,224.22

In the initial cohort, both girls and boys in the NEU schools had a lower per student cost to reach the 6<sup>th</sup> grade than the corresponding control schools. This is likely the result of somewhat higher completion rates coupled with a lesser cost per student to the largest segment of the cohort, first graders, who had not been part of the NEU project in 1991. In subsequent years, the per student costs for girls reaching sixth grade was higher in NEU schools than in EU schools, despite somewhat higher completion rates. As program costs were ameliorated and completion rates remained higher in NEU, the costs have decreased to less than those in traditional schools. Table 12 shows that the same pattern was found for boys, but that the differences were not as large.

**Table 12: Cost Effectiveness by Cohort - Boys**

Cohorts	Cost/Student		
	NEU	EU	Difference
1991-96	8,167.66	8,526.36	-358.70
1992-97	8,864.37	8,036.54	827.82
1993-98	11,184.88	9,690.60	1,494.28
1994-99	9,579.08	9,050.97	528.11
1995-00	15,395.84	17,065.34	-1,669.50

As the current study focused on Alta and Baja Verapaz, where students are of Mayan origin, the same analysis was done with project and control schools for this region alone. Here the cost pattern is somewhat different with the cost for the NEU girls being lower

than the EU schools for the first two years, and the amount spent per girl was Q. 766 in the first cohort and nearly double for the second cohort. For boys, the difference was very small for the first cohort, and for the 1992-97 cohort, it cost Q. 1,417 more to produce a 6<sup>th</sup> grader in the project schools than in the control. For the 1993-98 and 1994-99 cohorts, it cost more to produce both 6<sup>th</sup> grade boys and girls than in the controls, but again the cost differences were the highest for the girls. Then, for the last cohort, it cost about Q. 5,000 less to produce a female 6<sup>th</sup> grader in the NEU schools and Q. 666 more to produce a male 6<sup>th</sup> grader.

**Table 13: Cost Effectiveness by Cohort – Indigenous Girls**

Cohorts	Cost/Graduate		
	NEU	EU	Difference
1991-96	11,939.38	12,706.31	-766.93
1992-97	11,448.70	12,880.11	-1,431.41
1993-98	17,481.16	13,573.80	3,907.36
1994-99	15,558.31	12,898.24	2,660.07
1995-00	14,816.84	19,828.67	-5,011.82

**Table 14: Cost Effectiveness by Cohort – Indigenous Boys**

Cohorts	Cost/Graduate		
	NEU	EU	Difference
1991-96	9,835.74	9,877.27	-41.53
1992-97	9,848.57	8,431.19	1,417.38
1993-98	13,920.43	11,318.87	2,601.56
1994-99	11,307.41	8,899.87	2,407.55
1995-00	14,791.10	14,124.87	666.23

The large differences between boys and girls in NEU and EU schools in Alta and Baja Verapaz can be accounted for by the increasingly higher completion rates for Mayan girls.

**Philippines.** A recent study (University of Philippines 2002) looked at cost-effectiveness in relation to student achievement in five subjects and to students' attitude toward schooling. It used average teacher salary, Building Furniture & Equipment, instructional materials, and maintenance operating expenses to calculate an average cost per student for Multigrade Funded, Multigrade Regular, and Monograde programs. The study found that Multigrade Funded programs, including those supported by UNICEF were more cost effective than the other types of programs on average and by grade MF = P 5,901.44; MReg = P 8,820.90; Mono = P 6,360.03. The study recommended extension of UNICEF and UNDP assistance.

## VI. Discussion

The multigrade active learning programs in Guatemala, Nicaragua, and the Philippines have been effective in changing the classroom environment in multigrade schools. Qualitative research in classrooms showed that there are differences between active learning programs and traditional multigrade schools without such programs in the three countries. In the active learning programs, a classroom environment was created that allowed students to engage in an assortment of participation contexts (e.g., small groups with teacher, small groups without teacher, small groups with an appointed or elected student leader, pairs, large groups, etc.). In contrast, the comparison groups generally relied on two participation contexts, the large group with the teacher as the central authority figure and individual seatwork. Although the three innovative learning programs differed in the degree of change, each had decentralized and diversified discourse and interaction patterns to bring about greater verbal communication, small group cooperation, and student involvement in instructional and extramural activities when compared to multigrade schools without such programs.

The greater decentralization of the classroom environment and emphasis on student participation was particularly successful for girls. In Guatemala and Nicaragua the organization of the classroom in small groups gave the teachers a better view of students and led to greater participation of girls. The variety of learning situations for the presentation of subject matter (small groups and large groups, guides, learning centers, community) provided students with different contexts in which to interact with subject matter. Collaborative exercises allowed girls to work together, and the emphasis on verbal problem solving and decision-making helped build confidence in both boys and girls. Participation in student government furthered confidence and built on girls' previous experience of organizing projects in their communities.

These positive aspects of the innovative multigrade learning programs led to greater increases in completion for girls in all countries than for their counterparts in multigrade schools without innovative multigrade learning programs. Girls in the Guatemala and the Philippines also had greater relative increases in enrollment and achievement. In Guatemala and the Philippines, the multigrade active learning programs were effective for boys as well as girls. Boys in NEU schools had greater increases in access and sixth grade achievement, as well as consistently higher completion rates than boys in traditional multigrade schools. However, classroom participation was similar for boys in active learning programs and boys in comparison classes in both countries. In the Philippines enrollment, classroom participation and achievement were higher for boys in the Multigrade Demonstration Project. However, completion was lower than for boys in traditional multigrade schools.

The active learning programs in multigrade schools appear to be sustainable in all countries. In Guatemala, the program has expanded from the 200 schools of the BEST project to 398 schools where the program is fully implemented. The program also began in an additional 1,908 schools, after training during the 2001 school year. These positive benefits are the result of the commitment of teachers and administrators who were in the original program and have continued supporting the active learning methodology, despite

a lack of Ministry of Education interest for a number of years following the completion of the project. These individuals continued to use the methodology in the classroom, moved the national textbooks toward more active involvement of students and advocated for Ministry investment in active learning in multigrade schools. Recent in-service training and Ministry partnerships with NGOs have come about through such advocacy, combined with a change in government. The program also seems to be cost effective in terms of ameliorating development cost over time with greater internal efficiency than was found in more traditional multigrade schools.

In Nicaragua, the lasting benefits of the program cannot be judged, as implementation is still underway. However, all of the teachers and administrators interviewed were strongly committed to the active learning program. The *Escuela Modelo* program is situated officially within the Ministry of Education and Culture, although it is sustained largely through BASE project funds, and the Minister of Education has been impressed enough with the program to order the development of a plan to incorporate elements of the active learning methodology throughout the primary school system.

In the Philippines, the institutionalization of multigrade schooling through the establishment of a division of multigrade education with the Department of Education speaks to the importance of this strategy in the Philippines. The findings on cost-effectiveness together with the expansion of the Demonstration school approach to other schools and the adoption of the program strategies by other multigrade programs suggest that the approach is sustainable. The generally positive view of the program by the teachers and parents participating in the program support the viability of the program for meeting the needs of isolated rural areas.

Despite the success of the multigrade active learning programs, completion rates remain low, especially in Guatemala and Nicaragua. The extreme poverty in which isolated rural communities live, combined with the devastating effects of economic downturns or natural disasters heavily influence family decisions about keeping children in school. Such decisions are exacerbated by fluctuations in Ministry of Education support for programs with changes in administration.

## Appendix A: Literature Review

This section of the report examines literature relevant to the multigrade active learning programs, *Nueva Escuela Unitaria* and *Escuela Modelo*, being implemented in Guatemala and Nicaragua, respectively. Active learning is an approach that allows students to take responsibility for their own learning. It may use a variety of methods to create different contexts in which students interact with subject matter. The common goal is the provision of opportunities for learners to integrate new information, concepts or skills into their own mental schema through rephrasing, rehearsing and practice. Activities can include collaborative group work, investigation with materials inside or outside the classroom, and peer teaching, as well as self-guided instruction, lecture and individual seatwork. Most important, to be actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis and evaluation. (Chickering and Gamson 1987; Bonwell and Eison 1991).

Active learning has its roots in three bodies of education literature. The first is the constructivist approach to the acquisition of knowledge. This approach has become a predominate paradigm in educational reform in the United States and many developing countries. The second is cooperative learning, which is characteristic of the NEU program. The third is discourse analysis as a methodological approach for studying classroom interaction. In addition, research related to multigrade primary schooling is discussed.

Socio-Constructivism. Educational reform in the United States and elsewhere has begun to emphasize the active and meaningful participation of all students. The challenges of academic excellence and educational equity, currently summarized as “No one left behind,” have led to a search for the integration of subject matter proficiency and universal participation in the learning environment. In recent years, constructivist or socio-constructivist approaches to learning and human development (Cobern 1993, Watts & Bentley 1987) have guided much of the educational reform to achieve this convergence. In contrast to the behaviorist, Pavlovian assumptions presupposed by the previous approaches to learning and human development, the socio-constructivist approach focuses on the ways learners actually generate understanding (Resnick 1987 & 1989, Newman, *et al.* 1989). This approach to human development emphasizes three interrelated aspects of learning that differ significantly from the behaviorist tradition: a) learning is a process of knowledge *construction*; b) learning is *knowledge-dependent*; and c) learning is intimately connected to the *situation* in which it takes place (Resnick 1989). Resnick asserts that individuals learn by actively interpreting information as opposed to simply recording it. That learning is knowledge-dependent suggests that it "depends on elaboration and extension of prior knowledge" (Ibid., 1989:2). The third aspect - that learning is tied to the situation - addresses the rediscovery that individuals better retain knowledge when it is embedded in some organizing structure.

These developments constitute a paradigmatic shift in the field of cognitive psychology and in the study of human development. This field, also known as "sociocognition," is concerned with social interaction, cognition and cognitive change, and collaboration (Levine, Resnick, and Higgins 1993). Constructivist approaches to learning have begun to question the epistemological assumptions that support theories of learning and human



development that ignore the influence of social interaction and language (i.e., discourse) on learning (See Wertsch 1985, 1991, Scribner & Cole 1981, Forman & Cazden 1985, Tharp and Gallimore 1988).

Constructivism has been heavily influenced by the work of Vygotsky (1962). Educational psychologists, anthropologists, and sociolinguists have built on his writings to complement the Piagetian orientation and to explore more comprehensively the various social and linguistic contexts within which the child develops (Paour 1990). For Piaget, developmental change and learning are nearly synonymous, as they are both pre-coded, genetic, and obedient to an external structure of graduated epistemological levels. Whereas for Vygotsky, the dynamic processes by which children learn (i.e., pass from low levels of mental functioning to higher levels) are much less associated with preprogrammed cognitive designs. Rather than seeing the child advancing through predetermined, successive stages of genetic development, Vygotsky views the child "unfolding in a massively social environment in which the determining aspects of growth were shaped...by other people in the community to which the child belonged" (Holquist 1990:80).

Vygotsky, attempting to call attention to the child's actual social context or community, utilizes a construct that he terms the "zone of proximal development" (ZPD). Vygotsky's ZPD (1978) relies on the distinction between *actual developmental level* and *potential developmental level*. He describes the ZPD as: the distance between actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers (Ibid., 1978:86).

The Vygotskian emphasis on tutorial or peer assistance and/or collaboration in learning can be seen as the underpinnings for constructivism. Learners are not alone in the learning process; rather, they are embedded in socio-cultural settings with pre-existing institutionalized, yet dynamic, contexts. This orientation has led some researchers to examine the familial parent-child relationship for possible pedagogical applications for the teacher-student relationship in school settings (Harding, Carol, & Safer 1990, Wang 1993).

Bruner (1985) argues for an important language-related aspect of the Vygotskian view. When a learner enters into dialogue with a more experienced tutor in the course of instruction, the interpersonal dialogue that once characterized the learner-tutor interaction becomes an intrapersonal or internal dialogue for the learner. This internalization of dialogue is further developed in the work of Bakhtin (see Wertsch 1991, see also Wertsch 1985, Davydov & Radzikhovskii 1985, Morson & Emerson, 1991). Bakhtin sees all utterances, including an individual's inner speech, are "polyvocal," (i.e., made up of more than one voice). Thus, all human communication and the construction of individual and collective understanding presuppose a dialogue. Bahktin claims that for a listener to understand the utterance of a speaker, the listener must orient himself or herself in relation to the utterance of a speaker so as to locate or create a corresponding context for it on a word for word basis (Voloshinov 1973). The listener partially accomplishes this by furnishing a "counter word" for each of the speaker's words, a dynamic metalinguistic process that Bakhtin calls "interanimation."

Cooperative Learning. The use of learning contexts that facilitate cooperative small group problem solving is a growing trend among educators in the U.S. and abroad. The opportunity for students to learn by interacting with each other, rather than only with the teacher, is seen as a means to improve student learning, increase student motivation, and as a tool to help manage large numbers of students (Slavin 1983). Much of the research of small group learning has focused on the motivational aspects of working toward a group product. Slavin (1987) has argued that when individual accountability is coupled with extrinsic group rewards, students are motivated to learn from group efforts. Others feel that from a developmental perspective, extrinsic rewards can have a negative effect on learning, as they mislead students into thinking that learning cannot be intrinsically rewarding (Hatano & Inagaki 1987). They propose that motivation for comprehension should be the goal of group cooperative behavior. Vygotskian theory argues for the analysis of problem solving as a culturally and historically situated activity (Saxe 1991). An individual's actions, attitudes, goals and understandings influence the meaning of the problem-solving activity; and, the actions of the participants within the activity can transform their mediational means, social roles and status and attitudes. This implies that analysis of the potential benefits of peer collaboration must include information about changes in learners' communication, goals, and social interactions over time as well as changes in their ability to solve a particular problem (Forman & McPhail 1993).

Cooperative learning includes not only cooperative product development and collaborative problem solving, but also peer tutoring. Both facilitation by the teacher or by a more experienced peer in a small group situation might be seen as "cognitive apprenticeship" (Newman *et al.* 1989). The "apprenticeship" metaphor is a useful concept for describing the processes that occur between and among teachers and students in a constructivist learning environment. Hansen (1990), for example, draws on an apprenticeship model in her definition of education as "a deliberate and systematic attempt to transmit skills and understandings, habits of thought and deportment required by the group of which the learner is a novice member" (p. 28). This definition reflects Vygotsky's view that "the true direction of the development of thinking is not from the individual to the socialized, but *from the social to the individual*" (Vygotsky 1962:20). Vygotsky's ZPD concept captures the social and interactive character of apprenticeship, as some educational anthropologists have pointed out (Lave 1977, Greenfield & Lave 1982, Goody 1989). In this context, the term "scaffolding" (Brunner 1978) has been used to graphically represent the training mechanisms, pedagogical strategies, and instructional techniques that "master" practitioners use as mediational means to assist "novices" as they prepare to become full members in what Lave and Wenger (1991) call "communities of practice." Brown and Palincsar note that "the metaphor of scaffold captures the idea of an adjustable and temporary support that can be removed when no longer necessary" (1989:411).

The Sociolinguistic Approach. The sociolinguistic orientation emphasizes the role of social context in the interpretation of spoken language (Gumperz & Hymes 1972, Cazden 1986, Halliday & Hasan 1989, Ochs 1986, and Mehan 1979). Levinson (1983) draws a distinction between "conversational analysis" and "discourse analysis" that helps to shed light on the theoretical diversity within sociolinguistic research. Conversational analysis has its roots in ethnomethodology and focuses on the process or movement of discourse

in natural and institutional settings. Conversational analysis tends to use inductive procedures. Discourse analysis, on the other hand, tends to be somewhat more deductive. Both take into account the interplay between text and context. A study of classroom communication using conversational analysis might begin with an in-depth examination of a large corpus of naturally occurring student and/or teacher verbal behaviors; a study using discourse analysis might begin with a set of functional types generated from the intuition of the researcher (Carlsen 1991). Green (1983) and Cazden (1986) concur on the following beliefs shared by classroom sociolinguistic researchers: a.) that the meaning of classroom talk is context dependent, b.) that classroom contexts are constructed and negotiated by speakers in the "give and take" of classroom discourse, c.) that verbal interaction is mutually generated by teachers and students (Erickson 1982), and d.) that sociolinguistic research nearly always involves close examination of transcripts of classroom discourse.

In recent years with the expansion of the notion of "literacy" that encompasses a wider range of discourse-related competencies involving affective, cognitive, and metacognitive practices (Scribner & Cole 1981, Heath 1983, Street 1984, Cook-Gumperz 1986, Gee 1990), sociolinguistic research in classroom settings has begun to focus on "discourse strategies" and "participation structures" that undergird the complicated processes of language usage in the context of learning and human development (O'Connor & Michaels 1993, Lampert 1990, Leer et al., Erickson 1982, and Lemke 1990). Some of this research has examined language usage in culturally diverse settings (Lee 1992).

The Multigrade School. The concept of a multigraded or nongraded school is not new. There is a long history of both developing and developed countries attempting to meet the schooling needs of sparsely populated rural areas by grouping students of various ages, grades, and experience in a single classroom. In Finland, for example, 70 percent of all primary pupils are enrolled in schools with less than three teachers. Iceland has an average enrollment for all rural primary schools of 50 students, and one-fourth of the schools in countries such as Spain and Scotland have less than 50 students (Hayes, 1993). The "one-room-school house" still is an important part of primary education in rural parts of the United States and Canada, and France has over 11,000 one-teacher schools (Bray, 1987).

Multigrade and single teacher schools are even more prevalent in many developing countries. China has approximately 420,000 multigrade schools, while Indonesia and Malaysia have 20,000 and 1,540, respectively (Thomas and Shaw, 1992). In Latin America, 22 percent of Mexican primary schools are "unitary", and multigrade classrooms comprise 50 percent of the schools in Belize and 88 percent of the schools in Honduras. Five thousand of the 7,544 rural primary schools in Guatemala are classified as "unitary".

The research on multigrade classrooms is somewhat mixed. In the United States, there is little difference in academic achievement between single and multigrade classrooms and students in multigrade classrooms often have more positive attitudes towards school, themselves, and their peers (Miller, 1989). Results in Togo (Thomas and Shaw, 1992), Indonesia (Bray, 1987), and Brazil (Harbison and Hanushek, 1988) show that students in multigrade classrooms outperform comparative children in single grades. A recent study

in Pakistan, however, documented that single-grade students had higher academic achievement than students in a multigrade environment (Rugh, 1989), and in Belize, the performance of students in multigrade school on national examinations was found to be relatively low (Nielsen, 1992).

Perhaps, the best documented success of multigrade schooling has been that of the *Escuela Nueva* in Colombia. Evaluation results showed students participating in that program to perform significantly better than similar children in single grade classrooms (Rojas and Castillo, 1988). A reexamination of the Rojas and Castillo study found similar results (Psacharopoulos, et. al., 1993). Despite these positive results and suggestions that the *Escuela Nueva* program may be the hope for schooling in Latin America (Schiefelbein, 1991), the authors of both studies, as well as Schiefelbein himself, stress the importance of a well implemented program, if positive results are to be expected.

Recent cross-national research has shown that much of multigrade teaching is very traditional (Hargreaves et al 2001). One of the issues in multigrade classrooms has been the degree of implementation of programs, especially those requiring a change in teacher attitudes and practice. It has been shown that, even in a program considered highly successful, as the *Escuela Nueva* in Colombia, there is variation in teaching methods across classrooms (Benveniste & McEwan 2000). The authors suggest that without local commitment to a program, it is unlikely to be successful.

Research on gender differences within multigrade classrooms comes mainly from the Caribbean. Recent studies of multigrade schools in that region (Berry 2001; Kutnick et al 1997; Miller et al 1994), where girls generally have greater success than boys, have shown that multigrade programs are most successful for low achieving boys. It is suggested that this may be a result of the more generalized attention given to students in multigrade classes when compared to focus on the high achievers in monograde schools. In Latin America, effective implementation of active learning multigrade programs has been related to the development of democratic behaviors for both boys and girls (de Baessa 2002).

## **Appendix B: Research Methodology**

In order to examine the persistence of girls in multigrade classrooms, data were collected on multiple levels, including education management information systems, school-level enrollment data, classroom observation, teacher and school director interviews, and student and parent interviews.

### **Education Management Information Systems**

The purpose of collecting data from the Education Management Information Systems (EMIS) was to examine program level trends as compared to those found in sample schools. Girls' primary school completion rates in multigrade schools were examined in terms of cohort trends from year to year. Comparisons were made with boys' completion rates in the programs under study, and when possible, with completion rates of boys and girls in schools that have not been affected by special programs, e.g., the NEU schools in Guatemala, the Model Multigrade Schools in Nicaragua, and the Multigrade Demonstration Schools in the Philippines.

The specific data collected from the EMIS, when available, included enrollment, promotion, repetition by gender, grade, year, and type of school. The data were then used to calculate completion rates for cohorts of students that enter school in a given year. For example, if 500 girls enter first grade in 1995, the calculations took into account the number of girls who have had to repeat a grade, the number who drop out every year and showed the percent of girls from the original cohort who have graduated from primary school; when data were not complete or available, making normal progress to the fifth grade was used instead.

When no data are available on promotion and repetition but just enrollment, an apparent cohort has been calculated by taking the number of girls who enroll in any given year and calculating the percentage of those girls who remain in school in the corresponding successive years and grades until the required number of years to graduate from primary school. Since the number of repeaters is not known and the differences in enrollments from one grade to the next in two successive years is considered to be the result of dropouts, the completion rates may be somewhat inflated.

In countries where no data are available for enough years to calculate completion for complete primary school cycles, the reconstructed cohort method was used when data were available for a minimum of two successive years. Using these data, promotion and repetition rates were calculated for successive grades from one year to the next, and these rates were then used to construct the progress of a hypothetical cohort of 1,000 students as they progress through all the primary grades based on the promotion and repetition rates for the two adjacent years with complete data. If data were available for another pair of successive years a given number of years later, the reconstructed cohorts were compared to see how completion rates had changed since the first cohort.

Once the completion rates were calculated, the results were examined to see the difference between girls' and boys' completion rates in any given year and to see if there are any trends from year to year. In addition, when there was a specific program intervention in a given number of schools, the completion rates were compared to

identify gender-based differences in completion rates between program schools and other comparable schools that have not been subject to the interventions.

### **School Level Enrollment Data**

Annual school-level data on the enrollment by grade, promotion, birth dates and gender of individual students were also collected at each of the schools visited, generally going from the 2002 enrollments back to at least 1997. With data on individual students, precise completion rates and the percent of girls versus boys in the three lower and three upper grades were calculated. The annual change in the percent of girls in relation to boys has been compared within the schools visited and between schools that have been part of a special program in relation to those that have not.

### **Attendance in Observed Classrooms**

As part of every school visit and individual classroom observations, the teachers were asked how many boys and girls were enrolled in the class, the observers made a diagram of the classroom indicating spatial arrangement of the students, the furniture and materials present, and the attendance on the day of the visit was also noted. Using the attendance and enrollment figures, the percent of boys and girls present were calculated and comparisons were made.

### **Academic Achievement Testing**

In countries where academic achievement tests have been given to boys and girls in multigrade schools and providing the test results are available in digital format, the tests scores were analyzed by gender and type of school or program intervention. Test scores were then compared to identify trends from year to year and differences in scores between boys and girls.

### **Classroom Observations**

The observations consisted of drawing a map of the classroom, taking an inventory of classroom materials and noting the extent of student use, structured observation of teacher-student interactions, and descriptive observations of students working in groups.

The first activity in the classroom consisted of drawing a detailed map indicating the location of desks, students by gender, blackboards, posters, learning corners, libraries and other items in the classroom. This map then served as a point of reference for making the other observations, especially student group work.

The inventory of classroom materials consisted of noting the different type of teaching materials available for student use, including text books, curricular guides, other written materials and manipulatives. Next, the observers noted the use of these materials by the students by counting the number of materials actually being used by students at 10 minute intervals, and this information was then used to calculate materials availability ratios per student and a use ratio was calculated by dividing the number of materials in use by students by the total number of materials available.

The observation of interactions was done by observing teacher-student interactions over three separate 10-minute intervals during lessons. Observations were staggered throughout the school day to eliminate the influence of extemporaneous events that might

influence a single lesson. An interaction was defined as verbal or non-verbal communication between the teacher and one or more students on a specific topic. An interaction ends and a new one begins when there is a change in the individuals involved or a change in the topic. Each individual interaction was recorded on a checklist indicating the initiator of the interactions, gender, the context of the interactions, the quality of each interaction, the receiver of the interaction and whether or not the responses were verbal, non-verbal or simply no response at all. The contexts of the interactions included a large group of more than eight students—often the entire class, a small group of eight or fewer students led by the teacher, a similar small group led by a student, seatwork being done by individual students at their desks or a non-instructional context such as students asking permission to go out and use the bathroom. The quality of the interactions included the asking of questions, explaining or elaborating on a particular topic, lecturing, telling someone to do something, giving positive reinforcement, and verbal or physical punishment.

The analyses of the interaction data consisted of calculating the relative percentage of all the interactions that were initiated by the teacher, the percentage initiated by students—especially by girls in relation to boys, the percentage of interactions that take place in a particular context, the relative percentages of the different kinds or qualities of the interactions and the nature of the responses as a function of gender. The percentages of interactions initiated by boys and girls were adjusted for the number of boys and girls that were present in the classroom. For example, when the number of boys present was larger than the number of girls, the percentage of interactions initiated by girls would be increased according to the ratio of boys present divided by the number of girls. In other words, when there are fewer girls in attendance, they do not have the same opportunity to initiate interactions, and the percentages must be adjusted to simulate having an equal number of both genders in the classroom.

The descriptive or qualitative observation of students working in groups consisted of the investigators, sitting close to a group in a non-intrusive manner, and making careful and detailed observation of the activities. If the class was divided into groups by grade, each group was observed for two five-minute segments for a total of 10 minutes. If the student groups were based on specific types of activities, then each of these were observed for 10 minutes. Particular attention was paid to the topic under discussion, exactly what each individual student was doing, how each was or was not participating, the nature of the dialogue, whether or not a student was leading the activities and the level of involvement of the teacher. The information from these observations was noted in detail using a form that identified the number and type of groups.

### **Teacher, Student and Parent Interviews**

Three interview instruments were used, each consisting of a series of open-ended questions. The teacher questionnaire asked about the history of the school, the nature of the surrounding community, organization of the school in terms of grades, attendance and the number of teachers, whether or not there were special programs, facilities, organizations and activities, and teacher training. Next, the teachers were asked to describe how girls participate in the classroom, how many and which girls participate in student government, what the benefits are for girls in the particular school with its special programs, and what are the possible disadvantages. Interviewers followed up by asking

how girls' participation compared to that of boys. Interviewers were careful to ask the questions in a neutral manner so that teachers did not try to answer the questions with responses that they thought the interviewers wanted. Interviews were always conducted after observations so that teachers would not try to teach in ways they thought the researchers wanted to see.

The student interviews were conducted with girls and boys who held positions in the student government. They were asked how they got their position, what the responsibilities and purposes were for their position, what they have learned from the experience, what their parents think of their participation, and their feeling about being part of a multigrade classroom. Since these were all open-ended questions, the students were prompted to expand as much as possible on their responses.

Whenever possible, parents of female students were interviewed individually. They were asked open-ended questions about how they felt about their daughters' school participation in the classroom and in student government, what changes they have seen as a result of this participation, whether or not they have other children who went to school and who also participated in student government, whether or not the parent has participated in any school activities. In a number of cases, parents were interviewed in a focus group context. The moderator asked the group to reflect on the participation of children in the classroom and in extra-curricular activities, as well as on the multigrade learning program implemented in their school as compared to previous programs or to their own primary school experience. Participants were also asked if they had participated in school activities and they were asked to provide details about the nature of the participation. In addition, parents were asked how many children they have, how many have gone to school and how many years of schooling the parent has completed.



## **Appendix C: Workshops and In-service Teacher Training**

The *Escuela Nueva* program in Colombia influenced each of the innovative multigrade programs in this study. Teacher and administrators from each program made visits to Colombia to observe *Escuela Nueva* schools, prior to design their program. The cornerstones of *Escuela Nueva* was the workshops for teachers participating in the program and a strategy for creating an ongoing collaborative learning environment for teachers in the field. The features of the program were: a series of regional workshops structured for reflection followed by action; modeling of the collaborative learning that the program students would undertake; development of instructional materials as part of the workshop products; and organization of follow-on activities for continued reflection and group learning when the teachers returned to their schools. These features were important aspects of the training in the innovative multigrade programs of Guatemala, Nicaragua, and the Philippines.

In each program, Nueva Escuela Unitaria, Escuela Modelo, and the Multigrade Demonstration Project, three workshops were held in the initial year of implementation. The workshops were generally of one-week duration. Although the organization of subject matter for the workshops varied by country, the three workshops were generally divided into the following topics: 1) approaches to managing a multigrade class, including self- and collaborative learning by students and the formation of a student government; 2) creation and use of materials including activities and games that promote active involvement of children with the subject matter, the creation of learning corners through children's investigative activities to collect local material for the corners, and use of the mini-libraries; and 3) involving parents and community members in the activities of the school. While these are the general areas dealt with in the workshops, the actual workshop activities are structured to focus on a series of common problems related to the topics. Thus, solutions may be integrated across the areas. Exhibit 1 presents the outline of a workshop activity related to bilingual education

As can be seen, the participants begin the session by reflecting on a reality found in the schools where they work. This is followed by discussion of how the school system at different levels would deal with the issues presented. The teachers then develop strategies for dealing with the issues in their own classrooms. The final step is two develop materials for addressing the problem at the school and community level.

## **Exhibit 1: Illustrative Multigrade Teacher Training Workshop Lesson**

### **I. INITIATION PHASE**

1. Read with attention the following text

We have all heard parents, community leaders and students express themselves in reports, radio programs and comments about the state of the school: Education has lost quality; Teachers talk more than students in class; Boys and girls are bored in class; the teachers don't speak the language of the children so they don't understand; there are no materials, students don't get promoted, etc.

2. In a group – Respond to the following questions:

- What do you think of the comments in the text?
- How would teachers, principals, and school administrators respond to the comments?
- Do you think it is necessary to improve Bilingual Education?
- What can we do in communities to improve Bilingual Education?
- What can I do as a teacher to improve Bilingual Education in my class?

3. Read with attention the following text:

Bilingual Education can and should be improved. To do so, each teacher must be concerned with improving his or her practice in the classroom. Obviously, teachers alone can't change all the problems of education; but it is also obvious that there are things that only we, the teachers, can improve.

4. Here are some strategies that teacher can apply to improve schools in bilingual areas: Recognize that each community has its own culture and that this culture should be recognized and celebrated in the class; Build the experience of students from different cultures into the activities of the class; Give students time to learn, recognizing their different experiences and facility with the language of the classroom; participate in events of the community; invite parents to the classroom to share their culture

5. In a group – Respond to the following questions:

- What other things can a teacher improve in bilingual classrooms?
- Why is it necessary to communicate with students in their native language?
- Will education improve if a teacher changes from a lecturer to a facilitator?
- What of that which we learn in this workshop can I apply in my school?

6. Alone – Write three strategies that I can apply with my students to improve education in this area – In the classroom, in the school, in the homes.

### **II. DEVELOPMENT PHASE**

1. In a group – Provide an example of an activity that I can realize in my school to reach one of the following objectives:

- a) Create active classes
- b) Students can attend my classes and help their parents at home and in the fields
- c) Take advantage of the culture of the community in teaching and learning in my classes
- d) My students have a variety of experiences that allows them to be successful in class

2. In a group – Discuss how these activities will reach the objectives

### **III. CULMINATION PHASE**

1. In a group – Make a poster that will explain to other teachers why it is necessary to improve and strengthen bilingual education in this region. This poster can be presented in a) Meetings of teachers; b) Meetings with parents and community leaders

2. In a group – Explain simply and with examples: How the community can strengthen bilingual education.

Each of the programs also develops follow up activities to the workshop. These are generally monthly or quarterly meetings of a cluster of teachers in schools in the same area. These teachers use the same methodology developed in the workshop to address particular problems that one or more of their colleagues have encountered in their schools or communities.

All of the programs also develop teacher's guides, manuals or handbooks as reference material for the teachers in their schools. These handbooks have chapters on: The Multigrade Classroom as a Learning Environment, which discusses the purposes and opportunities for multigrade schooling; The Components of a Multigrade Classroom, which includes descriptions of the learners, the different roles of the teacher and the organization of the physical environment; Teaching and Learning Processes, dealing with the subject matter to be taught and the sequences and integration of learning; Classroom Management; Evaluation in the Multigrade Classroom, which may include issues of flexible scheduling and promotion; and The Multigrade Classroom in the Community. Some guides also include sample lesson plans.

## Appendix D: Student Self-Instructional Guides

The *Escuela Nueva* program in Colombia served as a model for the self-instructional guides that are an important instructional material in each of the innovative multigrade programs in this study. The guides are not necessarily a substitute for the curriculum, but rather compliment the curriculum where one is in place by suggesting activities that allow children to interact with the subject matter presented in other forms. Where curricular materials are lacking, the guide are designed to meet four basic learning needs. These are: reading and calculating with understanding; communicating verbally and in writing, learning from context and applying that learning in other settings; and valuing the importance of participation as a member of the school and larger society. First graders generally do not have self-instructional guides. Rather they learn to read using significant expression that they, themselves have generated. Second through sixth grade students spend much of their time working with guides. These guides promote active learning, cognitive skills, group discussion, decision making and collaborative creation, as well as investigative and discovery learning through activities that encourage children to interact with their environment and with other learning materials.

The guides are in modular format with four to six guides per core subject at each grade level. Core subjects include national language, mathematics, science, social studies, and at times the mother tongue. The guides consist of sequential exercises that use a variety of learning contexts (individual study, pairs, small group). The final activity in each sequence is testing of mastery of the concept being learned. Each sequence of exercises follows a structure of “learn – practice – apply.” The guides may for example ask students to collect local knowledge such as adages, put them in writing, recite them to other students orally and compare them with the findings of other students. The guides are designed so that they can be used by several children at once.

The following example is taken from a second grade lesson in one of the Guatemalan guides. In exercise number eight, the student is asked to work alone and match the rhyming riddle with the picture, as a final step in practicing what has been learned about the characteristics of local animals. Subsequently, the student is asked to apply this knowledge with his/her family members by reading the riddles to younger siblings and helping the children understand them. The student then carries out an investigation with his/her mother and father, asking them to name five useful and five harmful animals, respectively. The student writes the names in a notebook. To finalize the effort, the student presents the work to the teacher and receives an evaluation of progress.



Solo o sola

8. Adivino y uno con línea, la oración que se relaciona con el dibujo.

A. Soy dueño del gallinero y mi canto es el primero.



B. Soy un medio de transporte y vivo corre, que corre.



C. Me gusta dormir de día, y cazar en la noche fría.



D. Tengo alas y poco vuelo no sé caminar muy bien, pero nado requetebien.





# Aplico los conocimientos



## Con mis familiares

1. Leo a mis hermanitos las adivinanzas del punto 8 y les ayudo a entenderlas.
2. Pregunto a mi papá el nombre de cinco animales perjudiciales, luego a mi mamá el nombre de cinco animales útiles.
3. Escribo en mi cuaderno los nombres de esos animales.

## Presento mi trabajo al profesor o profesora



CONTROL DE PROGRESO		
E	R	A

**Appendix E: Guatemala Country Study**



# **GEMS**

**Girls' Education Monitoring System**

**Ethnographic Study of the Effects of Active Learning Programs on Girls' Persistence and Completion of Primary School in Developing Countries**

**Guatemala Country Study**

*Prepared for:*

**United States Agency for International Development  
Bureau of Economic Growth, Agriculture, and Trade/ Office of Women in Development**

*Project Undertaken by:*

**Juárez and Associates, Inc.**

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## Acronym List

AV- Alta Verapaz

BEST- Basic Education Strengthening Project

BV- Baja Verapaz

ERA- *Escuela Rural Activa* (Rural Active School)

EU- *Escuela Unitaria* (Unitary Schools)

FUNRURAL- *Fundación Rural* (Rural Foundation)

GEMS- Girls' Education Monitoring System

GDP- Gross Domestic Product

MINEDUC- Ministry of Education

NEU- *Nueva Escuela Unitaria* (New Unitary School)

PRONADE- *Programa Nacional de Autogestion para el Desarrollo Educativo* (National Education Development Management Program)

USAID- United States Agency for International Development

## Guatemala Country Study

This study examines the effects of the multigrade component of the *Nueva Escuela Unitaria* program in Guatemala. The study focuses on the elements and processes of this innovative program as they relate to the success of girls in rural primary schools. It is part of a multi-country study on active learning programs in multigrade settings and the relationship of such programs to girls' performance in school. It is hoped that the study will serve as a resource in planning educational interventions to improve quality, especially in those countries where participation of girls in formal school is low.

The study applied rapid ethnographic appraisal methods for school and classroom research to collect data in a sample of 6 schools (four with active learning programs and two that employed traditional methods). The study used the qualitative methods of maps, inventories, structured observations, and in-depth interviews with school directors, teachers, students, and principals to conduct case studies of a sample of multigrade schools with active learning programs, as well as programs using traditional teaching methods. Available program level data were also collected and compared to case study findings. A team of anthropologists with extensive experience in education research in Latin America carried out the study during June 2002.

### I. Context

Guatemala is emerging from 35 years of civil war that cost the lives of an estimated 100,000 Mayans in the areas of conflict between the Guatemalan army and guerrilla forces. Although Guatemala is relatively well off compared to other Central American countries, as it accounts for nearly one-third of the GDP of all the Central American. The poorest families usually are subsistence cultivators who supplement their production with seasonal day labor. The country also has the lowest school enrollments in Latin America and public expenditures on education has been one of the lowest in the region for the last three decades—1.8% of GDP as compared to an average of 4%.<sup>4</sup> Guatemalan female illiteracy was 38.4% in 2000 as compared to 23.9% for males. About 16% of infants suffer from low birth weight due to poor maternal nutrition, and 50% of all children have some degree of malnutrition. These indicators are worse for the Mayan population, the bulk of which live in rural areas.

The approximately 40% of the Guatemalan population that is Mayan live in poverty and were the most adversely affected by the civil war which ended with the Peace Accords signed in December 1996. After the signing of the Accords, many Mayan refugees returned to Guatemala and account, in part, for recent population increases near urban areas in the Western Highlands and in Alta and Baja Verapaz. These areas were hard hit by the economic downturn of the late 1990s that was brought about both by the decrease

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<sup>4</sup> World Bank Country Brief, May 1999, online:  
<http://lnweb18.worldbank.org/external/lac/lac.nsf/412657d72e240425852567d6006b2721/43145249ae1fea1d852567d90070cbd9?OpenDocument>

in international investment with the ascent of a populist administration in 2000, the continued decline of coffee prices over the last four years, and recent droughts.

The schools visited are located in K'ekchi speaking areas that are among the poorest in Guatemala. These communities are very traditional and families continue to be male-dominated with extensive restrictions on the behavior of children outside of the household. For example, the first duty of girls and women is to the household and sending girls to school is a relatively recent phenomena. Within the household girls are often restricted from meeting people outside the immediate family until the father gives his consent.

## II. Background

Guatemala has been concerned with improving educational access and quality in primary schools for most of the last decade. An aggressive campaign to increase access through the development of community schools by the semi-autonomous Ministry of Education division PRONADE, access in rural areas has been greatly increased. However, many of these new schools do not provide a full sixth grade education. As shown in Table 1, about 20% of Guatemalan rural primary schools do not offer sixth grade. This percentage is even higher in Indigenous areas.

**Table 1: Percent of Incomplete Schools - Guatemala**

Student Ethnicity	Urban	Rural	Total
Indigenous schools	13.7%	25.1%	24.5%
Non-Indigenous Schools	11.8%	19.0%	17.2%
Guatemala	12.6%	21.5%	20.2%

Source: National School Records

Low primary school completion of about 30% in rural areas and less than 60% in urban areas has been attributed to the poor quality of schooling, especially in rural areas where poorly trained, underpaid teachers in ill equipped, overcrowded classrooms who teach largely through rote memorization. Educational reformers faced with such situations are turning increasingly to active learning methodologies in the hope of improving quality.

The *Nueva Escuela Unitaria* (NEU) is one effort by the Guatemalan government to improve both educational access and quality for rural children. In the “New Unitary School” program, Guatemalan educators adapted the "Escuela Nueva" model of Colombia to the needs of Guatemala through pilot programs in both indigenous and non-indigenous regions. The program involved: in-service training workshops for teachers at which they reflect on their own experience as students and teachers, develop the materials used by students, and form “teachers circles” for monitoring each other’s teaching; parent involvement in activities in the classroom, as resources for local customs and agricultural pursuits, and as members of the school governing boards; and a series of active learning strategies such as the use of self-instructional guides, learning corners, small group work and peer teaching, as well as flexible promotion and participation in elected school government. The NEU program stressed the role of the teacher as a facilitator of

knowledge building who encourages children to be active, creative, participative and responsible through collaboration in small groups and individual use of a variety of learning contexts. Such learning experiences were seen to lead to democratic attitudes and behaviors such as comradeship, cooperation, solidarity and participation. (Colbert, et. al. 1990). The program was designed to provide teachers with the skills to handle multiple classes, thereby allowing one or two teachers to offer a complete six grades of primary school.

The NEU program began in 1992 with 100 schools developing the NEU innovation on a pilot basis. The project was developed as part of the USAID-funded Basic Education Strengthening (BEST) project. It was envisioned that the program would be expanded to all of the more than 600 schools in the two pilot regions and eventually to all of the more than 3,000 unitary schools in Guatemala. The objective of the program was to provide a complete primary education for children in remote rural areas by preparing teachers to handle a number of grades simultaneously. As mentioned the focus was on active learning methodology and much of the first year of the program was spent working with a group of teachers in the pilot schools. These teachers reflected on their experience as students and teachers then began to develop a series of self-instructional guides for students under the direction of specialists in active learning methodology. At the same time, teachers in the pilot schools began to implement certain aspects of the NEU methodology such as allowing students to vote for members of a school student government. The guides were completed and full implementation of the program began in February-March 1993. In 1995, the program was expanded as each of the 100 schools “adopted” a neighboring school that had expressed interest in using the NEU methodology. The original teachers of the NEU program were the principal trainers of their colleagues in the neighboring schools. The BEST active learning specialists supported them in 1996, the first year of the expansion.

All of the schools in the pilot program were at some distance from a municipal center. They were generally accessible only with four-wheel drive vehicles and often required a walk of several hours to the school from the last accessible point for a motorized vehicle. Schools generally consisted of one, or at best two, large rooms and a small office or storage area. Because of difficulty in access, furniture was often old and dilapidated. Few of the schools had electricity or potable water. In most cases, teachers arrived by bus or truck from the nearest municipal center, often leaving their homes at five in the morning in order to arrive at a school by eight o’clock. The school day generally ran from eight o’clock until noon, with a 45-minute recreation period. One or two teachers worked with children between the ages of six and sixteen distributed in four to six grades of primary school.

The NEU pilot program was carefully monitored and was found to promote participation, especially by girls (Chesterfield and Rubio 1997), to increase completion rates to the extent that it was more cost effective than traditional methodologies (Chesterfield and Rubio 1996) and to promote democratic behavior in the classroom (de Baessa et al. 2002). Expansion of the program was to be funded by the World Bank and InterAmerican Development Bank once USAID funding ended in 1997. However, the new government that took office in 1996 felt that the pace of expansion would be too slow. Thus, they developed new textbooks that had a self-learning aspect in their format.

However, these books resembled traditional texts in terms of content, scope and sequencing. The little in-service training provided to teachers on the use of the books was given in short-term, large-group settings that gave no chance for the reflection and experimentation provided to teachers in the NEU training.

Intensive efforts at developing active learning methodologies based on the NEU were carried forward by NGOs. In 1996, FUNRURAL, the philanthropic foundation of the association of coffee growers, Anacafe, began working with teachers in schools that the association sponsored in coffee plantations to adapt the NEU teacher guides and student self-instruction guides to the needs of these schools. The foundation gave full credit to the contribution made by NEU materials to its work, but renamed its program *Escuela Rural Activa* (Active Rural School). By 2001, the program consisted of 202 primary schools with 17,171 students (FUNRURAL 2001). It had expanded to government multi-grade primary schools, which made up about 60% of the total number of schools. The preparation of teachers took place through 10 in-service workshops of two days in length over a period of two years. Between 25 to 40 teachers participated in each workshop. The program has been financed by the foundation at a cost of about \$1,300 per school per year. However, the continuing drop in coffee prices has forced the foundation to look for partners in order to continue supporting the program. This has allowed expansion to an additional 24 schools serving 4,000 children in 20 communities during the 2002 school year (Maldonado 2002).

Plan International, an NGO working in 43 countries, has also spent the last five years working with the NEU active learning program in primary schools. Plan has kept the original name and concentrated on schools in departments of Guatemala where the organization is working in a variety of development efforts. It currently supports 195 schools with teacher training, school furniture, teacher guides, self-instructional guides for teachers and school libraries. The organization also carries out an early childhood education program in many of the same communities and has made infrastructure improvements in a number of the schools (Plan International 2001). Plan has hired a local NGO that employs teachers and supervisors who participated in the original NEU program to carry out teacher training, which occurs at the end of the school year.

With the change in government in 2000, the Ministry of Education also began to develop more intensive programs to move forward active learning methodologies in multigrade schools. With World Bank funding, the original self-learning guides and teacher manuals were modernized to reflect curricular changes and the national university developed a program for training rural teachers in the active learning methodology. University professors who taught in the program were complemented by rural teachers who had experience with the methodology. The program was carried out prior to the 2002 school year over a five-month period. Approximately 4,000 teachers, representing 1,908 schools (de Segura 2002), were trained in 20 sessions. School libraries and self-instructional guides for the first three grades were distributed at the start of the school year to participating schools. Self-instructional guides for the upper primary grades are to be distributed in the second semester of the 2002 school year.

The Ministry has also started a national program of professional development for teachers. This program will take place over two years and involves all primary teachers

in the country attending classes one day a week. Different teachers attend on different days and their colleagues supervise their classes while they are away. The program is supposed to involve principles of active learning. The Ministry has requested that no other specialized training of teachers take place during the *profesionalización* (professionalization). This request will delay the expansion of active learning programs through intensive training of teachers.

### **III. Results**

#### **A. Participation**

##### **1. Classroom Organization**

Seven multigrade classes implementing the *Nueva Escuela Unitaria* active learning program were observed intensively. These classes were found in two of the original BEST program schools, one Plan International school, and one FUNRURAL school. In all of the classes, children were organized into small groups by grade. Teachers stated that students were grouped by level of development (*desarrollo*). The unit of the self-instructional guides on which the students were working defined this level of development. All of the groups were of mixed genders. However, children of the same sex sat together when there was more than one in a group. No cross-grade work among students was observed. Interactions were limited to students asking friends or siblings for materials such as pencils or crayons. Interviews and observations showed that organizing class in terms of small groups allows a teacher to focus on a few children at a time and allowed student participation beyond those children who continually sought attention. Teachers verified that the small groups gave them greater opportunity to involve all children in lessons and other classroom activities.

In three of the four NEU schools there were generally self-instructional guides in sufficient numbers for the enrolled students. The two exceptions were first grade and one of the two schools in Guatemala still using the original guides from 1995. In first grade, the students developed reading and writing skills using significant expressions generated from their own experience. They only begin working with guides at the end of the school year. In the school in Sanimlaha, which had had changes in teaching and administrative staff and was the more isolated of the schools still using the original guides, there were only enough guides for about half the class and these were in disrepair. Learning corners for science, mathematics, language, social studies, civics, and at times, culture were observed in each classroom and included a variety of materials that were gathered locally.

In contrast, all four of the multigrade classrooms without an active learning program were arranged in single file rows with children one behind the other. Distinct rows were for each grade and in some cases genders. Only in one case did a teacher mention grouping children by ability. She stated that she had the slower learners in the desks closest to the front of the classroom to encourage them to participate. Although textbooks were available in all classes, the blackboard and notebooks were the only learning materials utilized in all comparison classes. In every classroom observed, children of all grades found in a classroom were observed to work on the same assignment.

## 2. Interaction in the Classroom

In NEU schools, a far greater percentage of teacher-student interaction during lessons took place in small groups. Table 2 shows the percentage of interactions between the teacher and students in the contexts of: teacher-directed small group contexts, where the teacher facilitates a small group activity; student-directed small group contexts, where students work collaboratively on an assignment, often under the direction of a classmate who serves as a monitor; large group contexts involving all of the students in the class; and seat work, where children worked individually at their desks on assignments. Twenty-five percent of all interactions were in small group contexts. In those programs with the longest periods of implementation and support (Limonares and Mariscal) more than 60% of all interactions took place in small group context. The lowest percentage of small group work in active learning programs occurred in the school that had the least implementation time and where teachers had the least familiarity with the self-instructional guides (Las Vegas). In this school, teachers led learning activities that focused on an entire grade. Thus, they created a large group learning activity, despite the organization of the grade into several small groups.

Small group work was almost non-existent in the four comparison classes. Only 3% of all interactions during lessons were observed to take place in this context. In these schools, the teacher working with all students in the classroom as a single group made up the majority (52%) of the interactions observed during lessons. Seatwork, where children worked alone on an assignment, was almost as frequent, making up 45% of the interaction contexts. In this context, teachers either sat at their desks and children came up and waited to be noticed to have their work corrected or the teacher walked around the classroom correcting work.

**Table 2: Percentage of Observed Student-Teacher Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percent – NEU	17	8	11	63
Percent – comparison schools	1	2	52	45

## 2. Structure of the Interactions: Involving Girls

In six of seven classrooms where intensive observations were made, girls initiated a higher ratio of interactions than boys. This was true even when observations were adjusted for the number of children of each gender present in the classroom. Girls initiated 19% of all interactions compared to 10% for boys. There was a more even distribution of children receiving interactions from the teacher in terms of gender. Girls received 29% of the interactions across the active learning programs, whereas boys received 25%. When corrected for the percentage of children of different genders in each classroom, girls had a higher ratio of interactions in four of the seven classrooms.

In the comparison schools, on the other hand, the percentage of all interactions initiated by girls was 8% compared to 12% for boys. The difference in interactions received from the teacher was even greater at 25% for male students and 20% for female students.

Despite the emphasis on group work in active learning schools, teacher-initiated interactions predominate in teacher-student interactions. As shown in Table 3, the teacher initiated almost three-fourths of all interactions. Only in the Mariscal, the school with the longest period of ongoing program implementation, did students and teachers initiate a similar percentage of interactions (52% for teacher and 48% for students). However, the percentage of student-initiated interactions is 11% higher than in comparison schools and girls account for this greater participation. In addition, high ratios of participation were found in all the schools serving indigenous populations, where girls are generally least likely to participate.

**Table 3: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percent – NEU	71	10	19
Percent – comparison group	80	12	8

#### **4. Quality of Interactions**

Building skill in verbal communication skill building was observed to be a key element of the active learning programs in Guatemala. Such skill building emphasized public communication in front of the class. In five of the seven classrooms that were observed intensively, verbal exercises that required students to interpret material, explain their experiences in carrying out exercises in the guides or to make decisions, in front of class were observed. Such behavior was never observed in the comparison classrooms. Rather students, when required to give an answer in front of the class, were expected to provide a single answer to a question posed by the teacher.

Verbal communication and initial reading and writing skills were stressed in first grade in all active learning program schools. First grades were not generally multigrade classrooms, as only one of the four schools with active learning programs had a multigrade first grade. The single grade structure was a result of the large number of children generally enrolled in that grade and the focus in first grade on preparing students to read. Teachers used significant expressions generated by the students as the starting place for word recognition and building sentences. The students constructed flash cards and these became part of the language corner. There was also an emphasis on pre-writing skills by using a sandbox for the formation of words. The first guide is introduced late in the first grade year. Students who have not mastered the basic ability to read and follow the instructions in the guides are not failed, but are considered “in process” until the skills are acquired to the teacher’s satisfaction.



All active learning classrooms had student work displayed, whereas no displays of student work were observed in the comparison schools. In several classes, students showed the observers their displayed work and explained the context in which the work was developed.

In all schools, student cited serving as monitors, working together with other girls in small groups and participating in student government as contributing to their success in school. When working with the guides in small groups, students were observed to direct fellow students in an activity, take turns, help one another, express opinions, and choose among viable options. Girls in the active learning programs when interviewed stated that they helped one another in small groups and also helped boys.

Neither of the comparison schools had a school government that was elected by student vote. Student participation was limited to being selected to classroom committees that were in charge of water, trash or bringing the government supplied snack to the classroom.

## **5. Parent Participation**

Parent committees existed in all schools. They did not, however, take the active role in school governance and student classroom activities as had been envisioned in the active learning programs. Parents stated that they cooked, cleaned, or painted when called upon by the school director to do so. Despite not actively participating in the classroom, however, parents of the children in active learning schools were able to discuss the importance of the student guides in allowing students, especially girls, to catch up, if they were forced to miss school. All parents of children in active learning programs also commented on the increased confidence shown by their offspring as a result of participation in the program. The parents in comparison schools fulfilled similar responsibilities in the schools but did not articulate any programmatic elements that contributed to their children's success in school.

## **B. Performance**

### **1. Enrollment**

One objective of multigrade school programs in rural areas of Guatemala is to allow students to complete primary school. Increase in enrollment is an indicator for meeting this objective. Table 4 shows enrollment patterns in NEU and EU schools over the last ten years. NEU girls have an increase in enrollment each year through 1999. Except for 1992 and 1993, NEU girls have greater increases in enrollment than girls in the comparison program. In 2000, there is a decrease in enrollment among all students in both types of schools. However, NEU girls still have positive enrollment gains from 1991, whereas girls in EU schools fall below the 1991 level. NEU boys have a similar pattern of greater gains than comparison boys in each year. They also maintain positive gains against the baseline year, while EU boys fall 10% below 1991 totals.

**Table 4: NEU and EU Enrollment by Sex and Year**

Year	Girls				Boys			
	NEU	%inc	EU	%inc	NEU	%inc	EU	%inc
1991	1430	100.0	5752	100.0	1871	100.0	7680	100.0
1992	1493	4.4	6302	9.6	2090	11.7	8403	9.4
1993	1621	13.4	6523	13.4	2141	14.4	8725	13.6
1994	1740	21.7	6426	11.7	2215	18.4	8474	10.3
1995	1777	24.3	6581	14.4	2309	23.4	8902	15.9
1996	1800	25.9	6855	19.2	2399	28.2	9063	18.0
1997	1822	27.4	7323	27.3	2421	29.4	9133	18.9
1998	1994	39.4	7953	38.3	2449	30.9	9671	25.9
1999	2107	47.3	8022	39.5	2455	31.2	9886	28.7
2000	1706	19.3	5687	-1.1	2026	8.3	6903	-10.1

Source: National School Records

Enrollment in the four sample schools had similar patterns of enrollment. From 1995 to 2002, enrollment for girls increased by 50% and that of boys by 45%. Enrollment in the two comparisons schools was even higher. It increased by 57% for girls and 66% for boys. This was a result of a 243% increase in one of the two schools that was on the outskirts of Coban, the regional capital that had had an influx of returning migrants after the end of the civil war.

## 2. Achievement

The test data were obtained from the national testing program (PRONERE). Test data were drawn from the same sample of NEU schools over a four-year period (1998-2001). Traditional multigrade schools included in the sample varied by year, but were selected randomly from the same regions. Table 5 compares the results on four tests: concepts, problem resolution, mathematics, and total reading for sixth graders. It can be seen that girls in the NEU program had greater improvement on all tests than girls in the traditional multigrade program. In each case, NEU girls also had higher average mean scores than the comparison group. In fact, in three of the four tests, NEU girls had the highest average score of any group. The only exception was concepts where the average mean score for boys was higher than that of the NEU girls. The difference was two-tenths of a percentage point for NEU boys and seven-tenths for EU boys.

**Table 5: Change in Sixth Grade Test Score by Program and Gender**

	Concepts				Problem Resolution				Mathematics				Reading			
	Girls		Boys		Girls		Boys		Girls		Boys		Girls		Boys	
	NEU	EU	NEU	EU	NEU	EU	NEU	EU	NEU	EU	NEU	EU	NEU	EU	NEU	EU
1998	41.3	41.4	39.1	44.3	42.9	44.1	40.5	47.8	52.2	54.5	52.2	58.1	41.3	44.1	35.5	43.7
2001	52.2	46.7	52.4	52.9	50.6	42.7	45.1	46.3	59.4	53.9	56.1	58.5	53.0	49.2	52.4	47.4
Change	+10.9	+5.3	+13.3	+8.6	+7.7	-1.4	+4.6	-1.5	+7.2	-0.6	+3.9	+0.4	+11.7	+5.1	+16.9	+3.7

Source: PRONERE

In terms of average gains, NEU boys, when compared to boys in traditional multigrade schools, had trends similar to that of their female classmates. In each case, NEU boys had higher average gains than boys in comparison schools. However, boys in traditional schools had higher scores on three of the tests (concepts, problem resolution, and mathematics) than did NEU boys. Boys and girls in the comparison group also improved in most areas. The exception is problem solving where both decreased slightly. Tests for third grade were also examined. However, no consistent patterns for either group were found.

### 3. Completion

Table 6 presents the percentage of children in NEU and EU schools that reach sixth grade in six years. As can be seen, both boys and girls in the active learning program have higher completion rates than children in the comparison schools in each cohort. Although completion rates for girls do not go up each year, the NEU girls have a gain in completion of 1.8% over the five cohorts compared to a gain of .7% among EU girls. NEU girls had a higher completion rate in the final cohort than NEU boys.

**Table 6: Percent of Students Making Normal Progress to 6th Grade Guatemala**

Cohort	Boys		Girls	
	NEU	EU	NEU	EU
1991-96	18.4	10.1	12.8	8.8
1992-97	16.8	9.5	13.9	8.1
1993-98	12.2	11.0	10.6	8.5
1994-99	12.6	11.5	11.2	10.2
1995-00	13.1	11.3	14.6	9.5

Source: National School Records

NEU boys in each cohort had consistently higher rates than boys in the comparison group. However, the completion rates for the NEU boys drop over time, whereas there is an increase of 1.2% in completion for EU boys. For all children, normal progress to sixth grade is very low. Less than 20% of the children who begin first grade in a given year reach sixth grade, five years later.

### 4. Cost-effectiveness

Cost data are only available at the project level for the NEU project in Guatemala. The cohort data on completion in the NEU project and among the *Escuela Unitaria* comparison schools were used to examine cost-effectiveness. Cost effectiveness was defined as the total cost to produce a sixth grade graduate in six years. During the operation period of the active learning component, the BEST Project was directed towards a total of 39,170 students in the Departments of Alta and Baja Verapaz, Jalapa and Jutiapa. The total project costs for these activities were Q. 8,186,742 for the 1992 through 1996 school years. This amount was divided by the total number of students in

the program to obtain a cost of Q. 209 per student per year. For each of the students in a NEU cohort, this cost was added to cost per student incurred by the Ministry of Education. This cost varied from year to year between 1992 and 2000, but in 1992 the MINEDUC cost was Q. 220, giving a total of Q. 429 for students beginning school in the first year of the NEU program. For the corresponding number of EU control schools, the cost per student was the Ministry expenditure.

There were five cohorts of students that entered school between 1991 and 1995 for which data on sixth grade entry are available. The calculation began with the 1991-96 cohort. As NEU had not yet begun, the boys and girls in the schools that would become program schools were assigned MINEDUC costs per student for that year. In 1992, the number of children in second grade was multiplied by the cost for the Ministry plus the project cost per student in NEU schools. Control children in second grade were assigned only the Ministry costs. The same procedure is followed for third grade in 1993, fourth in 1994, and so on. A cumulative cost for the cohort over the six years from 1991-1996 was then calculated. This figure was divided by the total number of NEU students in sixth grade in 1996, giving the cost to produce a sixth grader in six years. Calculations were made separately for boys and girls. This procedure was repeated for the EU control schools and Table 7 below shows that the cost to produce a female NEU 6<sup>th</sup> grader was Q. 398.72 less than in the control schools. This was the period of operation of the NEU program under BEST, when children received the benefit of the full implementation of the program.

The same calculations were made for the next four cohorts, but for the 1992-97 cohort, the project costs were excluded from the 6<sup>th</sup> grade in 1997 when the project activities had ended. Accordingly, the project costs were excluded from the 5<sup>th</sup> and 6<sup>th</sup> grade in the 1993-98 cohort, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> in the 1993-98, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> in the 1994-99, and just the 1<sup>st</sup> and 2<sup>nd</sup> graders were included in the project costs for the final 1995-00 cohort.

**Table 7: Cost Effectiveness by Cohort - Girls**

<b>Girls</b>	<b>Cost/Student</b>		
<b>All</b>	<b>NEU</b>	<b>EU</b>	<b>Difference</b>
1991-96	9,530.14	9,928.86	-398.72
1992-97	9,653.09	8,977.19	675.89
1993-98	12,404.02	10,484.06	1,919.96
1994-99	12,540.53	10,831.18	1,709.35
1995-00	16,497.64	18,721.85	-2,224.22

In the initial cohort, both girls and boys in the NEU schools had a lower per student cost to reach the 6<sup>th</sup> grade than the corresponding control schools. This is likely the result of somewhat higher completion rates coupled with a lesser cost per student to the largest segment of the cohort, first graders, who had not been part of the NEU project in 1991. In subsequent years, the per student costs for girls reaching sixth grade was higher in NEU schools than in EU schools, despite somewhat higher completion rates. As program costs were ameliorated and completion rates remained higher in NEU, the costs have decreased to less than those in traditional schools. Table 8 shows that the same pattern was found for boys, but that the differences were not as large.

**Table 8: Cost Effectiveness by Cohort - Boys**

<b>Boys</b>	<b>Cost/Stud</b>		
<b>All</b>	<b>NEU</b>	<b>EU</b>	<b>Difference</b>
1991-96	8,167.66	8,526.36	-358.70
1992-97	8,864.37	8,036.54	827.82
1993-98	11,184.88	9,690.60	1,494.28
1994-99	9,579.08	9,050.97	528.11
1995-00	15,395.84	17,065.34	-1,669.50

As the current study focused on Alta and Baja Verapaz, where students are of Mayan origin, the same analysis was done with project and control schools for this region alone. As shown in Tables 9 and 10, in this region the cost pattern is somewhat different with the cost for the NEU girls being lower than the EU schools for the first two years, and the amount spent per girl was Q. 766 in the first cohort and nearly double for the second cohort. For boys, the difference was very small for the first cohort, and for the 1992-97 cohort, it cost Q. 1,1417 more to produce a 6<sup>th</sup> grader in the project schools than in the control. For the 1993-98 and 1994-99 cohorts, it cost more to produce both 6<sup>th</sup> grade boys and girls than in the controls, but again the cost differences were the highest for the girls. Then, for the last cohort, it cost about Q. 5,000 less to produce a female 6<sup>th</sup> grader in the NEU schools and Q. 666 more to produce a male 6<sup>th</sup> grader.

**Table 9: Cost Effectiveness by Cohort – Indigenous Girls**

<b>Girls</b>	<b>Cost/Graduate</b>		
<b>BV-AV</b>	<b>NEU</b>	<b>EU</b>	<b>Difference</b>
1991-96	11,939.38	12,706.31	-766.93
1992-97	11,448.70	12,880.11	-1,431.41
1993-98	17,481.16	13,573.80	3,907.36
1994-99	15,558.31	12,898.24	2,660.07
1995-00	14,816.84	19,828.67	-5,011.82

**Table 10: Cost Effectiveness by Cohort – Indigenous Boys**

<b>Boys</b>	<b>Cost/Graduate</b>		
<b>BV-AV</b>	<b>NEU</b>	<b>EU</b>	<b>Difference</b>
1991-96	9,835.74	9,877.27	-41.53
1992-97	9,848.57	8,431.19	1,417.38
1993-98	13,920.43	11,318.87	2,601.56
1994-99	11,307.41	8,899.87	2,407.55
1995-00	14,791.10	14,124.87	666.23

The large differences between boys and girls in NEU and EU schools in Alta and Baja Verapaz can be accounted for by the increasingly higher completion rates for Mayan girls.

#### **IV. Discussion**

Qualitative research in active learning program classrooms showed that there are differences between NEU and EU schools, particularly in terms of classroom discourse and interaction patterns. In the active learning programs, a classroom environment was created that allowed students to engage in an assortment of participation contexts (e.g., small groups with teacher, small groups without teacher, small groups with an appointed or elected student leader, pairs, large groups, etc.). In contrast, the comparison or EU schools generally relied on two participation contexts, the large group with the teacher as the central authority figure and individual seatwork. NEU classrooms had deliberately decentralized and diversified discourse and interaction patterns to bring about greater verbal communication, small group cooperation, and student involvement instructional and extramural activities.

The greater decentralization of the classroom environment and emphasis on student participation has been particularly successful for girls. The teachers' acceptance of each learner's personal experiences and perspectives encouraged girls' participation. The use of small groups made girls more visible to the teacher than in traditional classrooms where students were arranged in rows, thereby facilitating interaction. The use of small groups also allowed girls to work together and support each other when doing assignments. The use of flexible promotion and modular instructional guides allowed girls to continue to study after missing school for household obligations, without the stigma of failing a grade. Student government allows girls to expand collaborative behavior and build on organizational responsibilities that they have in the household.

These positive aspects of the active learning programs led to greater increases in enrollment, achievement, and completion for girls in active learning programs than for their counterparts in multigrade schools without active learning programs. The multigrade active learning programs were effective for boys as well as girls. Boys in NEU schools had greater increases in access and sixth grade achievement, as well as consistently higher completion rates than boys in traditional multigrade schools. However, classroom participation is similar for NEU boys and boys in comparison classes.

The active learning programs in multigrade schools appear to be sustainable in Guatemala. The program has expanded from the 200 schools of the BEST project to 398 schools where the program is fully implemented. The program also began in an additional 1,908 schools, after training during the 2001 school year. These positive benefits are the result of the commitment of teachers and administrators who were in the original program and have continued supporting the active learning methodology, despite a lack of Ministry of Education interest for a number of years following the completion of the project. These individuals continued to use the methodology in the classroom, moved the national textbooks toward more active involvement of students and advocated for Ministry investment in active learning in multigrade schools. Recent in-service training and Ministry partnerships with NGOs have come about through such advocacy, combined with a change in government. The program also seems to be cost effective in terms of ameliorating development cost over time with greater internal efficiency than was found in more traditional multigrade schools.

Despite the success of the multigrade active learning programs in Guatemala, completion rates remain low. The extreme poverty in which isolated rural communities live, combined with the devastating effects of economic downturns or natural disasters heavily influence family decisions about keeping children in school. Such decisions are exacerbated by fluctuations in Ministry of Education support for programs with changes in administration.

## **Guatemala: School Case Studies**

### ACTIVE LEARNING PROGRAMS

Limonares – Plan International

Mariscal – BEST/Plan International

Sanimlaha – BEST

Las Vegas – FUNRURAL

### COMPARISON

Los Tronchos

Signalom



## **Limonares – Baja Verapaz, Guatemala**

As we arrive at the school, two girls come toward us and wait at the school gate. They introduce themselves as Nanci, the president of the student government and María, the Vice President, when they shake hands. They take us to the school principal, and then return to their classes. Nanci goes to one of three groups of desks that are facing each other in a circle on the cement terrace in front of several classrooms. María goes into the classroom that is labeled a combined second and third grade. The director explains that he is attending to the school himself that day as two of his teachers are at a training session and one is on sick leave. Thus, he is handling both the combined second and third grade class and the combined fourth, fifth and sixth grade that is his normal responsibility. He further notes that the upper grade children are having class on the covered patio or terrace because one classroom is being used to store building materials for the new classrooms being constructed on a playing field behind one of the facing sets of classrooms.

### **Background**

Las Limas was founded about 30 years previously. It is located between several farms and villages approximately 27 kilometers from the Salamá, the capital of Baja Verapaz. The school is easily accessible, as it is located along the side of the principal asphalt highway leading to Salamá from Guatemala City.

The catchment area of the school contains about 1,500 inhabitants. It extends for several kilometers. Almost all of the families served by the school work in agriculture. They cultivate corn and beans for subsistence and other crops such as tomatoes and chili peppers for consumption and sale. They also work as day laborers on the larger plantations in the area, and a few are employed in restaurants that have grown up at major crossroads in the area.

Until recently, the school has had one or two teachers providing services to six grades and between 75 and 100 students. The director stated that the school had had no special programs prior to 1998, when it began to implement the *Nueva Escuela Unitaria* program through Plan International. Because of its lack of innovative programs, the school was chosen as a comparison school for a longitudinal evaluation of the original *Nueva Escuela Unitaria* program begun in 1993. At that point in time the school had two teachers who were married. Because of difficulties with the community, these teachers were transferred in 1994 (de Baessa, et al, 1996). However, only one teacher who worked alone for several years replaced them. In 1996, a second teacher was assigned to the school and the configuration of one teacher for first and second grade and another for third through sixth grade was reestablished. In the next two years two more teachers arrived to work at Las Limas. Currently, there is one teacher for preprimary children, a teacher for first grade, a teacher for second and third grades and a teacher for the upper three grades.

The school has four large classrooms that face each other across a patch of dirt of about 10 meters in width. With each set of classrooms there is also a smaller room that is used as an office or for storage. There are three latrines to the rear of the school that face a

wooded area of about 50 meters. Behind one set of classrooms are a wooden kitchen and a small school garden. Behind the other are a playing field and the construction site for two new classrooms.

Since 1998, school staff has received teacher guides, student self-instructional materials and training from Plan International. This training has taken place several times a year for two to four days. Plan uses a training group whose members were part of the original NEU program. It also has a supervisor for the program that visits individual schools several times a year.

## Enrollment

Student enrollment reflects the changes in school staff described previously. There was a drop in enrollment during the period of staff change and when only one teacher served the school in 1994 and 1995. Enrollment increased as staff was added. The enrollment of girls increased slightly after the initiation of the active learning program in 1998 and has been greater than that of boys in three of the four years that the program has functioned.

**Table 1: School Population by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Girls	40	27	32	43	47	46	49	50	54	49
Boys	53	39	43	50	41	51	40	43	49	51
Total	93	66	75	93	88	97	89	93	103	100

## Completion

Given that the student population has been fairly stable over the years for which data are available, the variation in enrollment in upper grades was examined to determine continuance in school. Table 2 presents the percentage of the enrolled students of each gender in the upper three grades (fourth, fifth and sixth) for the ten-year period. If all children were making normal progress through primary school, one would expect about one half of the population of female students to be in the upper grades each year and the same would hold true for boys. As can be seen, until 1999, less than 20% of the population of either gender was in the upper grades. With the NEU program, the percentage of girls in the upper grades has more than doubled (from 15% to 35%). There is also a positive increase in the percentage of boys in the upper grades. It is, however, less dramatic.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Girls	na	na	8%	14%	15%	15%	29%	22%	28%	35%
Boys	na	na	13%	14%	17%	14%	15%	19%	20%	20%
Total			21%	28%	32%	29%	44%	41%	48%	55%

Data on the progress of individual children were only available for a cohort of children who were under study in 1993. This sample consisted of six first graders and six second graders, all of whom would have theoretically completed sixth grade prior to the implementation of the active learning program. Of the first grade sample of three girls and three boys, none had advanced beyond second grade by 1997 and all had left school by 1998. The second grade sample of three girls and three boys fared somewhat better two children (one boy and one girl) had left school by 1995 without advancing beyond second grade, whereas two boys and one girls completed sixth grade in 1997 without repetition. The final girls repeated second grade and then advanced normally, completing sixth grade in 1998.

### **Classroom Organization**

Children are organized into small groups by grade in all classes. Although the director stated that children were arranged by ability (*desarrollo*), students in the lower grades are in groups made up of either boys or girls. In fourth, fifth and sixth grade, students are organized into a single small group of mixed genders. However, there is a predominance of girls in each grade and they sit together.

All grades have the NEU self-instructional guides in sufficient numbers for the enrolled students. They also have the Ministry of Education textbooks, *Camino a la Excelencia*, that also use self-learning techniques. The exception is first grade where the students develop reading and writing skills using significant expressions generated from their own experience. Learning corners for science, mathematics, language, social studies and culture were observed in each classroom and included a variety of materials that were gathered locally. However, as the corners for the combined fourth, fifth and sixth grade were in the classroom being used for storage, students had to climb over construction materials to reach several of the corners. Either manipulatives such as beans, stones and corn for counting or textbooks were being used throughout the observations of each classroom and grade. Thus, children were always observed to have learning materials beyond their notebooks available to them.

### **Pedagogy and teacher student interaction**

As might be expected in a situation where children are organized into small groups, the majority of teacher-student interaction took place in that context. Table 3 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. Eighty-eight percent of teacher-student interactions occurred in small groups. Most of the interaction took place in small group contexts where students were working together following the guides on a collaborative effort. This is a result of the bulk of the observations being made with upper grade students. The teacher was more likely to lead small group activities in the lower grades where students had not yet fully mastered using the guides independently.

**Table 3: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	15	73	0	12

There were no observations of the teacher interacting with all students in the classroom as a single group. Rather, the teacher worked with individual groups, which in the upper grades represented an entire grade level. Seatwork, where children worked alone on an assignment, was infrequent. It occurred when the sixth graders, following the instructions in the guide, wrote summaries of the experiment that they had conducted.

The instructional contexts are very different from those observed over a three-year period from 1993 to 1995 in the same school. At that time Limonares served as a comparison school in a formative evaluation of the NEU program. At that time the predominate instructional strategy was that of the teacher providing lessons to each class in the form of written assignments on the blackboard to be copied into notebooks and the problems answered. The teacher circulated in the class to examine work or sat at a desk where children would bring work for grading. Small group work, especially that led by students was almost non-existent.

**Table 4: Percentage of Observed Student Teacher Interactions by Context (1993-1994)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	1	.5	18	80

Source: de Baessa et al, 1993 and 1994

Despite the emphasis on group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys were never observed to initiate an interaction with the teacher. Girls initiated 8% of teacher-student interactions. These interactions were related to questions about correctly following the directions in the self-instructional guides. Girls also received a higher percentage of teacher-initiated interactions than did boys. However, when corrected for the number of children of each gender in the classroom, this relative difference did not remain because of the greater number of girls in the classroom. When the correction for the number of children of each gender was made for student-initiated interactions, the relative frequency favoring girls remained, as boys did not initiate any interactions with the teacher.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	92	0	8

A high percentage of the teacher's interactions involved giving directions related to how students should carry out the activities described in the guides (58%) and asking questions to check on understanding of the subject matter (65%). Explanation or expansion of the information provided in the assignments was observed in 23% of the interactions. Positive reinforcement in the form of praise of work occurred in 8% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed.

9:05 am The teacher has given the second and third graders assignments related to counting using different counters such as stones, maize and beans. The children are working on the assignment in small groups. Boys are generally working independently whereas groups of girls work together and review each other's work. The fourth graders are returning from collecting "sets" (*conjuntos*) of similar materials from the wooded area behind the school. The teacher joins them and tells them to put the similar materials together, then draw pictures of each set. The students form their desks in a circle and begin to match materials. A circle of the different materials (leaves from the same trees, pieces of gravel, pods, twigs, ice cream sticks) is laid out and the children begin to draw each set in their notebooks. The children leave their desks to look at the different materials and several carry something to their desk to draw. The girl serving as group monitor, retrieves the items and reorganizes the sets of materials that have become separated. Children look at one another's work and offer suggestions or observe progress (what's this? You haven't done the *paleta*. I'm going to do the *piedracitas* next.)

The teacher has gone from the fourth grade to the group of fifth graders (all girls), who he tells to read the passage in the guide and then ask each other questions about it, thus reinforcing the instructions in the guide. The girls read individually for about ten minutes then the monitor for the group asks "Who has a question?" (*quien tiene una pregunta?*) The girl next to her responds that she does and asks the group.

The teacher meanwhile has moved to the sixth grade. He had earlier reiterated the assignment in the guide to find two rocks and crash them together and observe what happens. He asks Nanci, the president of the student government, what happened and she responds "the teacher told me to find two rocks and crash them together and when I did they made sparks" (*el profe me mandó a buscar piedras y cuando las choqué hicieron chispas*). He then tells Nanci to ask her classmates about their experience and "to write a summary as it says in the guide" Nanci asks several of her classmates who respond with the same information that she had given. The sixth graders then sit and begin to work on their assignment. 9:35 am.

This classroom observation illustrates the teacher's emphasis on using children's everyday experience in his lessons. The use of monitors allows him to handle more than one class at once while providing the children in each class with the opportunity to express themselves verbally in front of their peers.

### **Instructional Materials**

The school director identified the self-learning guides as the most important element of the program. The ability of the children to use the guides is, therefore, vital to the program. Thus, the focus in first grade is on preparing students to read. It is not a multigrade class. The teacher uses significant expressions generated by the students as the starting place for word recognition and building sentences. The students construct flash cards and these become part of the language corner. There is also an emphasis on pre-writing skills by using a sandbox for the writing of words in the flattened smooth sand. The first guide is introduced late in the first grade year. Students who have not mastered the basic ability to read and follow the instructions in the guides are not failed, but are considered "in process" until the skills are acquired to the teacher's satisfaction.

The guides allow students "to think, create and develop at their own speed." The director feels that these are the skills that will help them through life. As the guides permit students to move through the subject matter at their own speed, they also offer students who are forced to miss school during the year an opportunity to catch up. The girls interviewed also mentioned the importance of the guides in allowing them to work together collaboratively. As mentioned previously, children were observed using either manipulatives or elements from their surroundings in conjunction with the guides throughout the day's lessons.

### **Student Government**

The school student government is made up of eight students. It includes representatives from third, fourth, fifth and sixth grades. Girls in sixth grade, third grade and fifth grade hold the positions of president, vice president, and secretary, respectively. An additional girl is one of the four "speakers" (*vocal*). Boys fill the other three speaker positions as well as the position of treasurer. Each grade elects a slate of candidates that includes each of the five student government positions. Each individual on a slate then makes presentations on his/her platform to each grade and students vote for each position. Elections are held once a year. The school director stated that participation in election process and the roles of the student government members ranked close to the self-instructional guides in importance of preparing children for future life. This was a result not only of the election process but in terms of responsibility for planning projects, representing the school at functions in the departmental capital and at times in Guatemala City, and assisting in maintaining order and creating a sense of responsibility among their classmates. He stated that the girls took the lead in student government (*la niñas sobresalen aquí*), especially in cultural presentations that had been the principal projects of the school to date.

The girls who were interviewed made comments similar to that of the school director. They felt that going through the election process and then planning activities and representing the school through such activities helped them to not be afraid to participate or to state their ideas. They stated that their parents supported their participation as they saw the experience of serving in school government as a way to enhance opportunities for further study after primary school. Parents echoed the statements of their daughters of the importance of participation in school government as a means to broaden experience, become more confident, and develop greater enthusiasm for school. The experience of Nanci illustrates the role of student government in the NEU active learning program.

Nanci is a sixth grade student at Las Limonares school of Baja Verapaz. She is president of the student government at the school. Nanci's mother is a single parent who works from 9 am until 9 pm as a waitress in a truck stop on the road between Guatemala City and Salamá, the capital of Baja Verapaz. The mother is widowed and has never attended school. Nanci and her sister Karin stay at a small market next to the school from the time school ends at 1pm until the mother can pick them up in the evening.

Nanci was not promoted after her initial year in first grade. However, with the initiation of the active learning program at the school she has made normal progress through primary school. She attributes her success to the NEU program, especially the student government and the self-instructional guides.

*I was afraid, but with the guides I worked with other girls and participated more. I ran for student government, first as a speaker (vocal) then as Vice President. We had to go to the different classes and say what we would do for the school. I learned how to speak in front of other children. Now I set an example. I receive visitors, help maintain order and organize school projects. My mother is happy because I'm not afraid and have a chance to continue my studies.*

Nanci and her sister, who is in fourth grade and has not repeated a year, have taken advantage of their wait for their mother by organizing reading classes for adult women who live near the school. They are also teaching their mother to read on the weekends. Despite her long hours, their mother is currently serving as president of the parent organization for the school.

## **Parent Participation**

Discussions with the school director and the president of the parents association showed that the participation of parents is mainly in response to school infrastructure needs. Parents are called together to clean and paint, through periodic meetings. The president stated that she often had to visit parents individually to ensure participation. Although she, herself, stated that she visited the school to check on her children's progress, the director said that in general parents expected the school to teach, and were not involved in the academic progress of their offspring. He felt that parents had traditional views of

education, as a result of their own limited schooling experience. However, he had received no complaints from parents about the change to an active-learning methodology.

### **Difficulties Encountered**

The school director mentioned the unfamiliarity of the departmental education officials with the program as a difficulty. He felt that paperwork, supervision, and tests did not reflect the focus on discovery learning and multiple acceptable answers to dealing with real-life situations that were cornerstones of the NEU program.



## **Mariscal – Baja Verapaz, Guatemala**

*The teacher of the combined 2<sup>nd</sup> and 4<sup>th</sup> grade class invites us to enter the classroom and talk to the students about what they are doing. A group of four children are drawing maps. We ask what they are doing and a girl responds “We are showing where we live.” The students take us to a wall filled with examples of student work and point to maps of Guatemala drawn by previous generations of children to explain what they are doing. We ask the students to show us where they live on the maps and after a short hesitation, several point out Salamá, the departmental capital. The students then ask where we live. When one of us replies “Guatemala City,” they take him to a globe and ask him to show where it is located.*

### **Background**

Mariscal opened in 1986. It is located in a village approximately 6 kms. from the municipal center and departmental capital of Salamá. The village is made up of about 250 inhabitants who represent 45 families. The families are subsistence farmers who also grow seasonal crops for sale. The catchment area of the school is largely limited to the village. School personnel felt that almost all families send their school-age children to school and almost no children are out of school. The school is accessible by a dirt road about one and a half kilometers from the asphalt highway leading to Salamá.

The school is located in the center of the community. The first classes were held in a shed with six grades and up to 60 children in a single classroom. In 1991 the present structure of two classrooms and a small director’s office was built with funding from the Dutch government. In 1992, the school became one of the original pilot schools in the Nueva Escuela Unitaria program. At that time, the school had two teachers: a man who taught fourth through sixth grade and a woman who taught first through third grade. The man, who serves as school director, was the original teacher at the school. In 1998, an additional teacher was added and teaching assignments were divided into a combined first and third grade classroom, a combined second and fourth grade classroom and a fifth and sixth grade classroom.

The two teachers who were at the school in 1992 received all of the series of four week-long training workshops. The school continued to use the methodology after the termination of the BEST project in 1997. In 1998 the original teachers trained the newly arrived teacher in the methodology. The following year, Mariscal became a Plan International NEU school and participated in the activities organized by that organization.

### **Enrollment**

Student enrollment has increased by about 50% over the ten years for which data were available. Boys have generally represented a slightly larger percentage of the student body than girls. As the population of the catchment area for the school has remained stable, the increase suggests that the active learning methodology may have had some effect in encouraging parents to enroll their children in primary school.

**Table 1: School Population by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Girls	20	18	27	21	23	23	28	31	27	28
Boys	20	20	35	32	28	29	26	28	30	32
Total	40	38	62	53	51	52	54	59	57	60

**Completion**

Several indicators of continuance in school were used. Given the normally low rates of completion in Guatemalan rural schools in general, the variation in enrollment in upper grades was examined to determine changes in students who made progress in primary school but may not have completed school. Table 2 presents the percentage of the enrolled students of each gender in the upper three grades of fourth, fifth and sixth for the ten-year period. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, only boys in 1995 and 1996 had more than 50% of their number in upper grades. These were the years when the NEU program under the BEST project was fully implemented. There was a drop off for both boys and girls in subsequent years. With the new support provided to the school under the Plan International NEU program, the percentage of children in upper grades began to rise. Further, the percentage of girls in upper grades surpassed that of boys.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Girls	na	na	3%	38%	30%	30%	32%	35%	41%	39%
Boys	na	na	52%	59%	46%	34%	38%	36%	40%	34%
Total			45%	49%	39%	33%	35%	36%	40%	37%

Sixth grade completion rates were calculated for three cohorts of children. Fifth grade completion was also calculated to provide another year of trend data. As can be seen from Table 3, there has been a general increase in the percentage of children making normal progress through primary school at Mariscal. The percentage of girls completing sixth grade has risen from 30% to 43%. Fifth grade completion has risen from 30% to 50%. Given that in each cohort all fifth graders who were promoted have gone on to complete school the following year, it is likely that 50% of the 1998 cohort will complete school in 2003. Boys rise from 0% to 43% completion over the three sixth grade cohorts. There is, however, a drop in fifth grade completion in the final cohort.

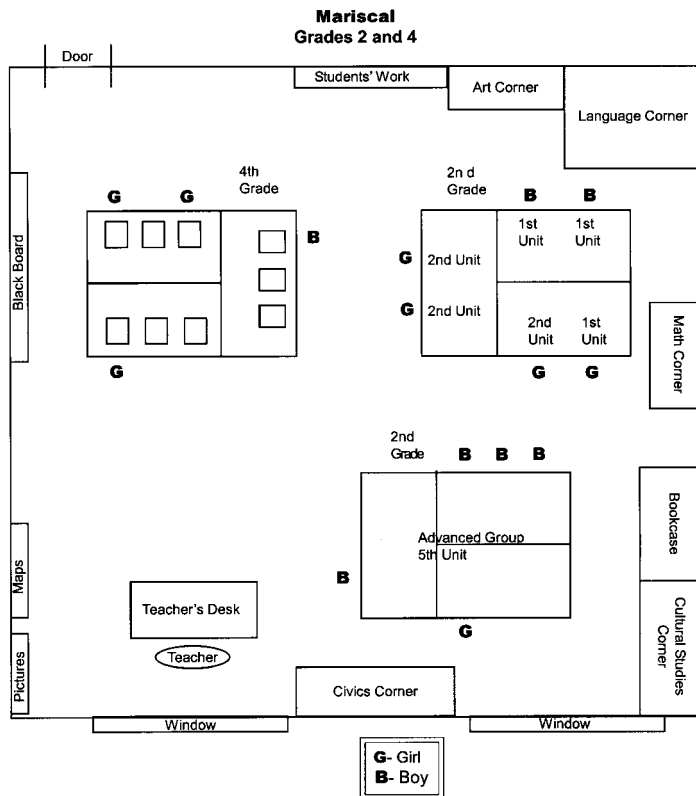
**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

Years/Gender	Girls		Boys	
	5 <sup>th</sup> grade	6 <sup>th</sup> grade	5 <sup>th</sup> grade	6 <sup>th</sup> grade
1995-2000	30%	30%	0%	0%
1996-2001	25%	25%	37%	37%
1997-2002	43%	43%	43%	43%
1998-2003	50%	--	30%	--

Data on the progress of individual children were only available for a cohort of children who were under study in 1993. This sample consisted of six first-graders and six second-graders. Of the first grade sample of three girls and three boys, two girls and three boys had completed primary school. The final girl had left the area and teachers did not know if she finished school. The second grade sample of three girls and three boys all completed primary school. Two of the girls and one of the boys had gone on to secondary school.

**Classroom Organization**

Children are organized into small groups by grade in all classes. In the upper grades, students are divided by grade but are free to group themselves as they desire. In the lower grades, students are grouped by their progress with the guides, and all children in a group work with the same guide. Thus, there may be two or more groups within a grade level. Groups at all grade levels were of mixed genders. With groups, however, children sit with other students of the same gender when possible.



The diagram to the left shows the arrangement of the 2<sup>nd</sup> and 4<sup>th</sup> grade classroom at Mariscal. The 2<sup>nd</sup> grade is arranged in two groups: one working with the fifth unit of the guides and the other with the second unit. Fourth graders make up the third group found in the classroom. Learning corners with materials gathered by the children, as well as posters and other manipulatives are located around the room on shelves that are low

enough that they can be reached easily by children. Children's work is displayed

prominently on a large section of the wall. The work is attached on top of work from previous classes.

### **Instructional Materials**

The principle instructional materials in all grades were the original NEU self-instructional guides. Although the guides were well preserved after nearly 10 years of use, they are few in number. Thus, for some units, two children shared a guide to carry out assignments. Learning corners for science, mathematics, communication, social studies, culture and civics were observed in each classroom and included a variety of materials that were gathered locally. The self-instructional guides were used throughout the observations of each classroom and grade.

### **Pedagogy and teacher student interaction**

Only two learning contexts were observed during observations of students and teachers. The majority of teacher-student interaction took place in teacher-directed small groups. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. Sixty-seven percent of teacher-student interactions occurred in small groups. Most of the interaction took place in small group contexts where the teacher worked with students who were doing a task described in the self-instructional guides. Students worked collaboratively under the teacher’s supervision. It is interesting to note that despite the teachers stressing the use of monitors to direct small group activity, no student directed small groups were observed during the two days of observation. This is a result of many of the students in upper grades being away from the school harvesting tomatoes. The small size of the classes allowed teachers to circulate to all groups easily.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	67	0	0	30

There were no observations of the teachers interacting with all students in the classroom as a single large group. Rather, the teachers worked with individual groups. Seatwork, where children worked alone on an assignment, was the context for about one-third of the interactions.

The instructional contexts are similar to those observed over a three-year period from 1993 to 1995 in the same school. At that time Mariscal was part of the sample of NEU schools studied in a formative evaluation of the NEU program implementation. As shown in Table 4, small group work was the predominate learning context in the classrooms of Mariscal. However, there was a greater use of student-directed small

group work than observed in our study. There were also some instances of the teacher providing lessons to an entire class in a large group context.

**Table 5: Percentage of Observed Student Teacher Interactions by Context (1993-1994)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	31	21	19	30

Source: de Baessa et al, 1993 and 1994

The emphasis on small group work contributed to students actively engaging the teacher. Teacher-initiated interactions and student interactions initiated with the teacher occurred with almost equal frequency. Girls initiated a higher percentage of the interactions with the teacher than boys. Almost all of the student-initiated interactions were related to questions about correctly following the directions in the self-instructional guides. When the correction for the number of children of each gender was made for student-initiated interactions, the relative frequency in favor of girls remained. Boys received a higher percentage of teacher-initiated interactions than did girls (35% versus 21%). Again, as the number of children of each gender was similar, when corrected for the number of children of each gender in the classroom, this relative difference did not change.

**Table 6: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	51	19	30

As mentioned, a high percentage of the interactions between teachers and students involved asking questions about the work described in the guides (63%). In the case of students these questions were to obtain clarification, whereas teachers asked questions to check on understanding of the subject matter. As might be expected, given the high percentage of questions, explanation or expansion of the information provided in the assignments was also relatively high. This was observed in 32% of the interactions. Both ordering a student or group of students to carry out an action were relatively rare, occurring in 8% of the interactions. Dictation occurred in 2% of the interactions and positive reinforcement in the form of praise of work occurred in 4% of the interactions. Negative reinforcement, in terms of punishment or harsh correction, was not observed.

### **Student Government**

The school student government is made up of eight students. The president is a boy whereas girls serve as vice president, secretary and treasurer. There are two “speakers” (vocal), both of who are boys. It includes representatives from third, fourth, fifth and sixth grades. Girls in sixth grade, third grade and fifth grade hold the positions of president, vice president, and secretary, respectively. An additional girl is one of the four

“speakers” (*vocal*). Boys fill the other three speaker positions as well as the position of treasurer. Each grade elects a slate of candidates that includes each of the five student government positions. Each individual on a slate then makes presentations on his/her platform to each grade and students vote for each position. Elections are held once a year. The school director stated that participation in the election process and the roles of the student government members ranked close to the self-instructional guides in importance of preparing children for future life. This was a result not only of the election process but in terms of responsibility for planning projects, representing the school at functions in the departmental capital and at times in Guatemala City, and assisting in maintaining order and creating a sense of responsibility among their classmates. He stated that the girls took the lead in student government (*la niñas sobresalen aquí*), especially in cultural presentations that had been the principal projects of the school to date.

The girls who were interviewed made comments similar to that of the school director. They felt that going through the election process and then planning activities and representing the school through such activities helped them to not be afraid to participate or to state their ideas. They stated that their parents supported their participation as they saw the experience of serving in school government as a way to enhance opportunities for further study after primary school. Parents echoed the statements of their daughters of the importance of participation in school government as a means to broaden experience, become more confident, and develop greater enthusiasm for school.

### **Parent Participation**

Interviews conducted with six parents showed that they are highly favorable toward the active learning program. The most frequent comments about the program was that it provided the children with an education that was very different from that which their parents had experienced. Children were described as less timid and more active and participatory even during their first year in school. Working with guides was seen as much better than simply copying from the blackboard into a notebook, as had been the experience of the parents. All of the parents were pleased that children were not held back, as had been their experience in school. They recognized that the guides allowed children to continue on in school without failing a grade. The comments of María, a mother of five children who has lived in the community for 30 years, illustrates the feelings of the parents.

I have seven children. Five are big now and they all studied in this school. My girls are in sixth grade and second grade. The older is 13 and the younger is eight. They haven't repeated any grade. They are more active and more willing to help me at home. The kids can develop on their own with the guides and they participate in the school activities so they aren't afraid in groups. It is different than when we went to school. This program extends their minds. It is not just copying.

All of my kids completed sixth grade. One girl has a university degree and one finished high school and works in the police. The oldest hasn't finished high

school but she is still studying at night. The boys didn't study. After sixth grade, they went into agriculture.

None of the parents interviewed were currently on the board of directors for the school, but several mentioned that they had served on the board previously. The board is made up of the school director, one of the teachers and two parents. However, as they all live within a 20 minute walk of the school, parents said that they helped out regularly at the school. The duties mentioned were cleaning, painting and food preparation.

### **Difficulties Encountered**

School personnel did not mention any difficulties in carrying forth the program. Parents only mentioned the lack of space in the school.

## **Fighting for Survival: The Lasting Effects of *Nueva Escuela Unitaria***

### **Sanimlaha – Cobán Alta Verapaz**

The school director takes us into his small office. It is full of *Nueva Escuela Unitaria* materials. There is a complete set of student guides for each grade, pennants and other motivational materials used during the early years of program implementation, books that make up the school library, and materials for the “culture” learning corner. All materials are in excellent shape. The director explains:

*“We have been careful to conserve the NEU methodology. We keep one set of the guides here so that we can make photocopies for pages that are unreadable. I hope the Ministry gives us new guides as we can’t copy enough for all the students.” All aspects of the program (guides, learning corners, the library, student government, the use of small groups and flexible promotion) are interdependent, but it is the guides that make the elements work. It is the only methodology that works here, as children, especially girls have to help out at home and the methodology allows for different rates of learning and students can catch up.”*

### **Background**

Sanimlaha was started as a municipal school in the 1988-89 school year. It had one teacher who attended the first three grades of primary school. In 1990, it obtained another teacher on a temporary basis. The school was one of the original NEU schools that began operation in 1992. The teachers in the school participated in training sessions and helped with the creation of the self-learning guides. They also implemented the student government component of the NEU program by organizing student elections in that year. The following year the full NEU program with self-instructional student guides in a mimeographed format, learning centers, flexible promotion and teachers circles where colleagues from different schools met to discuss school issues was implemented. In 1995, the school began to offer classes for students in fourth, fifth and sixth grade and two additional classrooms were built.

The temporary teacher remained with the school through 1996, when she was replaced by a teacher with a permanent posting. The teacher who had been the original teacher in the school left the following year. She was replaced by the current director of the school. This individual was part of the expansion program of NEU in another district. He received training in the methodology in 1995-1996 from a fellow teacher in a near-by school who had been part of the original 100 NEU pilot schools. An additional permanent teacher who works with preschool children was also added in that year. In 2001, the school obtained the services of a temporary teacher. During that year all four of the teachers in the school underwent the five-month Ministry of Education program to train multigrade teachers. The director was subsequently able to retain the temporary teacher in order to take advantage of her training in implementing the NEU program.



In 2002, the school had approximately 110 students enrolled in the six primary school grades. There were also an additional 31 children in the preschool program. The director taught 36 children in first grade. The temporary teacher taught 38 children in second grade and the remaining teacher taught the 36 children studying in the fourth, fifth and sixth grades. Although only one class had students of different grades, all of the teachers used the elements of the NEU methodology. They used the original self-instructional guides developed by the BEST project. After almost 10 years of use, these texts were in very poor condition with tattered and missing pages. The director stated that he kept a clean set of the guides in his office and made photocopies of pages or sections of the guides as needed. He was hopeful that the Ministry would replace the original guides. The school also had sets of the Ministry of Education texts *Camino a la Excelencia*, which were based on the NEU self-instructional guides, but contained a greater degree of traditional content.

### **The Community**

The community of Sanimlhaha is 20 kilometers from the departmental capital of Cobán. It is reached by a dirt road that is only passable in a four-wheel drive vehicle during rainy season. The community consists of an estimated 100-125 families. Almost all are Mayans whose first language is K'eqchí. Both men and women work in agriculture. Men generally have subsistence plots and supplement their incomes by obtaining jobs as day workers during harvest seasons. Women market agricultural products and other foodstuffs in the municipal center. Older female children are expected to take care of younger siblings when mothers work. Teachers also felt that they were constantly dealing with a cultural bias against sending girls to school and that community members were inclined to remove girls from school when they reached puberty and were thus of an appropriate age for marriage.

The catchment area for the school was about three kilometers, which meant that the children who lived farthest from the school had to walk about a half an hour to attend classes. The director stated that there were about 200 children of school age in the community, of which only about half were enrolled in the school.

Members of the community support the school by providing unskilled manual labor to maintain the school infrastructure. Poverty, exacerbated by an ongoing decline in coffee prices in recent years, has reduced the need for day labor; therefore community members provide little monetary support.

### **Enrollment**

Enrollment has increased dramatically during the life of the NEU program in Sanimlhahá. School enrollment data show that enrollment has more than doubled since 1995. There has also been an increase in the relative enrollment of girls. As can be seen in Table 1, the school enrollment has grown from 25 in 1995 to 94 in 2001. The percentage of girls increased from 24% of the total enrolment to 34%. There has also been a yearly increase in the number of girls enrolled in school until 2001, when there was a slight drop in female enrollment. Boys had a similar trend in enrollment, however, the relative increase has been somewhat smaller.

**Table 1: School Population by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	% increase
Girls	11	12	13	20	19	23	27	36	32	290
Boys	34	25	32	39	36	43	47	57	62	182
Total	45	37	45	59	55	66	74	93	94	208

**Completion**

In order to examine the effect of the NEU program on keeping girls in school, the enrollment of girls in upper grades was calculated. As can be seen in Table 2, there has been a general decline in the percentage of both boys and girls enrolled in the upper grades. The total decline has been more severe for boys than for girls. This difference, however, is a result of the relatively high percentage of boys in the upper grades in the first year for which data were available. It is also important to note that despite the increases in enrollment, very few children reached the upper grades. At Sanimlhahá there were never more than fourteen children in total enrolled in the three upper grades.

The decline in completion appears to be a result of the dire economic situation in the country beginning in late 1998 as a result of the damage caused Hurricane Mitch. It was exacerbated by an ongoing drop in coffee prices and by the decreased foreign investment in the country with the election of a populist government in 2000.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	% change
Girls	na	na	13%	na	26%	17%	7%	14%	6%	-7%
Boys	na	na	41%	na	25%	23%	23%	12%	8%	-33%
Total			54%		51%	40%	30%	26%	14%	-40%

Completion rates of individual children were examined for a cohort of children who were under study from 1993 to 1995, as part of a formative evaluation of the NEU program. This sample consisted of six first graders and six second graders. Of the first grade sample of two girls and four boys, neither of the girls advanced beyond third grade and neither was enrolled in 1996. Two of the boys completed sixth grade in 1999, a year later than normal progress would dictate. The remaining two boys also left school after completing third grade in 1995. The second grade sample contained one girl and five boys. The girl made normal progress through school and finished sixth grade in 1997. One of the boys left school prior to 1995. Three made normal progress and completed sixth grade in 1997. The fifth boy completed sixth grade the following year. Thus, 33%, or one of the three girls graduated, and six of nine or 66% of the sample boys completed school.

## **Classroom Organization**

Children are organized into small groups in all classes. Two or three tables are pushed together so that children can sit facing one another. There is no assigned seating and children are allowed to sit in whatever group they chose within a grade. Within a small group, however, children tend to separate by gender within the same small group.

## **Instructional Materials**

As mentioned, all grades have some of the original NEU self-instructional guides. However, they are in poor shape and are not available in sufficient number for all students. Teachers complain that the lack of guides make meaningful instruction difficult. In second grade, for example, the guides for all six units of the curriculum were present in the classroom. Only 27 books in total, with an average of about four books per unit were available in a class with an enrollment of 38 children. The school also has the Ministry of Education textbooks, *Camino a la Excelencia*, that use self-learning techniques. These are used for subjects where no guides are available, but teachers say they are not as successful as the guides, as they present too much content and are not easy for the children to follow. Learning corners for natural science, mathematics, and communication were observed in each classroom. They contained few materials and were not observed in use during the research. There were no examples of children's work on the walls.

The exception was preschool. It had learning corners with "significant expressions" generated from the children's own vocabulary that were used to teach initial reading and writing skills. The classroom also had a sand box where children practiced writing and had examples of students' drawings on the walls.

## **Pedagogy and teacher student interaction.**

Although children are organized into small groups throughout the school, no interactions between the teacher and students were observed to take place in a context where children worked within the group. Rather, teachers either write assignments on the blackboard that children copy into their notebooks, or use the Ministry of Education texts. With these texts, teachers present an assignment to the entire group of students who then work individually. Table 3 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, no small group work was observed. Most of the interaction took place in the context of seat work, where students worked individually on assignments after the entire class had received directions from the teacher.

**Table 3: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	33	67

This interaction pattern is very different than that observed when the NEU program began in the school. At that time all of the teachers had been trained as part of the pilot program and participated in the development of the learning guides. Table 4 shows that in observations conducted over a two-year period, more than 50% of the interactions occurred in small group contexts. It must be remembered, however, that at that time the school only offered instruction through third grade and students of different grades were in a single classroom. The combination of less training and direct involvement with the development of the curriculum, the smaller number of students, grouped by grade within one classroom (as opposed to graded and multigrade classes), and the lack of instructional guides that support group work, account for these differences.

**Table 4: Percentage of Observed Student Teacher Interactions by Context (1993-1994)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	26	25	2.5	48

Source: de Baessa et al, 1993 and 1994

As might be expected given the amount of large group work, teacher-initiated interactions predominate in teacher-student interactions. As shown in Table 5, the teacher initiated 79% of the interactions. Despite the greater number of boys in all classes, girls initiated a higher percentage of interactions with the teachers. This is not surprising, as teachers stated that girls enjoyed the methodology as it allowed them to organize in groups and show what they had learned. One teacher even referred to girls as hyperactive in the classroom when working with the guides. A high percentage of the interactions (61%) involved teachers providing directions to the group about carrying out an assignment. The interactions initiated by both boys and girls were questions about the assignment or requests for a teacher to examine their work. Boys received a slightly higher percentage of teacher-initiated interactions than did girls (28% versus 27%). However, when corrected for the number of children of each gender in the classroom, girls had a higher ratio of interactions because there were fewer of them in the classrooms.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percentage of interactions	79	6	15

A high percentage of the teacher's interactions involved giving directions related to how students should carry out an assignment (61%). Dictation was involved in 13% of the interactions. Teachers' explanation or expansion of the information provided in the assignments was relatively low, appearing in 10% of the interactions. Positive reinforcement in the form of praise of work occurred in 4% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was observed in a similar percentage of interactions.

11:15 am The second grade teacher is calling students to the front of the room and asking them to think of something for another student to do, such as sing, or dance or read a story. She points out the child who will perform the action invented by the student at the front of the class. She generally alternates boy and girls so that children of different genders interact in public. The child who performs the action becomes the next to go to the front of the class and call on a classmate. This exercise goes on for about 10 minutes and involves about eight different students. The teacher then has the students in charge of the guides pass out the books with a unit dealing with the family. There are eight guides among the 27 children present. The teacher gives the students the assignment of reading the assignment and drawing the family represented in the guide in their copybooks. She circulates among the tables, picking up copybooks to examine children's work. Other children approach to ask the teacher about what they have read in the guides. Although boys outnumber girls by 17 to 9, girls initiate three-fourths of the observed interactions with the teacher.

The first grade teacher also has the preprimary students in her classroom, as their teacher is in training. The teacher explains a lesson to the first graders. They are to copy a lesson on health from *Caminos de Excelencia* into their notebooks. The lesson requires reading a passage and filling in missing words in a series of statements about the passage. She then directs her attention to the preschool children and writes 10 words on the board. She reads each word and has the students repeat them after her. She then walks among the children dictating a word to a child and listening to the student repeat it. Returning to the front of the class, she tells the students to copy the words into their notebooks. As the teacher sits in the front of the class, she calls individual children from both classes forward to show her their work. 11:45 am.

This classroom observation illustrates that teaching in Sanimlhahá is rather traditional, despite both of these teachers' emphasis on the importance of group work and using the self-instructional guides. The teacher is the center of the lesson in each case. She tells the students what they will do and expects them to work individually on the assignment

that she provides. The exception is the emphasis on formulation and verbalization of an action to be performed by a classmate and the performance of the action in front of the class observed in second grade.

It should be remembered that none of the teachers at this school had the benefit of the full training in the multigrade methodology, but all participated in the Ministry's training program that provided training in the program through university extension classes. However, this was one day a week for approximately 15 weeks in a lecture format, rather than the series of three-day workshops that focused on small group work in developing the instructional materials and procedures, that were prescribed by the methodology.

## **Student Government**

The school student government is made up of six students. All of the students are in the combined third through sixth grade class. The president and vice president are boys while the secretary, treasurer and one speaker are girls. Teachers select children from the combined 3<sup>rd</sup> through 6<sup>th</sup> grade class as candidates for each position and children from all grades vote for the candidate of their choice. Elections are held once a year. The school government representatives meet every Tuesday to discuss projects that students can carry out in the school. All of the classes have commissions that are responsible for cleaning up the classroom after class and each grade elects a slate of candidates that includes each of the five student government positions. Commission members are also nominated by the teacher and then elected by their classmates. Teachers and the school director see participation in the commissions and school government as especially important for girls as such participation provides practice in appearing in front of other children and makes girls less timid.

Members of the student government are not present during the two days of fieldwork as the teacher for the combined fifth and sixth grade class is sick. We ask the school director if there are members of the commissions for the classes present with whom we can talk. He calls to two girls, Rosandra and Alicia, in K'eqchí. They come forward and we explain in Spanish that we would like to talk to them about what they do on the commission. The girls, who are in first and second grade, respectively, agree and they are interviewed separately. Despite limited verbal ability in Spanish and being alone with strangers unlike themselves for the first time, the girls respond to our questions readily. They say that they were picked by the teacher to run for election to the commission responsible for bringing potable water and the nutritional snack to the classroom each day. Their classmates then voted them into the position in their respective classes. They enjoy the job and feel that it has made them less timid.

## **Parent Participation**

The parent committee is active in the school. Their efforts focus on school improvement. Such improvement includes preparing a daily snack for the students, painting school buildings and classrooms, and soliciting funds for school maintenance from the local government. Although the director felt that many parents in the community didn't

understand the importance of primary schooling, especially for their female offspring, the members of the parent committee seemed to support education for all their children. Their perspective was articulated by the secretary for the group, a man who had only a second grade education.

*It is very important that girls as well as boys complete school. Reading and writing help to get a job and also carry out tasks to help the family like go to the doctor for medicine. Here kids have to work with their parents, so they miss school. The program at this school lets them catch up and not lose the year. They work in groups with the guides and following the guides they can go at their own speed and catch up.*

### **Difficulties Encountered**

The major difficulties mentioned by the school director were the staff's lack of familiarity with the method. He had tried to overcome this by showing them what to do, but didn't consider his efforts the same as formal training. The in-service training provided by the Ministry in 2001 also helped to overcome the staff's unfamiliarity with the program. The lack of student guides was an additional problem. Finally, he felt that many parents in the community did not feel it was necessary to send girls to school. This accounted for the high numbers of out-of-school children of primary school age in the area.

## Las Vegas – San Marcos, Guatemala

We enter the combined second and fourth grade class. The teacher has been called away for training. However, the students are attending class. Each side of the blackboard has a Spanish and Mathematics assignment for the children to complete. They are carrying out the assignments under the supervision of two girls and a boy. These students are the president of school government, one of the speakers, and the secretary, respectively. The second and fourth graders work quietly on their assignments, occasionally calling to one of the student government officials to ask a question about the assignment. The school government students spend about five minutes at a time in the class then go back to their own classrooms. They return to check on the teacherless class at half hour intervals.

### Background

Las Vegas was founded in 1968. It has been a multigrade school since its inception, serving children from first through sixth grades in three classrooms. It is located in the hills about 20 kilometers from the urban center of Coatepecque. The catchment area of the school contains about 100 families. Most of the families live in the area immediately surrounding the school, but some children come from several kilometers away. All of the families served by the school work in agriculture. Men work as day laborers in the large sugar cane plantations near the coast. They are picked up before sunrise each day and taken to work. The families are poor with the men making about \$2.00 a day for their labor. Small plots at the homes are used to cultivate subsistence crops. School staff estimated that about 10% of the school age population was not enrolled in the school.

The current principal has been at the school for 15 years. She stated that she was preparing to retire when the *Escuela Rural Activa* methodology was introduced in 2000. She says that she has been rejuvenated by the methodology and the interest that children and the parents show in the results. Thus, she now has no plans to end her career.

The school has three large classrooms that face a playground area that includes a basketball court. There is also a smaller room attached to the classrooms that serves as an office and storage room. There are three latrines at the end of the classrooms away from the office. The school has both electricity and running water.

School staff has received several training sessions where the different elements of the program were covered as separate units. The elements covered included: the student government, use of the self-instructional guides, learning corners, pre-reading and writing activities for first grade, use of the library, flexible promotion, developing communicative abilities and community participation. This training has taken place several times over the last two years in two-day sessions. The revised student guides were received at the start of the 2002 school year.



## Enrollment

Student enrollment at Las Vegas began to increase in 2000, the first year of the *Escuela Rural Activa* (ERA) program. During the last two years, overall enrollment has increased by more than 50% and total enrollment increase from the 1996 baseline by 58%.

Increases in enrollment have been similar for both boys and girls. However, in its short operating period, the program seems to have been more successful in attracting boys, as enrollment of males has almost doubled from 1999 to 2002. Tables 1 show the percent increase in enrollments from 1996 to 2000.

**Table 1: School Population by Gender and Year**

Students	1995	1996	1997	1998	1999	2000	2001	2002	% Change
Girls	Na	42	42	41	48	49	50	66	+57%
Boys	Na	52	55	44	43	46	56	82	+58%
Total		94	97	85	91	95	106	148	+58%

## Completion

An examination of the variation in enrollment in upper grades suggests that the program has been most successful in enrolling new children in school. With the rise in enrollment in the early primary grades there has been a corresponding drop in the percentage of children in the upper grades. Upper grade enrollment has recuperated from a large drop in 2001 and although percentages remain relatively low compared to previous years, the greatest total number of boys and girls ever enrolled in the upper grades was found in 2002.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1995	1996	1997	1998	1999	2000	2001	2002
Girls		9.5	9.5	17.1	25.0	24.5	10.0	19.7
Boys		28.8	20.0	25.0	27.9	30.4	12.5	18.3

Actual completion rates, shown in terms of the percentage of students reaching fifth and sixth grade in five or six years, respectively, have been erratic. A relatively high percentage of girls (43%) completed sixth grade in 2000. Although more than half of the fifth grade cohort was poised to enter sixth grade in 2001, no data were available for sixth grade enrollment in that year. In subsequent years there has been a drop in the percentage of the cohort of boys and girls making normal progress through school. In the 1998 cohort, only 6% of both girls and boys reached fifth grade without repeating a grade.

**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

Years/Gender	Girls		Boys	
	5 <sup>th</sup> grade	6 <sup>th</sup> grade	5 <sup>th</sup> grade	6 <sup>th</sup> grade
1995-2000	57%	43%	17%	17%
1996-2001	0%	nd	10%	nd
1997-2002	17%	6%	0%	0%
1998-2003	6%	--	6%	--

**Classroom Organization**

Different grades are combined in an attempt to have similar numbers of student in each classroom. Thus, sixth grade, with two students is grouped with first grade with forty. Second grade with 39 students is combined with fourth grade with 16 and third grade with 43 is combined with fifth grade with 10. Teachers stated that children are organized into work groups by grade in all classes. They are arranged in terms of the unit of the guides with which they are working.

All grades have the ERA self-instructional guides in sufficient numbers for the enrolled students. They also have the Ministry of Education textbooks, *Camino a la Excelencia*, that also use self-learning techniques. The exception is first grade where the students develop reading and writing skills using significant expressions generated from their own experience. Learning corners for science, mathematics, language, social studies and culture were observed in each classroom and included a variety of materials that were gathered locally.

All of the children interviewed thought that attending a multi-grade school had the advantage of learning from older children (*es bueno, hay niños más avanzados para preguntar*). Several cited elements of the program such as the student government as teaching them to not be afraid to speak in public (*tener más confianza, perder miedo*) or the ability to continue working with student guides when the teacher wasn't present as important (*si no está la maestra podemos estudiar porque las guías nos orienta*) to their learning.

**Instructional Materials**

The school has recently received the self-instructional guides. Thus, although there were sufficient guides for all children in each grade, the teachers stress the active methodology, especially communicating publicly, conducting research in the community, and using the library as key elements of the program. The focus in first grade on preparing students to read by using significant expressions generated by the students as the starting place for word recognition and building sentences, was also highlighted as critical to the program's success.

**Pedagogy and teacher student interaction**

Despite the organization of students into small groups, no collaborative group work was observed in any classroom. Teachers wrote the assignment on the board or explained it

to the entire group. Children worked individually with the guides or the assignment on the board. Generally students came to the teachers' desks and waited until they were recognized, if they had questions about the assignment. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, no interactions between teachers and students took place in small group contexts. The vast majority of the interactions occurred in the context of seat work at all grade levels.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	3	97

As shown in Table 5, the teacher initiated about three-fourths of the interactions between teachers and students. Girls and boys initiated the same percentage of interactions. These interactions were primarily requests for the teacher to provide feedback on their work. Girls received a higher percentage of teacher-initiated interactions (33%) than did boys (28%). When corrected for the number of children of each gender in the classroom, girls had a higher index of interaction than boys because of the fewer number of girls in all classrooms.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	74	13	13

A high percentage of the teacher's interactions involved asking the students about their work (30%) and providing additional explanation (38%). Dictation was involved in 12% of the interactions, primarily in the lower grades. Positive reinforcement in the form of praise of work occurred in 11% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was observed in 2% of the interactions. The following sequence of observations illustrates the environments observed in the classrooms during the school visits.

9:35 am The teacher of the combined third and fifth grade class has given the students assignments in their guides. The third graders are in eight groups of three to six students each. Girls sit together in each group of which they form a part. Third graders are copying an assignment from the guides into their notebooks. Children work independently and there is little discussion. It is a hot day and several children are sweating. Children do not need to stay in their seats while working as they get up frequently to go to the dictionary and look up words,

as part of the assignment. They also approach the teacher who is sitting at her desk. Most wait to be recognized before showing the teacher their work but a few wave their books looking for recognition. The three boys in fifth grade sit apart from the third graders. They work independently in their guides without interacting with one another or the teacher.

In the combined second and fourth grade class, the students work on assignments for each class written on the blackboard. The eight fourth graders present that day are seated at two tables at the far side of the classroom away from the door. They are working on problems with multiplication tables and have a second assignment to write sentences using objectives and nouns (*sustantivos*). The second graders also have problems involving math and grammar. The students' teacher is not present, as she is in training for the day. The class is being supervised by members of the student government. These children spend about five minutes at a time in the classroom then return to their own work. One or more of them visit the classroom at half-hour intervals.

First graders are working in pairs trying to name different animals. The teacher is at her desk working on the children's report card (*Informe de logros intelectuales y de desarrollo*), as she has a meeting with parents to inform them of the students' progress after class. She occasionally walks around the classroom to check on the work of individual students. When she interacts with the students she addresses them by name. The single sixth grader present in this combined class sits in a desk near the teacher and works with the sixth grade student guide on communication. The teacher checks on him periodically and asks him questions or takes the guide and explains what he should be doing. 10:00 am.

This classroom observation shows that while children are generally arranged in groups, much of the pedagogy is teacher centered. Children have not been encouraged to work together in groups and tend to seek out the teacher for assessment of progress on an assignment or clarification of directions. Except for the student government members, children did not have the opportunity to express themselves verbally in front of their peers.

### **Student Government**

The school student government is made up of six students. It includes representatives from third, fourth, fifth and sixth grades. Girls in fifth grade, fourth grade and third grade hold the positions of president, treasurer and speaker, respectively. Boys fill the three positions of vice president, secretary and first speaker. With the exception of the president, who stated that the school director named her as president, members of the student government were elected. Students interested in a position told teachers of their interest and then made presentations on their platform to each grade. The students vote individually for the candidate of their choice. Elections are held once a year.

The school director felt that participation in the election process and the responsibilities of the student government were very important in helping girls become more participatory in the classroom. She said that girls were more active in student

government than boys. In addition to their responsibilities of greeting visitors, and monitoring classes when teachers are absent, and organizing students for cultural events, the student government members identify school projects. The director cited the current project of reforestation of a waste area in the school. The female members of the government took the lead in planning the activity and in obtaining seedlings from municipal authorities.

Both the girls and boys who were interviewed made comments similar to that of the school director. They felt that going through the election process and then planning activities and representing the school through such activities helped them to not be afraid to participate and to express their ideas. In general, they said that their parents supported their participation as they saw the experience of serving in school government as a way to enhance opportunities for further study after primary school. However, the president said that her parents lived in Guatemala City and she lived with her grandparents, who she hadn't informed about her participation. Parents described the changes in their children as a result of participating in school government. They said that the students were more responsible, more interested in their studies and served as examples for other children (*más responsables, se dedican más, son ejemplos para los demás*).

### **Parent Participation**

A group interview with 14 mothers showed that the participation of parents is largely a response to the director's requests for assistance. Attending meetings, helping organize days of celebration, and providing school snacks or lunches were mentioned by the women as examples of their participation with the school. The mothers were highly supportive of the curricular change that had taken place in the school. They stated that children now learned on their own, using the guides, whereas previously, they had just memorized material.

## **Los Tronchos – Cobán Alta Verapaz**

In the combined 3<sup>rd</sup>/4<sup>th</sup> grade classroom at Los Tronchos the students sit in rows of individual desks watching the teacher write a series of numbers on the blackboard. She then asks the students of both grades to write the numbers in their notebooks. The students immediately go to work on the eight numbers on the board. For the next 45 minutes the children work on the assignment, taking their work to be checked. Then the teacher tells the class to write the Roman numeral for all the alternate numbers between one and five hundred. She stands in front of the class and tells the children the correct way to write letters in their notebooks: “letters should occupy the entire space between the lines and not be tiny and illegible.” While they are still writing the Roman numerals, she goes around the class and corrects their work. This exercise goes on until recess at 10am. When class is once again in session at 11am, the writing of Roman numerals continues.

### **Background**

Los Tronchos was founded in 1978. It was the first school in the area serving indigenous children. It had two wooden sheds that were used as classrooms. Until 1991, the two teachers in the school provided classes to children through fourth grade. When the four new classrooms were built in the early 1990s, the school began to offer all six grades and preprimary classes. It currently has five teachers to serve about 150 children a year distributed in three single grade classrooms (preprimary, first and second) and two multi-grade classrooms (a combined third and fourth and a combined fifth and sixth). The teachers have not been trained to implement any particular pedagogical program. However, several have received training from the Ministry of Education’s Bilingual Education Directorate (DIGEBI) to use bilingual methodology in first grade. The school had the bilingual texts for first grade, as well as sets of the Ministry of Education texts *Camino a la Excelencia*, which were based on the NEU self-instructional guides, but contained a greater degree of traditional content.

### **The Community**

The community of Los Tronchos is 20 kilometers from the departmental capital of Cobán. It is reached by a dirt road that is only passable in a four-wheel drive vehicle during rainy season. The community consists of an estimated 400 families. Almost all are Mayans whose first language is K’eqchí. Both men and women work in agriculture. Men generally have subsistence plots and supplement their incomes by obtaining jobs as day workers during harvest seasons. Women market agricultural products and other foodstuffs in the municipal center. Teachers also felt that they were constantly dealing with a cultural bias against sending children to complete school, as parents felt that one or two years of schooling should be enough to learn the basics of reading and writing Spanish.

Most of the children lived close to the school. However, the catchment area was about three kilometers, which meant that the children who lived farthest from the school had to walk about a half an hour to attend classes.

Members of the community support the school by providing unskilled manual labor to maintain the school infrastructure. Poverty, exacerbated by an ongoing decline in coffee prices in recent years, has reduced the need for day labor, community members provide little monetary support.

## Enrollment

Since 1995 there has been a general increase in enrollment at Los Tronchos. School enrollment data show that enrollment has increased by 29% over that period. The increase has been higher (33%) for boys than for girls (23%). Further, there have always been more total boys enrolled in the school than girls.

**Table 1: School Population by Gender and Year**

Students	1995	1996	1997	1998	1999	2000	2001	2002
Girls	39	33	31	35	58	35	54	48
Boys	54	37	40	50	86	54	59	72
Total	93	70	71	85	144	89	113	120

## Completion

In order to examine the continuation of girls in school, the enrollment of girls in upper grades was calculated. As can be seen in Table 2, there has been a general increase in the percentage of the total number of girls enrolled that are in the upper grades. The exception is 1998, when no students were recorded as being enrolled in grades four through six. As with enrollment, boys had a greater percentage increase in students enrolled in the upper grades than did girls. The percentage of boys went up over 16% from 1995 to 2002, whereas the percentage of girls increased about 10%. These increases occurred despite the increased enrollment that took place primarily at the lower grades.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1995	1996	1997	1998	1999	2000	2001	2002
Girls	15.4	21.2	16.1	0	27.6	37.1	24.1	25.0
Boys	16.7	18.9	22.5	0	19.8	29.6	30.5	33.3

Sixth grade completion rates were calculated for three cohorts of children. Fifth grade completion was also calculated to provide another year of trend data. As can be seen from Table 3, the percentage of children making normal progress to fifth or sixth grade has been especially erratic for girls. In two cases, no girls were promoted each year. The greatest percentage of a cohort of girls to make normal progress was only 18%. Boys

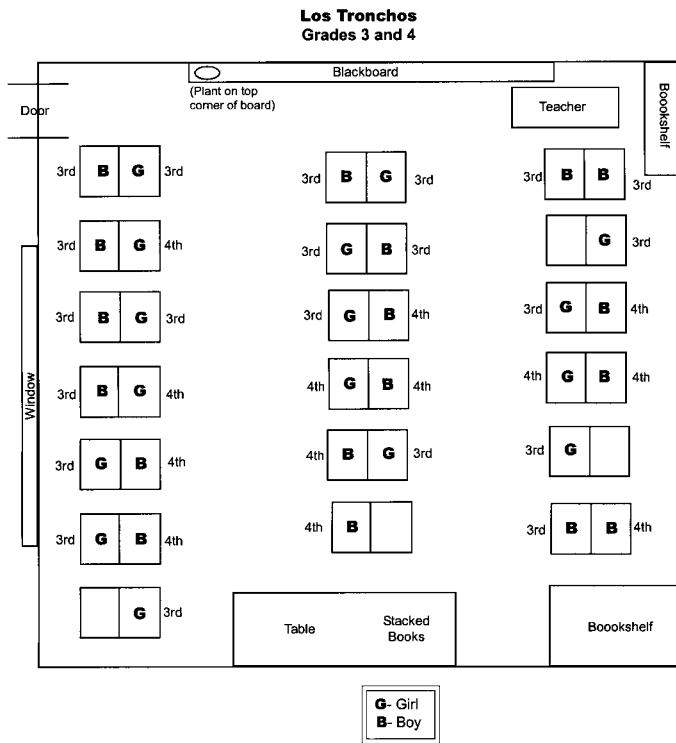
also show an erratic pattern. However, boys' completion rates are higher than those of girls in every cohort.

**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

Years/Gender	Girls		Boys	
	5 <sup>th</sup> grade	6 <sup>th</sup> grade	5 <sup>th</sup> grade	6 <sup>th</sup> grade
1995-2000	0%	0%	0%	0%
1996-2001	18%	18%	37%	37%
1997-2002	0%	0%	14%	14%
1998-2003	9%	--	22%	--

### Classroom Organization

Children sit in single file one behind the other in all classes. In the lower grades, boys are in the middle and front of the classroom with girls in the rows at the sides and in the back. No distinction is made by either grade level or gender for seating arrangements in



the upper grades. The diagram shows the arrangement of the 3<sup>rd</sup> and 4<sup>th</sup> grade classroom at Los Tronchos. As can be seen the fourth grade children are distributed among the third graders. Third graders do, however, predominate in the front of the class. In each classroom there are shelves with the books and in the first and second grades there are a few examples of children's drawings on the walls. In the upper grades the walls were blank.

### Instructional Materials

The principal instructional material in all grades was the blackboard. Teachers write academic content and exercises on the board and children copy this information into their notebooks and complete exercises, as required. The Ministry texts, *Camino a la Excelencia*, were available in all grades. They were present in numbers that were sufficient so that each student could have a text for a given subject. However, they were never observed in use. The DIGEBI bilingual texts for first grade were also present in



that classroom. These texts were never observed in use. In multi-grade classrooms, the teacher taught the same material to all students in the class, regardless of grade.

### **Pedagogy and teacher student interaction**

Seat work was the primary learning context observed in Los Tronchos. It was followed by large group work, in which teachers wrote the assignment on the board or explained it to the entire group. Children worked individually at their desks copying the assignment into their notebooks. Generally, if students had questions about the assignment, they came to the teachers' desks and waited until they were recognized. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, only 4% of the observed interactions between teachers and students took place in small group contexts. The majority of the interactions (61%) occurred in the context of seat work at all grade levels. Thirty-four percent of the interactions took place in the context of teachers addressing all of the students in the classroom.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	1%	3%	34%	61%

Teacher-initiated interactions predominated in the classroom, making up almost two-thirds of all interactions. Interactions initiated by girls and boys accounted for 12% of all interactions in each case. However, when the correction for the number of children of each gender was made for student-initiated interactions, boys initiated more interactions. Boys also received a higher percentage of teacher-initiated interactions than did girls (29% versus 20%). When corrected for the number of children of each gender in the classrooms, boys were still the recipients of relatively more interactions than girls.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percentage of interactions	73	12	12

A high percentage of the teacher's interactions involved asking students the answers to their work (53%) and telling them to provide answers either on the blackboard or verbally (50%). Both these actions often occurred during the same interaction. Teachers provided additional explanation in 33% of interactions. Dictation was involved in 12% of the interactions, primarily in the lower grades. Positive reinforcement in the form of praise of work occurred in 5% of the interactions and negative reinforcement, in terms of

punishment or harsh correction, was observed in 4% of the interactions. The following sequence of observations illustrates the environments and interactions observed in the classrooms during the school visits.

8:10 am. The first grade teacher is conducting a language lesson. She writes syllables on the black board and has the students repeat them after her in chorus. She then tells them to copy syllables into their notebooks. She goes from desk to desk asking different children to pronounce a syllable. Several boys follow her, waiting for her to look at their work. After making several rounds of the class, the teacher returns to the front and calls children in groups of three to come up and pronounce the syllables. Throughout the exercise, the teacher uses K'echi' and Spanish interchangeably.

In the second grade class the teacher is quizzing the students on their homework. She stands at the front of the class and individual children "How much is a *decena*? How much is an *unidad*?" Students answer "Ten things" (*diez cosas*) or "One thing" (*una cosa*). When she calls on an older girl, who looks to be in her early teens, the girl looks downcast and doesn't answer. Other children taunt the girl saying she didn't do her homework. When the teacher is distracted, the girl sits down quickly. As the teacher questions each student, occasionally a student interrupts to ask permission to sharpen his/her pencil. Upon completing the homework review, the teacher then writes ten numbers on the blackboard and tells the students to order them by the correct unit column. She sits at her desk and almost immediately several boys rush up to show her what they have done. On looking at the work in the first notebook that she accepts, the teacher opens a textbook and points to a page saying "This is a unit, this is a ten and this is a hundred..." several more boys jump from their seats and crane their necks to see. Two girls come forward and look from beyond the boys.

In the combined third and fourth grade class, the students are carrying out an exercise with Roman numerals that is written on the board. Several, as they complete a number, go to the teachers' desk to have their work checked. This continues for about 45 minutes until the teacher tells them to write Roman numerals to 500. 8:45 am.

This classroom observation shows that the pedagogy at Los Tronchos is highly teacher centered. Children are not encouraged to work together in groups and tend to seek out the teacher for assessment of progress on an assignment. The only opportunity to express themselves in front of their peers is through responding to problems provided by the teacher at the blackboard or at their seats.

### **Student Government**

The teachers stated that there was no functioning student government at the school. Commissions for books, classroom clean-up and the like functioned in individual classrooms at the discretion of the teacher, who named the commission members. None

of the teachers could identify commission members in their classes. Thus, students were not interviewed as to their views about participation in such commissions.

### **Parent Participation**

Teachers stated that parent participation was a problem at the school. Meetings were held on Sundays to encourage working parents to participate. However, participation was limited to cleaning the play area and providing school snacks.

## Signalom—Alta Verapaz, Guatemala

### Background

Signalom is located about 6 kilometers north of Cobán on the road to Chisec in a village of about 80 families. The inhabitants of the community are mainly farmers where some have small plots of land while others are agricultural wage laborers (*jornaleros*) who work on the nearby coffee plantations. In 2002, there were about 200 school age children in the community, and according to the director, 110 were enrolled in the school and another 50 went to school in Cobán, leaving about 40 who did not attend school.

The school has been in operation for 35 years and started as a literacy center operated by the Benedictine Order. In 1969, the Ministry of Education appointed one teacher and the school became an “official” institution. In 1980, two new classrooms were built on land donated by the adjacent *finca* (farm), and an additional teacher was appointed; two more teachers were appointed in 2000. The current grade and teacher organization consists of pre-primary which is taught by two student teachers from the normal school in the department capital, 1<sup>st</sup> grade, 2<sup>nd</sup> and 4<sup>th</sup> grades combined, 3<sup>rd</sup> grade, and 5<sup>th</sup> and 6<sup>th</sup> combined with one teacher for each classroom.

### Enrollment

Except for the 1993, 1994 and 2001, the total enrollments have steadily increased in Signalom where the number of students in 2002 shows a greater than three-fold increase over 1993. As shown in the table below, the number of boys and girls enrolled were the same in 1993, but by 2002, there were ten more girls than boys.

**Table 1: School Population by Gender and Year**

Students	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Girls	13	11	20	17	Nd	31	40	46	41	51
Boys	13	9	18	34	Nd	29	30	29	25	41
Total	26	20	38	51	Nd	60	70	75	66	92

### Completion

Although the total number of students has increased considerably, the percentage of males versus females in the three upper grades were calculated by examining continuance patterns. As shown below, a little over half of the girls enrolled in 1995 were in the upper grades as compared to less than one-third of the boys. In the subsequent years, the percentage of girls dropped to under 10% in 1998 and then increased to well over one-third by 2002. Boys on the other hand, reached a high of 50% in 1999, dropped drastically by 2001 and then increased to almost one-third by 2002.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

	1995	1996	1997	1998	1999	2000	2001	2002
% all girls upper	55.0%	29.4%	Nd	9.7%	30.0%	32.6%	29.3%	37.3%
% all boys upper	27.8%	20.6%	Nd	34.5%	50.0%	17.2%	12.0%	31.7%

The real cohort analysis tracing the number of students who reach 5<sup>th</sup> and 6<sup>th</sup> grade in five and six years, respectively, is shown for three cohorts in Table 3 below. For the 1995-00 cohort, the completion rates for boys is somewhat higher for boys in both the 5<sup>th</sup> and 6<sup>th</sup> grades, but in the next cohort (1996-01), the boys drop to zero and half the girls reach 5<sup>th</sup> with only one making it to the 6<sup>th</sup> grade. In the 1998-03 cohort, only one boy and one girl have reached 5<sup>th</sup>.

**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

cohort	Grade/%	1 <sup>st</sup> grade	5 <sup>th</sup> grade	%	6 <sup>th</sup> grade	%
1995-00	Boys	7	1	14.3%	1	14.0%
	Girls	9	1	11.1%	1	11.0%
1996-01	Boys	20	0	0.0%	0	0.0%
	Girls	6	3	50.0%	1	16.7%
1997-02	Boys	n/d				
	Girls	n/d				
1998-03	Boys	9	1	11.1%	n/d	
	Girls	11	1	9.1%	n/d	

In addition, twelve students, six first grade and six second grade, were randomly selected in 1993 for detailed ethnographic observation of their classroom behavior. Of the six first graders, three boys and three girls, three—one boy and two girls—finished 6<sup>th</sup> grade on time in 1998. Another boy finished in 1999 after repeating first grade, another boy left school when he was in the 4<sup>th</sup> grade in 1996, and one of the girls finished two years late in 2000. Of the second graders, only two girls finished on time in 1997, the third girl repeated two grades and then went on to finish primary in another school. One boy finished in 1998 after repeating first grade, and the other two boys left school in 1995 and 1996.

### **Classroom Organization**

All four classrooms in this school were arranged traditionally, and in the two multigrade classrooms (2<sup>nd</sup> and 4<sup>th</sup>; 5<sup>th</sup> and 6<sup>th</sup> grades), the seats were arranged in rows that were grouped by grade divided down the middle of the room. None of the classrooms had learning corners or very many things on the walls. The classroom that was observed was the combined 2<sup>nd</sup> and 4<sup>th</sup> grades.

The observed classroom was rather bare with few posters on the wall. In the front of the classroom large letters of the alphabet were pasted over the blackboard. The room was well lit with large windows on both side walls, and when facing the class, the more numerous second graders were on the left and the older fourth graders on the right. In the back of the room was a prominently displayed first aid box with a large red cross, and to the left was a small table with stacks of textbooks that were neither organized by subject nor grade. In the other corner was a stack of boxes with papers and more text books. The teacher's desk was opposite the door with a small blackboard next to it.

## Pedagogy and Teacher Student Interaction

The class that was observed was a combined 2<sup>nd</sup> and 4<sup>th</sup> grade taught by a young woman who had been at Sigualom for three years under a special contract. She had not received any special training in management and pedagogy for multigrade classes; her training had included specialization in the teaching of pre-school children. When asked about any special or active learning programs, she responded by saying that the lack of time for teaching the two grades was a problem, and that she taught different subjects to the two grades, alternating her attention from one to the other.

The day that observations were made in grades 2/4, Spanish language was taught during the first hour 8:30 until 9:30 followed by math until the recess at 10am; the recess lasted from 10:00 until 11:15. After the break, she taught human anatomy to the second graders while the fourth graders were making a map of Guatemala by pasting cutouts of each department on a large piece of colored paper. The class was dismissed for the day at 12:20pm.

The teacher was the principal leader of the activities in this classroom, and as shown in Table 4, she initiated nearly all of the observed interactions, and the remaining 4% were initiated equally by both boys and girls.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context**

Year	Teacher	Female student	Male student
Percent of Interactions	95.6	2.2	2.2

The context consisted of the teacher alternating between the second and fourth grades where she directed her attention to the whole grade in 91% of the interactions. In terms of students working in small groups led by the teachers or another student, the teaching contexts and interaction patterns observed in 2002 are very similar to those observed in 1993 and 94. One difference was that the receivers of the interactions went from near equal with girls and boys, respectively in 1993 and 94, but in 2002 60% of the interactions initiated by the teacher were directed to the entire class, and the rest of the interactions were divided between boys and girls with 16% and 20%, respectively.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Year	Teacher directed small group	Student directed small group	Large Group	Seat work
1993	6%	5%	38%	51%
1994	4%	1%	4%	91%
2002	0%	0%	91.1%	8.9%

The quality of these interactions consisted of asking questions 58% of the time, directing the students to do specific tasks (reading and copying section of the textbooks) in almost half, and dictating details about math operations and anatomy in a little less than one-quarter of the interactions; she reinforced students' work 4% of the time. About 9% of the interactions consisted of working with individual students at their desks or by having

them come up to the little blackboard next to her desk and write answers to specific questions.

When the teacher was working with the six 4<sup>th</sup> graders—two boys and four girls—the 2<sup>nd</sup> graders were sitting around doing nothing related to learning; they were talking with each other and paid no attention to what was going on around them. Then suddenly a few of them got up and went over to the teachers and asked her to check what they had copied from the Spanish language textbook. The teacher then turned her attention to them and started asking them math questions. After a few minutes, she turned her attention back to the 4<sup>th</sup> graders and individually asked them similar questions.

A little later, she called the six 4<sup>th</sup> graders up to her desk one by one and went over their math lessons, pointing out in a loud voice what they had done wrong. As each one came up to her desk, the size of the group around her grew, and the criticism echoed throughout the classroom.

Both the teacher in the observed classroom and the school director said that the girls were more active and participated more in classroom activities. But the director added that after they finish primary school and have entered puberty, they become restless.

### **Instructional Materials**

With the exception of natural sciences for both 2<sup>nd</sup> and 4<sup>th</sup> grades, the overall availability of textbooks in math, social studies, and Spanish was adequate to assure a copy for each of the students enrolled in both grades. On the day of the classroom observation, the attendance in both grades was low enough so that for the science lessons, all the students had their own textbooks. Each student also had his or her own notebook that was in constant use. No manipulatives or any locally made teaching materials were observed.

### **Student Government**

The school has a student government in each of the four classrooms but not a functional organization for the entire school. The main activities are carried out by five commissions with one for each of the following: recreation, health, school decoration, sports, planning, and arts and culture. Every two months, there is an evaluation of the student government activities done together with the students.

The school director said that in all the student government activities, the females are in charge. Four girls who are members of the school student government were selected and interviewed. All four said that their classmates had elected them. When asked what were their primary responsibilities, three said to help the teacher, two also said to help maintain discipline in the classroom, and one added supervision of school cleaning activities and attendance. When asked about the purpose of the student government activities, the responses included being able to do something very good, doing something useful, maintaining order in the classroom, and being useful and making sure that everyone pays attention. Responses to the question about what has been learned from this experience they said that everyone is able to help the school, be more responsible, help others, and

being able to work in a group. All four of the girls said they had friends who were also participants in the student government activities, and that their parents were very supportive of their student government participation. One girl said that her parents told her she should participate because she should help others and then later they would help her.

When asked about the advantages and disadvantages of being in a multigrade classroom, two positive responses were that they could share and the other two said they would have more classmates, and one also added that they would advance more quickly in their studies.

The mother of one of the girls in the student government said that she was very proud to have her daughter in the student government, and that one of the effects was that she spent more time with her studies. One of the changes that she saw in her daughter was that she had new ideas and spent more time helping out at home. She also said that she had a son who had also participated in the student government.

### **Parent Participation**

According to the school director, there is a parent-teacher organization where three mothers are the director, secretary and an officer. One of the fathers is the other officer and a teacher is the treasurer. One of the primary activities of this group is to raise funds for school activities.

Apart from the formal parent teacher organization, the director said that parents are supportive of having their children go to school. She went on to say that most of the parents feel that their daughters should study up to a certain grade, but if the girls do not enroll by age six, they will never finish primary school. These girls should stay at home and then get married. The feeling about boys is that if they do not do well in school, it is better to take them out. Although there are more girls in 6<sup>th</sup> grade, they do not continue their studies beyond primary school.

The parent interviewed said that her participation in school activities consisted of selling refreshments and snacks to the students and she was also a member of the parent-teacher organization.

The school director said that in recent years things have changed at the school. Since many of the parents in the community were her students, they now support the school more and they have excellent relations with the community. Before, there was not much parental support, but now some parents oversee the teachers to make sure they come to work on a regular basis.



**Appendix F: Nicaragua Country Study**



# **GEMS**

**Girls' Education Monitoring System**

## **Ethnographic Study of the Effects of Active Learning Programs on Girls' Persistence and Completion of Primary School in Developing Countries**

### **Nicaragua Country Study**

*Prepared for:*

**United States Agency for International Development  
Bureau of Economic Growth, Agriculture, and Trade/ Office of Women in Development**

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## Acronym List

BASE- Basic Education Strengthening Project

GEMS- Girls' Education Monitoring System

MED- Ministry of Education

MEDC- Ministry of Education and Culture

MIC- *Microcentro de Intercapacitación* (Micro Self-Instructional Centers)

NERA- School Nucleus

USAID- United States Agency for International Development

## Nicaragua Country Study

This study examines the effects of the multigrade component of the *Escuela Modelo* program in Nicaragua. The study focuses on the elements and processes of this innovative program as they relate to the success of girls in rural primary schools. It is part of a multi-country study on active learning programs in multigrade settings and the relationship of such programs to girls' performance in school. It is hoped that the study will serve as a resource in planning educational interventions to improve quality, especially in those countries where participation of girls in formal school is low.

The study applied rapid ethnographic appraisal methods for school and classroom research to collect data in a sample of 7 schools (five with active learning programs and two that employed traditional methods). The study used the qualitative methods of maps, inventories, structured observations, and in-depth interviews with school directors, teachers, students, and principals to conduct case studies of a sample of multigrade schools with active learning programs, as well as programs using traditional teaching methods. Available program level data for the four years of the project were also collected and compared to case study findings. The fieldwork for the study was carried out by a team of anthropologists with extensive experience in education research in Latin America, during June 2002.

### I. Context

Nicaragua is recovering from decades of misrule and civil war that devastated the economy and polarized the nation's political environment. Despite international support and investment following the change of government in 1990, Nicaragua remains among the poorest nations in the Hemisphere. National unemployment is 16% and it has been estimated the rural unemployment and underemployment exceeds 50%. Despite Nicaragua's return to a free market economy, private international investment has remained low. Fifty percent of the population lives in poverty and almost 20% live in extreme poverty. These conditions have been exacerbated by long-term decline in coffee prices and the devastating effects of Hurricane Mitch on agricultural production and infrastructure.

### II. Background

Nicaragua has been experimenting with active learning methodologies to improve the access to and quality of schooling, build community cohesion, and encourage democratic behavior among children since 1992. At that time, the Ministry of Education and Culture (MEDC) began administrative reform through a policy of deconcentration that gave more autonomy to schools in decision-making and curriculum reform by developing active learning methods and materials through an approach called humanistic constructivism (*constructivismo humanista*). Both the World Bank and USAID have collaborated with the Ministry carrying forth these reforms. The World Bank has supported the creation of a number of "autonomous" schools and assisted in the monitoring of their progress in financial and administrative decision-making. USAID, through the BASE I project, has assisted in the restructuring and automation of the

Ministry's financial management system and has provided extensive technical assistance in the reform of the curriculum for the first four grades of primary school. The Ministry reform effort known as *Transformación Curricular* (Curricular Transformation), focused on providing in-service training to teachers to familiarize them with constructivist theory and approaches to curriculum and pedagogy, developing a set of curriculum guides for all core subjects in Grades 1-4, and establishing a permanent national in-service teacher training system called *Red de Capacitación* (Training Network). As part of this process, a number of schools were selected as demonstration schools and micro self-instructional centers (MIC) were established in these schools to serve as a meeting place for teachers to provide mutual support and problem solving. In 1997, it was realized that special consideration had to be given to the large number of multigrade schools in the country to maximize their use of the curricular materials. Thus, 26 multigrade schools were selected as Model Schools.

Multigrade schooling is a strategy to provide teachers with the skills to handle more than one grade level simultaneously. Through training and materials that allow the students to take an active part in their own learning, schools in isolated rural areas with only a few teachers can provide a complete primary education. As can be seen in Table 1, despite recent efforts at educational reform, more than half of the primary schools in Nicaragua do not offer sixth grade.

**Table 1: Incomplete Schools - Nicaragua**

	No. of Schools	Percent
First Grade Only	98	1.4%
First and Second	342	4.9%
First through Third	616	8.8%
First through Fourth	1247	17.8%
First through Fifth	777	11.1%
Complete	3334	47.5%
Total Number of Schools	7014	

Source: Ministry of Education/Base database 2000

Much of the initial work in the model multigrade schools was determining what the active learning materials would look like. Several workshops were held and teachers from the schools reflected on their experience as professionals and discussed ways to implement an active learning methodology in multigrade settings. Cross cutting themes that needed to be integrated into the curriculum were discussed and strategies developed. Teams were then selected to begin to develop student self-instructional guides along the parameters agreed upon in the meetings. Although school staff began to implement elements of the multigrade program, such as the student government, it was generally felt that the schools were more pilot schools for the development and testing of materials than model or demonstration schools.

BASE II continued the development of self-learning guides, began the reform of bilingual education in the country and added an additional 25 multigrade primary schools

to the model school program. Between 1999 and 2001, materials were developed and resource centers designed. The student instructional guides developed by the teachers were initially mimeographed copies during the validation process. Although it was anticipated that printed guides would be available in 2000, mass distribution did not take place until early in 2002.

BASE II also supported Resources Centers. These sixteen centers are equipped with computer and copying facilities as well as all the curriculum materials produced as part of the *Transformación Curricular*. Such materials include instructional videos in addition to print. Owing to security concerns, all but one of the resource centers are in large graded schools.

In addition to the BASE multigrade model schools, Plan International began to support the implementation of active learning methodologies in schools where the organization worked. Plan has identified 140 schools/communities in which to work. Approximately 40 schools began implementing the Plan program in 2000. The program uses the BASE-developed materials published through the World Bank-funded APRENDE project. It also conducts training workshops that use small group collaborative approaches to help teachers develop active learning techniques. The Plan program puts great emphasis on the involvement of the community with the school. The organization conducts workshops for parents that focus on diagnosing community needs and abilities, as well as supporting the school through projects that provide lunches for students and infrastructure maintenance. The program also emphasizes the civic participation of students and community members in school governance.

With the change of government in 2002, there has been an increased interest in active learning methodologies. The new Minister of Education has visited a number of schools and has started a planning process to determine how the program can be expanded to all the primary schools in Nicaragua.

The developers of Multigrade Model School program have used the Ministry's own experience in constructivist pedagogy as well as observation tours to the *Escuela Nueva* program in Colombia and the Guatemala *Nueva Escuela Unitaria* program in creating the program. The program's principal features include: in-service training workshops for teachers, school directors and administrators, which are organized in small work groups to focus on particular issues such as developing the materials used by students, creating evaluation instruments or planning for the academic year; parent involvement activities aimed at encouraging the community to take an active part in school administration through membership on school governing boards; and a series of active learning strategies such as the use of self-instructional guides, learning corners, school libraries, small group work, peer teaching, and authentic assessment as well as flexible promotion and participation in elected school government. The program also stresses the importance of the MICs and other forums to learn about the experiences of different schools, students, and teachers throughout the country and the utilization of resource centers by teachers for creative endeavors.

### **III. Results**

#### **A. Participation**

##### **1. Classroom Organization**

Nine multigrade classes implementing the *Escuela Modelo* active learning program were observed intensively. In all but one of those classes, children were organized into small groups by grade. The remaining class had children organized in single file rows for much of the observation period. Teachers said that they grouped children by their progress with the self-instructional guides, within a grade level. There was little cross-grade interaction among students, except to ask siblings for pencils or other materials. All of the groups were of mixed genders. However, children of the same gender were observed to always sit together when there was more than one in a group. Interviews and observations showed that organizing class in terms of small groups focused a teacher's attention on a few children at a time and allowed student participation beyond those children who continually sought attention.

All of the active learning classrooms had self-instructional guides. They were generally present in sufficient numbers for the enrolled students, at least in the core subjects of mathematics and language arts. However, the printed guides had arrived at the start of the semester in which the observations were made. Prior to that time, the *Escuela Modelo* teachers used mimeographed guides, designed by a group of teachers with assistance from the BASE project. These guides were generally located in the learning corner associated with the subject covered by the guide. In first grade, the students developed reading and writing skills using significant expressions generated from their own experience. They only begin working with guides at the end of the school year.

The three multigrade classrooms which were not part of the active learning program also had the new guides and two of the teachers had participated in some training related to managing multigrade classrooms. However, the classrooms were arranged in single file rows with children one behind the other. Distinct rows were for each grade and in some cases genders. Only in one case did a teacher put children in small groups to use the guides during an observation period. Otherwise, the blackboard and notebooks were the principal learning materials used in all comparison classes. In every classroom observed, children of all grades found in a classroom were observed to work on the same assignment.

##### **2. Interaction in the Classroom**

In *Escuela Modelo* schools, a relatively high percentage of teacher-student interaction during lessons took place in small groups. Table 2 shows the percentage of interactions between the teacher and students in the contexts of: teacher-directed small group contexts, where the teacher facilitates a small group activity; student-directed small group contexts, where students work collaboratively on an assignment, often under the direction of a classmate who serves as a monitor; large group contexts involving all of the students in the class; and seat work, where children worked individually at their desks on assignments. Forty-seven percent of all interactions in the active learning program were

in small group contexts. Most of this interaction was lead by students. This is a result of most multigrade classes being third/fourth or fifth/sixth combinations where children had the ability to read and follow the guides without teacher facilitation. There was variation among classrooms, but small group work was found in all but one *Escuela Modelo* class.

Interaction between students and teachers in the three comparison classes was limited to one school, which had the self-instructional guides and where one of the two teachers had training in multigrade methodology. The lesson in this context was directed by the teacher. The predominant context in comparison schools was that of large group where the teacher addressed all of the children in the class.

**Table 2: Percentage of Observed Student-Teacher Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percent – Escuela Modelo	6	41	39	14
Percent – comparison schools	18	0	54	39

### **3. Structure of the Interactions**

In seven of the nine classrooms where intensive observations were made, girls initiated a higher ratio of interactions than boys. This was true even when observations were adjusted for the number of children of each gender present in the classroom. Thus, girls initiated 18% of all interactions compared to 10% for boys. The distribution of children receiving interactions from the teacher was more even in terms of gender. Girls received 22% of the interactions across the active learning programs, whereas boys received 23%.

In the comparison schools, on the other hand, the percentage of all interactions initiated by girls was 6% compared to 10% for boys. The difference in interactions received the teacher was even greater at 23% for male students and 16% for female students. In all three of the comparison classrooms boys had higher ratios of interaction when relative frequencies were adjusted for the number of children of each gender in the classroom.

Despite the emphasis on group work in active learning schools, teacher-initiated interactions predominate in teacher-student interactions. As shown in Table 3, the teacher initiated slightly more than 70% of all interactions. However, the percentage of student-initiated interactions is 12% higher than in comparison schools and girls account for this greater participation.



**Table 3: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percent – Escuela Modelo	71	10	18
Percent – comparison schools	84	10	6

#### **4. Quality of Interactions**

Verbal communication skill building was observed to be a key element of the active learning program in Nicaragua. Such skill building emphasized public communication in front of the class. In seven of the nine classrooms that were observed intensively, verbal exercises that required students to interpret material, explain their experiences in carrying out exercises in the guides or making decisions in front of class were observed. Such behavior was never observed in the comparison classrooms. Rather students, when required to give an answer in front of the class, were expected to provide a single answer to a question posed by the teacher.

Display of student work was another strategy to build confidence. All active learning classrooms had student work displayed, whereas no displays of student work were observed in the comparison schools. In several classes, students showed the observers their displayed work and explained the context in which the work was developed.

In all schools, student monitors, who were appointed by the teacher based on their mastery of particular subject matter, facilitate the small groups. The exercises in the guides that encouraged collaborative group work also promoted participatory behaviors and democratic practices among students. In addition to directing fellow students in an activity, students were observed taking turns, helping one another, expressing opinions, choosing among viable options and participating in student government. Girls in the Modelo program when interviewed stated that they helped one another in small groups and also helped boys. Perhaps the best example of the confidence built through participation in the Escuela Modelo program was that of the students who were interviewed by the research team, then created their own questionnaire modeled on that of the team and interviewed the interviewer (See the Pedregal case in the appendices).

Participation in school government involved students in formalizing ideas about what they could contribute to their school and expressing those ideas in public. Children of all grades, with the exception of first, were found to be members of the student government. Thus, participation was not limited to the older members of the student community. In all five Escuela Modelo sample schools, student governments had written plans of action to be carried out or could point to projects such as school gardens, water spigots, or reforestation of trees in the school yard that the school government had carried out. All of the student government members interviewed spoke of the importance of their position in serving as a role model for other students.

One of the two comparison schools had a school government that was elected by student vote. However, in this case, the members were identical to those that made up the fifth/sixth grade class government.

## **5. Parent Participation**

Parent committees existed in all schools. They did not, however, take the active role in school governance and student classroom activities as had been envisioned in both active learning programs. In only one school, Carbonal, were mothers found to substitute for an absent teacher, teach lessons, and provide special tutoring. In other sample schools, parents were involved in school feeding and infrastructure needs. Parents came to cook, clean, or paint when called upon to do so. Despite not actively participating in the classroom, however, parents of the children in *Escuela Modelo* schools were able to discuss the importance of the student guides in allowing students, especially girls, to catch up, if they were forced to miss school and the increased confidence shown by their offspring as a result of participation in the program. The parents in comparison schools fulfilled similar responsibilities in the schools but did not articulate any programmatic elements that contributed to their children's success in school.

## **B. Student Performance**

Given the short length of time that the *Escuela Modelo* program for multigrade schools has been operational, performance data are limited. This section discusses the results of the program to date in terms of enrollment and completion.

### **1. Enrollment**

Access is not considered a problem in Nicaragua. This is especially true for girls, who usually have higher gross enrollment ratios than boys. However, enrollment data were examined to identify trends in areas served by rural multigrade schools. National data on enrollment were used to examine trends in *Escuela Modelo* multigrade schools and all multigrade schools in the country. Table 4 shows that enrollment declined for both girls and boys during the first several years of the project. It has however increased by 15.7% and 10.1% from the 1997 baseline, for boys and girls, respectively. However, enrollment in other multigrade schools in Nicaragua has increased steadily since 1997. The total increase is four to five times that of multigrade Model schools. This would appear to be a result of the school renovation efforts that took place under President Alemán's administration, which increased school capacity.

**Table 4: Enrollment by School Type, Sex and Year**

Years	Model Schools				All Multigrade Schools			
	Male Enrollments		Female Enrollments		Male Enrollments		Female Enrollments	
	Total	% Increase	Total	% Increase	Total	% Increase	Total	% Increase
1997	1117	100.0%	1075	100.0%	80828	100.0%	80216	100.0%
1998	1093	-2.1%	1049	-2.4%	84852	5.0%	84845	5.8%
1999	1108	-0.8%	1040	-3.3%	98243	21.5%	97302	21.3%
2000	1169	4.7%	1061	-1.3%	108509	34.2%	106137	32.3%
2001	1294	15.8%	1109	3.2%	119732	48.1%	116820	45.6%
2002	1292	15.7%	1184	10.1%	129183	59.8%	123782	54.3%

Source: Ministry of Education National Statistics

It is interesting to note that the school level statistics from the seven case studies show a somewhat different trend. Girls' enrollments decreased slightly in both the active learning schools (-4%) and comparison schools (-2%). Male enrollments in the active learning school increased by +5% and decreased by -8% in comparison schools. However, when the one active learning school that had lost a third of its student population, owing to the closure of a plantation where many of the families worked, there was an increase in enrollment for girls (+4%) and boys (+16). While the sample is small, if confirmed by examination of more school level data, the results would seem to suggest that national enrollment figures for multigrade schools are inflated.

## 2. Completion.

Completion was examined in two ways. Apparent cohorts were created with the three years of national data available for analysis and completion rates for individual children in the sample schools were calculated. Table 5 shows the percentage of students in the *Escuela Modelo* program that make normal progress through primary school. As the program for multigrade schools is relatively recent, fifth grade was used as an indicator of completion to allow the examination of two cohorts. As can be seen in Table 5, girls in the active learning program have a gain in completion rates of 2.6% compared to 1.3% for girls in the national sample of multigrade schools. The girls in the model program also have a slightly higher completion rate in the second cohort. Boys in the model school program, on the other hand, have a decrease in completion rates of 4.5%, whereas boys in the comparison group have an increase of 2.6%. Both groups of boys have completion rates that are more than ten percentage point lower than those of girls.

**Table 5: Percent of Students Making Normal Progress to 5th Grade Nicaragua**

Cohort	Boys		Girls	
	Model	Control	Model	Control
1997-01	43.4	42.3	53.0	53.8
1998-02	38.9	44.6	55.6	55.1

The school level data on completion again show a somewhat different trend than that estimated from national data. Tables 6 and 7 show the percentage of individual students

in a cohort who could be traced through school records. As can be seen, fifth and sixth grade completion is much lower than the rates estimated from national data. In the Escuela Modelo sample, only between 18% and 29% of the female students were found to make normal progress through school (Table 6). In the two-school comparison sample (Table 7), percentages were somewhat higher than the Escuela Modelo rates in the 1997 cohort, but still well below national estimates. In 1998, none of the cohort of 29 children reached fifth grade in five years.

**Table 6: Escuela Modelo Sample School Fifth/Sixth Completion Rates by Year and Gender**

Escuela Modelo						
		1st grade	5th grade	%	6th grade	%
1997-02	boys	52	10	19.2%	8	15.2%
	girls	44	8	18.2%	5	11.4%
1998-03	boys	17	2	11.7%		nd
	girls	24	7	29.0%		nd

**Table 7: Comparison Sample Fifth/Sixth Completion Rates by Year and Gender**

Comparison						
		1st grade	5th grade	%	6th grade	%
1997-02	boys	17	4	24.2%	4	15.2%
	girls	10	4	40.0%	2	20.0%
1998-03	boys	11	0	0.0%		nd
	girls	18	0	0.0%	3	nd

#### IV. Discussion

The *Escuela Modelo* multigrade program has been effective in changing the classroom environment in multigrade schools. The organization of the classroom in small groups has given the teacher a better view of students and led to greater participation of girls. The variety of learning situations for the presentation of subject matter (small groups and large groups, guides, learning centers, community) has provided students with different contexts in which to interact with subject matter. Collaborative exercises, using the self-instructional guides has allowed girls to work together and the emphasis on verbal problem-solving and decision-making has helped build confidence in both boys and girls. Participation in student government has furthered confidence and built on girls' previous experience of conducting projects in their communities.

Despite the changes brought about by school and classroom organization, teacher-directed work in lessons is predominant in most classrooms. This may be a result of the recent arrival of the self-instructional student guides, which serve as the focal point for effectively utilizing the elements of the program.

This change in the dynamics of the school is evident in the way in which students, especially girls, interact with visitors. The visible manifestations of the school environment and the behavior of students in Escuela Modelo schools, has led to support from regional and national administrators, who are promoting expansion of the program. The distribution of materials and training has also meant that the program has had a much greater reach than its 51 multigrade schools. However, in its short existence, the program has not yet demonstrated definitive impact on outcome measures such as increased internal efficiency. Also the positive effects of the program on boys is open to question, given that their participation was found to differ little from that of boys in non-program schools in this study.

## **APPENDICES: SCHOOL CASE STUDIES**

### ACTIVE LEARNING PROGRAMS

Carbonal – BASE

Celaque – Plan International

Manto – BASE

Pedregal – BASE

Santa Fernanda - BASE

### COMPARISON

Puente Cortés

Rio Hondo

## **Carbonal – Granada, Nicaragua**

In the combined first and second grade class two parents are substituting for a sick teacher. The two mothers are at one end of the room just in front of the blackboard. Individual children bring their math lessons to the younger of the two mothers. She carefully explains how addition should be done and answers each child's question. When interviewed after the class, the woman says that math is her favorite subject and whenever she substitutes, she does math lessons with the students. She went on to say that she had completed all six primary grades. She lives near the school and comes to visit nearly every day. She also leads a study group for learners needing help on Saturdays, and gives dance, acting lessons and poetry recitals for a school theatrical group. The other mother completed two years of primary school, and stated that her role was to help the other woman by watching over the students and keeping order.

### **Background**

Carbonal has been a multigrade school since its inception, serving children from first through sixth grades in three classrooms. The catchment area of the school comprises about 600 inhabitants in about 100 families. Most of the families live in the area immediately surrounding the school, but some children come from over a kilometer away. Most families served by the school are poor and work small parcels of land in subsistence agriculture. Women contribute to the family economy by working as domestics outside of the community. The school director cited the precarious economic situation of the families as the principal reason for children being out of school. Nonetheless, school staff estimated that only about 5% of the school age population was not enrolled in the school.

The current principal has been at the school for seven years. She described the situation before the *Escuela Modelo* methodology was introduced in 1998 as totally teacher-centered: "only the teacher would talk, and would do so until losing their voice." Parents were not involved in the school; now parents substitute for teachers, help develop materials and participate in representing the school at the NERA (school nucleus). Children are much more participative in the classroom and in school affairs. The school is considered something of a model for the methodology, and there is a sense of pride about it.

The school has three large classrooms that face a playground area that includes a basketball court. There is also a smaller room adjacent to the classrooms that serves as a storage room and kitchen. Three older and two new latrines were located a short distance from the classrooms. The school has both electricity and running water, and both a drinking fountain and hand washing facilities were located on the walkway between the latrines and the classrooms.

Elements of the program implemented at the Carbonal school include the use of self-instructional guides, student government, student commissions (snack, culture, cleaning, reforestation and "friends of the natural environment"), learning resource centers, work in

small groups, flexible promotion and student monitors. The revised student guides were received in April of the 2002 school year.

Staff training has been received in the active learning methodology, constructivism, strategies for Spanish and mathematics, participatory elaboration of the guides and modules, and the sharing of experiences in implementing the model. Every three months, or more frequently if problems arise, eight schools of the NERA school nucleus network meet to share experiences and resolve problems. The school principal visited active methodology schools in Guatemala for a week and considered this trip to be a considerable stimulus to put into practice the methodology at the Carbonal school.

## Enrollment

Student enrollment at Carbonal has increased by 27% since 1997, prior to the beginning of the multigrade active learning program. Over the 1997-2002 period, girls have made up about 52% of enrollment, both in lower and upper grades at the school. The school principal stated that, because more than half of the students enter school when older than seven years of age, overage is something of a problem at the school.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999*	2000	2001	2002
girls	53	57	46	59	54	68
boys	49	56	41	46	60	62
total	102	113	87	105	114	130

\* Data are missing for 4<sup>th</sup> and 6<sup>th</sup> grade in 1999

Attendance in grades 3 through 6 on the day the school was visited was much higher for girls (98%) than for boys (62%).

## Completion

An examination of the variation in enrollment in upper grades across years suggests that the program has increased retention for both girls and boys. In the last three years, for every three children in the lower grades, there are slightly more than two in the upper grades. In the 1997-1998 period, the ratio was one upper grade student for every two lower grade students.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	34.0%	38.6%	ND	32.2%	44.4%	39.7%
Boys	28.6%	32.1%	ND	34.8%	45.0%	38.7%

Actual completion rates, shown in terms of the percentage of students reaching fifth and sixth grade in five or six years, respectively, have been erratic. Of the 20 boys in the 1997 first grade cohort, 16 of them (80%) were found in fifth or sixth grade in 2002. There were 14 girls in first grade in 1997, but only eight (57%) of them had advanced to



either fifth or sixth grade by 2002. But as Table 3 shows, it would appear that the experience of girls in the next year's cohort (1998 first graders) has improved, reflected in the higher percentage of girls in fifth grade (29% for the 1997 girls cohort, 36% for the 1998 girls cohort).

**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

Carbonal						
		1st grade	5 <sup>th</sup> grade	%	6th grade	%
1997-02	boys	20	8	40.0%	8	40.0%
	girls	14	4	28.6%	4	28.6%
1998-03	boys	12	1	8.3%		
	girls	14	5	35.7%		

### **Classroom Organization**

Classrooms are organized by grade level, with one female teacher managing the 28 first and 26 second grade students, the female school principal handling the 26 third grade and 17 fourth grade students, and a male teacher attending the 15 fifth grade and 19 sixth grade students. The day of the visit, the first grade teacher was absent and being substituted for by two mothers from the community.

Teachers stated that children are organized into work groups by grade in all classes, and this division by grade was observed in both the 3<sup>rd</sup>/4<sup>th</sup> and 5<sup>th</sup>/6<sup>th</sup> grade classrooms. The students within each grade are arranged in groups of up to four or five students based upon which guide they are working with at a particular time.

All grades have the self-instructional guides in sufficient numbers for the enrolled students. The exception is first grade where the students develop reading and writing skills using significant expressions generated from their own experience. Learning corners for science, mathematics, language, social studies and culture were observed in each classroom and included a variety of materials that were gathered locally.

The students interviewed thought that attending a multi-grade school had the advantage of learning from older children (*es bueno porque aprendemos de ellos, nos da muchas ganas de pasar a otro grado, equipos de las diferentes clases ayudan*). Teamwork was cited as a key benefit derived from the way learning took place in the school (*intercambiamos información, es bonito en equipo y no solito, entre todos intercambiamos ideas*).

### **Instructional Materials**

The school recently received the revised self-instructional guides and there were sufficient guides for all children in each grade. First grade focuses on preparing students to read by using significant expressions generated by the students as the starting place for word recognition and building sentences.

## Pedagogy and Teacher-Student Interaction

Students were organized into small groups and student-directed small groups dominated (63%) the context of interactions observed in the 3<sup>rd</sup>/4<sup>th</sup> and 5<sup>th</sup>/6<sup>th</sup> grade classrooms. All students had guides and were using them throughout the entire observation period. Students were observed to go to the teacher with the guides to ask questions about content, rather than take their notebooks to the teacher to “check their work.” Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. The small group context, either student-directed or teacher-directed, accounts for nearly all of the student-teacher interactions.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	14	63	14	3

As shown in Table 5, the teacher initiated about two-thirds of the interactions between teachers and students. Girls were two-and-one-half times as likely as boys to initiate interactions. These interactions were primarily requests for the teacher to provide feedback on their work. Girls received a higher percentage of teacher-initiated interactions (18%) than did boys (14%). When corrected for the number of children of each gender in the classroom, girls still have a higher index of interaction than boys.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	63	11	26

A high percentage of the teacher’s interactions observed in grades 3 through 6 involved asking questions of the students (46%) and providing explanation (32%). Giving directions or instructions followed with 16% of teacher interactions. Dictation was involved in only 3% of the interactions overall, and was observed only in the 3<sup>rd</sup>/4<sup>th</sup> grade classroom. Eighty-three percent of all interactions observed had verbal responses.

## Student Government

The school government is made up of five students. Of these, two are girls, occupying the position of vice-president and secretary, both from the third/fourth grade class. Elections were announced and the candidates created posters explaining what they would do if elected. Voting was conducted using ballots containing the candidates name and

photograph. Students interviewed stated that their parents approved of their participation in student government because it would help them become better students. The students interviewed felt that it helped them learn more (*leer mejor, contar dinero bien*), be a better person (*ser un ejemplo a los compañeros*) and improve the school (*escuela muy bonita, escuela limpia, mejor medio ambiente*).

### **Parent Participation**

The two parents interviewed were at the school working as substitute teachers. Apparently, this was a normal occurrence at San Caralampio, and one said that she visits the school on a daily basis. In addition, she also gives classes in her home with students who need extra help. Both implied that parents on the whole were very active in their support of the school.

## **Celaque – San Caetano, Nicaragua**

We are with a group of eight mothers. We ask about livelihood pursuits and they explain that they can raise very little on their small plots of land. They have neither transportation nor potable water. When asked if they eat meat, the women laugh and say they eat beans and rice, and occasionally an egg or cheese. Generally they eat once a day. Men are not present in the community during the week as they search for work as day laborers. Despite their precarious economic situation, the women have formed a lunch commission that provides daily lunches to the children in the early grades. They feel that the active learning methodology has helped their children to develop their minds rather than just copy words into a notebook, as had been the experience of those who attended school.

### **Background**

Celaque was founded in 1976. Prior to that time it had been the communal house of the community where festive gatherings were held. It did not provide all six grades at that time and only began to offer a complete primary education in 1990. It is located on a dirt road about 6 kilometers from the town of San Caetano and perhaps 25 kilometers from the coastal resort of Montelimar. The catchment area of the school contains about 80 families and 600 inhabitants. Most of the families live in the area immediately surrounding the school, but some children come from several kilometers away. It is an area of extreme poverty. All of the families work in agriculture. Most grow corn and wheat for subsistence. Protein is obtained by fishing in a nearby river. Men look for work as day laborers in the large sugar cane plantations near the coast. They return only on weekends. Some women make bread or sew, services that are bartered within the community.

The current principal has been at the school for 12 years and the fifth/sixth grade teacher has spent his entire 19-year career at the school. Other teachers have also spent their whole careers in the school, although such careers were of shorter duration. School staff received several training sessions where the different elements of the Model School program were covered as separate units. The elements covered included: the student government, use of the self-instructional guides, resource centers, planning and evaluation, and community participation. This training took place over about a year prior to the current school year.

The school has three sets of relatively new buildings. Two are large classrooms that house the pre-school and first/second grade classrooms and the third/fourth and fifth/sixth classrooms, respectively. The other is the principal's office that has the school kitchen behind it. There are three latrines at the end of the classrooms away from the office. The school has electricity but no potable water.

### **Enrollment**

Student enrollment at Celaque has shown an overall increase in the two years of the project. This has been attributed to Plan's work with the community on the importance of sending children to school. The increase is largely a result of increased enrollment of

boys, which has 19% since the start of the program. Girls' enrollment has also increased by about 5% during the Plan program, but has yet to reach the total enrollment obtained in earlier years.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
girls	58	41	58	52	43	57
boys	39	44	34	42	49	50
total	97	85	92	94	92	107

## Completion

An examination of the variation in enrollment in upper grades suggests that the program has not yet been successful in increasing the percentage of students nearing primary school completion. The percentage of either girls or boys in the upper grades has only reached 50% or greater one time in each case. With the increased enrollment in 2002, the percentage of children in upper grades has dropped appreciably, although the total number of girls has stayed constant.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	31.0%	41.5%	43.1%	40.4%	51.2%	36.8%
Boys	41.0%	47.7%	52.9%	45.2%	42.9%	34.0%

Actual completion rates, shown in terms of the percentage of the students who begin school in a given year reaching fifth and sixth grade in five or six years, respectively, reflect a low rate of completion. In the two base years for which data are available, only two girls of the 11 and 10 who began school advanced to fifth grade in five years. Only one of these students then went on to sixth grade. In the first cohort of 10 boys, none reached fifth grade in five years. In the second cohort, one boy of five reached fifth grade.

**Table 3: Fifth and Sixth Completion Rates by Year and Gender**

Celaque						
		1st grade	5th grade	%	6th grade	%
1997-02	boys	11	0	0.0%		0.0%
	girls	13	2	15.4%	1	7.7%
1998-03	boys	5	1	20.0%		nd
	girls	10	2	20.0%		nd

## **Classroom Organization**

There are three combined classes, as well as pre-school at Celaque. Preschool has 27 students. Boys slightly outnumber girls 15 to 12. The first/second grade is the most populous classroom with 51 students. Boys also outnumber girls 20 to 15 in first grade. However in the combined class there are 26 girls and 25 boys. The 30 students in the combined third/fourth are made up of 16 girls and 14 boys. Girls again predominate in fifth/sixth, making up 15 of the 26 students. Teachers stated that children are organized into work groups by grade in all classes. They are arranged in terms of the mastery of the subject matter that they demonstrate.

All grades have the APRENDE self-instructional guides in sufficient numbers for the enrolled students. However, they have only mathematics and Spanish in third and fourth grade. Thus, they supplement the guides with Ministry of Education textbooks. The exception is first grade where the students develop reading and writing skills using significant expressions generated from their own experience. Resource centers for mathematics, language, social studies, natural science and civics were observed in each classroom.

All of the children interviewed thought that attending a multi-grade school had the advantage of learning from older children (*aprendemos mutuamente, ayuda mutua*).

## **Instructional Materials**

As mentioned the school has recently received the self-instructional guides. There were sufficient guides for all children in each grade. There were also resource centers in each classroom.

## **Pedagogy and teacher student interaction**

Despite the organization of students into small groups, collaborative group work was very limited in all classrooms. Teachers wrote the assignment on the board or explained it to the entire group. Children worked individually with the guides or the assignment on the board. Although teachers said that each small group had monitors who lead the group work as directed by the guides, such behavior was seldom observed. Similarly, girls were observed to work together and commented on the importance of “trabajo unido” but this occurred within the context of the teacher working with the entire group or during seat work. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, only 2% of the interactions between teachers and students took place in small group contexts. The vast majority of the interactions occurred in the context of large groups, where teachers worked with an entire class or grade.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	2	70	28

As shown in Table 5, the teacher initiated more than 80% of the interactions between teachers and students. Boys initiated slightly more interactions than girls on the average. They also received a higher percentage of teacher-initiated interactions (33% versus 22%). When corrected for the number of children of each gender in the classroom, there was no difference in initiation and girls had a higher index of interaction in terms of interactions received.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	82	10	8

A high percentage of the teacher's interactions involved asking the students to provide answers from their work (48%) or telling them to respond (43%). Additional explanation was provided in a lesser percentage (18%) of the interactions. Positive reinforcement in the form of praise of work occurred in 9% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following sequence of observations illustrates the environments observed in the classrooms during the school visits.

9:10 am. The teacher in the combined third/fourth grade is giving the assignment that the students are to do on civics. She explains what traditions are then tells the children of both grades to do the same exercises in the textbook for civic and moral education. These texts are not the self-instructional guides so children work alone. They write the questions to be answered from their reading in their notebooks, then write the answers. The teacher circulates among the groups of children and nonverbally requests their notebooks to correct their work. Occasionally, she bends over a child and points to the book to explain a detail.

In the combined fifth/sixth grade, fifth graders are working on a natural science assignment in the self-instructional guide for that subject. The teacher is asking different sixth graders to read a passage aloud from Swiss Family Robinson. At the end of each passage he asks the group questions and they yell out answers. Most of the fifth graders watch the sixth grade lesson. When the passage is finished, the teacher tells the sixth graders to write a summary of the story. He then picks up the fifth grade guide and begins quizzing the fifth graders on their assignment. 10:00 am.

These classroom observations show that while children are arranged in groups, much of the pedagogy is teacher centered. Teachers provide directions to an entire grade and in some instances to the whole class. Even where children have self-instructional guides, they have not been encouraged to work together in groups. Rather they work individually and the teacher assesses their progress on an assignment through questioning in front of the group or examination of individual notebooks.

### **Student Government**

The school student government is made up of five students. Three of the students are male. They hold the offices of president, vice president and treasurer. Female students are in the positions of secretary and speaker. All of the students are from the upper grades. Each classroom also had a class government made up of the same offices. In each class, girls held two of the five positions. Teachers selected candidates for the school government offices. The two candidates for each position made presentations on their platform to each grade. All of the students vote individually for the candidate of their choice. Elections are held once a year.

The student government develops a yearly plan of activities, which for 2002 included organizing study circles for students having difficulties in certain subjects, planting trees in the school ground and celebrating "Teacher Day." The plan is posted on a school bulletin board and lists the classes of commissions responsible for each activity.

The school director and all of the teachers who were interviewed felt that participation in election process and the responsibilities of the student government were very important in helping girls become more participatory in the classroom. The girls who were interviewed made comments similar to that of the school staff. They felt that going through the election process helped them to learn to work with others and to express their ideas. They said that their parents supported their participation as they saw the experience of serving in school government as service to the community. Parents stated that they had received training that included a description of the student government. They were very much in favor of the student government and described changes in their children as a result of participating in school government. They said that the students were less timid and more interested in their studies than they had been prior to being elected. (*entusiamada - más trabajo pero le gusta, se siente alegre y menos tímida*).

### **Parent Participation**

A group interview was conducted with eight mothers. They explained that they had been trained by the Plan International program to organize a commission of parents that support the school. The principal commissions are the school lunch commission that prepare hot lunches for children in preschool through second grade, the cleaning commission that helps keep the school clean and the health commission that supports the various national health campaigns at the village level. All of the mothers participate, each choosing one or more commissions in which to participate. Members of the lunch and cleaning commissions rotate every few days, as these are daily responsibilities and relatively labor intensive. The mothers supported the active learning program. They stated that children now were more interested in learning and as they were learning more



they could teach others (*tienen más voluntad de aprender, pueden desarrollar su mente y enseñar a los otros*). They stressed the benefits of the program for girls by comparing the way their children were learning to their own experience. They stated that by working in groups the girls had more confidence and weren't afraid to speak out as opposed to simply copying, as had been their experience in school (*las niñas – antes teníamos miedo, solamente copiábamos, ellas tiene más confianza*).

## Manto – Jinotepe, Nicaragua

The fifth/sixth grade teacher has taken a group of students to participate in an academic competition. Thus, a group of fifth/sixth grade students work alone in the classroom on a project. It is creating a poster about the individual for whom the school is named for ‘Education Day.’” Francy, a ten year-old sixth grader, who is the class president, takes the lead in coordinating the project.

### Background

Manto was opened in the 1980s. It has always been a center for the area and has had classes for adults in addition to its function of serving primary school children. It has been a multigrade school since its inception, serving children from first through sixth grades. However, with the school renovation that took place in the late 1990s, a morning preschool program was added. The school serves a catchment area of about three kilometers. However teachers stated that because of the school’s academic reputation, some students come from as far as the municipal center of Naidame.

The 70 families in the immediate area of the school are involved in agriculture. Most community members work at nearby sugar cane plantations.

The school has four large classrooms that face a playground area in front of the school. A larger playground area is found behind the school. Latrines are at the end of the two contiguous classrooms farthest from the road. The school is fenced and has both electricity and running water.

School staff has received several training sessions where the different elements of the program were covered as separate units. They have also participated in the design and writing of the self-instructional guides.

### Enrollment

Student enrollment at Manto has shown a dramatic decrease in girls since 1997. There has been more than a 30% decrease in female students. Boys, on the other hand, have fluctuated from year to year but show a slight increase in enrollment.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	66	68	61	60	59	46
Boys	63	69	55	64	72	65
Total	129	137	116	124	131	111

### Completion

An examination of the variation in enrollment in upper grades shows a drop in the last year for the percentage of boys and girls in the upper grades. Teachers who were interviewed offered no explanation for this change other than the serious economic situation of the area and the country as a whole. Prior to 2002, girls had shown a slight

increase since the baseline year, whereas boys' presence in the upper grades had begun decreasing in 1999.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	39.4%	33.8%	42.6%	35.0%	44.1%	15.2%
Boys	44.4%	40.6%	27.3%	29.7%	27.8%	16.9%

Little yearly enrollment data by individual student were available for Manto. The one cohort that could be examined in terms of fifth grade completion had low rates for both boys and girls. Only 9.5% of boys beginning first grade in 1997 reached fifth grade five years later. Similarly, 11.8% of the first grade girls in 1997 reached fifth grade without repeating a grade.

**Table 3: Fifth and Sixth Grade Completion by Year and Gender**

		1st grade	5th grade	%	6th grade	%
1997-02	boys	21	2	9.5%	nd	
	girls	17	2	11.8%	nd	
1998-03	boys	Nd	Nd		Nd	
	girls	nd	Nd		Nd	

### Classroom Organization

Students are in graded classrooms from preschool through second grade. A combined third/fourth and a combined fifth/sixth are the multigrade classrooms in the school. As might be expected, given the overall enrollment, there were more boys in each grade. Of the 33 students in first grade in 2002, 17 were boys. In second grade 19 of 29 students were boys. In third grade boys outnumbered girls 18 to 13 whereas in fourth grade, there were 13 boys and seven girls. First and second grade appeared to use a small group organization, but observations carried out in the combined 3<sup>rd</sup>/4<sup>th</sup> found that children were in single file rows, with third grade on one side of the class and fourth grade on the other. The teacher mentioned that she did use the large space available in the rear of the classroom for small group activities.

All of the children interviewed thought that attending a multi-grade school had the advantage of learning from and helping one another (*es bueno, ayuda mutual, aprendemos juntas*). All mentioned verbal communication and the student government as teaching them to not be afraid to speak in public.

### Instructional Materials

All grades have self-instructional guides in sufficient numbers for the enrolled students. Resource areas for civics, science, mathematics, language, social studies and culture were observed in each classroom. Students' work is displayed on the walls in the rear of the classroom.

## Pedagogy and teacher student interaction

Despite the teacher's ability to discuss the principles of the Escuela Modelo program and her commitment to them, no small group work was observed in the single classroom available for observation. The teacher wrote assignments on the board or explained it to the entire group. She asked children to work in pairs on the assignment, but children worked individually on the assignment on the board. If students had questions about the assignment, they came to the teacher's desk and waited until they were recognized. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, no interactions between teachers and students took place in small group contexts. The vast majority of the interactions occurred in the context of large group, where the teacher worked with all students in the class.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	59	41

As shown in Table 5, the teacher initiated more than three-fourths of the interactions between teachers and students. Girls initiated more interactions than boys. These interactions were primarily requests for the teacher to provide feedback on their work. Girls received a higher percentage of teacher-initiated interactions (32%) than did boys (21%). When corrected for the number of children of each gender in the classroom, girls had a higher index of interaction than boys because of the fewer number of girls in all classrooms.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	79	9	12

A high percentage of the teacher's interactions involved ordering students to carry out an action or to provide an answer (80%). Providing additional explanation was involved in 20% of the interactions. Dictation occurred in about 5% of the interactions and positive reinforcement in the form of praise of work occurred in 3% of the interactions. The following sequence of observations illustrates the environments observed in the classrooms during the school visits.

9:05 am. The third and fourth graders are working with accenting words. The teacher gives an explanation then writes a series of word pairs, one with an accent and one without, on the board. She tells the student to work with the student next to them in pairs on what each of the paired words means, but children continue to work alone. At one point, the teacher sends a girl to work with a boy who is alone. The girl sits with the boy, but he turns his back. The girl looks for the teacher, who isn't watching her and says "I'm not going to help him" (*Ay, no lo voy a ayudar*) and returns to her own seat. The teacher then calls up each pair of students and asks them questions about two groups of words (there are 20 paired words in all). After the students have responded to questions on all the words in front of the class, the teacher asks the whole class to clap for those who participated. 9:45 am.

At the same time, the fifth/sixth graders are working on a poster on the person for whom the school is named. They use the resource areas to get materials to paint the poster and the library to find information on his life that is described on the poster. When finished they take the poster outside and set it up.

### **Student Government**

The school student government is made up of eight students. It includes representatives from third, fourth, fifth and sixth grades. Girls hold four of the places and boys hold four. All students campaigned for election, first to be the nominee for a position in their class, then in a general election. Terms were for one year.

The girls who were interviewed felt that going through the election process and then planning activities and representing the school through such activities helped them to not be afraid to participate and to express their ideas. In general, they said that their parents supported their participation as they saw the experience of serving in school government as a way to enhance opportunities for further study after primary school. They felt that participation made them more responsible, and that they served as examples for other children (*más responsables, somos ejemplos para los demas*).

### **Parent Participation**

Interviews with members of the school council showed that the participation of parents is largely a response to the director's requests for assistance. Attending meetings, helping organize days of celebration, and supporting study groups for children who fall behind were mentioned by the women as examples of parent participation with the school. The council president was highly supportive of the curricular change that had taken place in the school. She was the mother of three girls and felt that they participated more and were more creative with the active learning program. She expected all to go on to secondary school.

## **Pedregal – Matagalpa, Nicaragua**

A member of the research team interviews two sixth grade girls who are the only members of the student government present that day. He uses an open-ended questionnaire with space to write the answers to each question. As he organizes his materials after completing the interviews, the representative and another girl—perhaps a 4<sup>th</sup> grader—come up and ask if they could interview him. They explained that they were members of the journalism committee. Both are equipped with identical questions written out on sheets of paper that appeared to be patterned on those that he had used to carry out the interviews, perhaps 15 minutes earlier.

They all sit at the same table outside of the classroom that the researcher used for interviewing and the girls ask such questions as “What do you think of our school?” “What did you like most about our school?” “What did you think of the facilitation?” (“facilitation” has to do with the use of the self-instructional guides), and “How can we do things better?” They write his responses on the forms and ask him to sign their interviews. Both thank him for the interview before leaving.

## **Background**

Pedregal school has been functioning in the same site since 1957. It has been a multigrade school since its inception, originally serving children from first through fourth grade. Sixth grade and preschool were added after the school was remodeled in 1995 in three classrooms. It is located in the mountains about 20 kilometers from the urban center of Matagalpa. The catchment area of the school contains about 60 families and a total population of 400. Most of the families live in the area immediately surrounding the school, but some children come from up to four kilometers away. The principal occupation of the families served by the school is that of horticulture. They raise flowers for commercial sale. School staff members state that most school age children are enrolled in school, but attendance is a problem, especially during the rainy season.

The school was one of the first model schools and was seen as one of the most well implemented programs. However, it has had a complete turnover of staff in the last year and teachers are still becoming familiar with the active learning methodology. All three of the primary grade classrooms are multi-grade situations. They are divided into a combined first and second grade, a third/fourth combination and a fifth/sixth grade classroom. The classrooms are spacious and face a dirt playing field that is fenced off from the highway that passes in front of the school. There are two latrines behind the school at the end of the classrooms away from a principal’s office. The school has both electricity and running water.

School staff has received several training sessions on different elements of the program from BASE staff. The training mentioned included use of the self-instructional guides and dealing with first grade pre-reading and writing skills through the use of significant expressions. The school used mimeographed copies of the guides until 2002, when they began to use guides published through the APRENDE program.

## Enrollment

Student enrollment at Pedregal has increased since the BASE model school program began in 1998. Although there was a slight initial decline, enrollment of both boys and girls has risen in the last two years. The enrollment of girls has increased 20% since 1998 and 32% since 1997, the earliest year for which data are available. Boys' enrollment has increased 8% since 1998 and 11% since 1997.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
girls	50	55	53	51	54	66
boys	45	46	46	41	51	50
total	95	101	99	92	105	116

## Completion

An examination of the variation in enrollment in upper grades shows a pattern similar to that for girls. There are declines in the initial years of the program and then increases in the last two years. It is important to note that although there are more girls in school due to enrollment increases, there is also an increasing percentage in the upper grades. The pattern for boys, on the other hand, shows a rather dramatic decline in the relative numbers in the upper grades. Boys decrease from 59% of all boys in the upper grades in 1998 to 32% in upper grades in 2002.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	46%	47%	42%	35%	39%	50%
Boys	36%	59%	41%	44%	35%	32%

As only aggregate completion data were available at this school, actual completion rates, shown in terms of the percentage of those students who enrolled in first grade in a given year reaching fifth and sixth grade five or six years later, could not be calculated.

## Classroom Organization

The first and second grade combination has the largest (48) population of students. Thirty children are divided evenly by gender in first grade, whereas second grade is made up of eight girls and 10 boys. Girls predominate in the third/fourth classroom as there are 10 girls in third grade and 11 in fourth compared to nine boys and six boys in third and fourth grades, respectively. Again in the fifth/sixth grade there are 22 girls and 10 boys. Teachers stated that children are organized into work groups by grade in all classes. They are arranged in terms of the unit of the guides with which they are working.

All grades have the APRENDE self-instructional guides in sufficient numbers for the enrolled students. Resource centers for mathematics, communications, and civic

education were observed in each classroom. In addition the first grade classroom had a sand table and a number of games for developing reading and writing skills.

All of the children interviewed thought that attending a multi-grade school had the advantage of learning from older children (*integrado da la oportunidad de avanzar más rápido porque uno va viendo que hacen los del grado superior*).

### **Instructional Materials**

The school has recently received the APRENDE self-instructional guides. There were sufficient guides for all children and students were observed using the guides throughout lessons. The exception was first grade, where students used manipulatives available in the classroom to work on reading skills.

### **Pedagogy and teacher student interaction**

Small group work predominated at Pedregal. As shown in Table 3, almost 60% of the observed interactions between teachers and students took place in either teacher-led small groups, or more commonly, groups led by a student monitor. Large group work took place when the teachers gave directions or called on students to do an exercise in front of the rest of the class. Very little individual seatwork that was not organized around activities in the guides was observed.

**Table 3: Percentage of Observed Student-Teacher Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	17%	41%	39%	4%

As shown in Table 4, the teachers initiated 66% of the interactions between teachers and students. Girls initiated almost three times as many interactions with the teacher than did boys. These interactions were primarily questions about the assignment in the guides. When corrected for the number of students of each gender in the classroom, however, no difference in initiating interactions was found. Girls received a higher percentage of teacher-initiated interactions (27%) than did boys (20%). In this case, girls had a higher index of interaction than boys, when the percentage was adjusted for the number of children of each gender in the classroom.

**Table 4: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percentage of interactions	66%	9	24

A high percentage of the teacher's interactions involved asking the students questions about their work (60%) or requesting that they perform an exercise (28%). A smaller



percentage of the interactions involved explanation and expansion of the lesson (22%). Dictation was involved in 8% of the interactions, primarily in the lower grades. Positive reinforcement in the form of praise of work occurred in 9% of the interactions, all in the first/second grade, and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following sequence of observations illustrates the environments observed in the classrooms during the school visits.

9:05 am. It is cold, windy and rainy and many of the students at Pedregal are only arriving at 9 am, an hour and a half after the official opening of the school day. The third/fourth grade teacher has not arrived, so members of her class return home or sit in the office and work on assignments. The first/second students are working together with word games. As additional students enter the class, they move from table to table, deciding on which games to join.

*In the fifth/sixth grade, all of the fifth graders are at one table working on a math lesson in their student guides. They discuss the problems and ask questions of the teacher who circulates from group to group. The teacher uses examples from religion to explain the Roman numerals to the children. Sixth graders are also working in small groups monitors answer questions for students at their table. The teacher takes a girl from one table and begins to ask her problems at the blackboard. When the girls can't answer the teacher asked the question to the sixth graders in general. Children examine their work then raise their hands to respond.*

In first/second grade, the teacher has begun to ask children about their homework assignment. Both grades were to ask their families about riddles and bring them to school. The teacher asked each student to tell his/her riddle. As a student says a riddle "What animal has two balls on its shoulders?" (*cuál es el animal que tiene dos pelotas en el hombro*), the students wave their hands to attract the teacher's attention. After several guess someone correctly says "camel." The teacher asks the class to applaud both the presenter and the successful guesser then continues to call on students until all have had a chance to offer their two riddles. 9:45am

This classroom observation shows that teachers use a variety of learning contexts with children. In the lower grades both games and research in the home are used to expand children's communication skills in small group followed by large group contexts. In both the lower and upper grades children work together under the direction of fellow students and are given the opportunity by the teacher to express themselves in front of others.

### **Student Government**

The student government is made up of six students. It includes representatives from each classroom. Girls hold four of the six positions, serving as president, secretary, treasurer, and one representative. Boys fill the positions of vice president, and representative. Members of the student government were elected. Students interested in a position first ran for the position in their classroom, then the winners for each position in each classroom ran in a general school election. Candidates made posters and developed their

platforms through presentations in their own classroom and then to each classroom in the school. All students vote individually for the candidate of their choice. Elections are held once a year.

The school student government is responsible for developing projects that benefit the school, e.g., planting trees, school gardens, etc. It also coordinates other committees and commissions formed for special activities. The school staff stated that participation in election process and the responsibilities of the student government was very important in helping children become more participative in the classroom.

Student government members who were interviewed made comments similar to that of their teachers and school director. They felt that going through the election process and then planning activities and representing the school through such activities helped them to not be afraid to participate and to express their ideas. In general, they said that their parents supported their participation as they saw the experience of serving in school government as a way to enhance opportunities for further study after primary school.

### **Parent Participation**

Efforts to interview parents in this school were unsuccessful because of the inclement weather. Teachers felt that parents participated when asked. They primarily contributed unskilled labor in helping to maintain the school or contributing to festivals in the school.

## **Santa Fernanda – Matagalpa, Nicaragua**

We arrive at the school and are greeted by three members of the student government; two girls and a boy. They take us to the school director who shows us around the school. The school is a resource center for other schools in its *nucleo*. It is equipped with a resource room that contains a computer, photocopier, television and videotape facilities. There is also a library and reading area and a space for meetings. The director explains that these resources are used by teachers from local schools in their free time. The school stays open beyond class hours to permit teachers' access to the facilities.

### **Background**

Santa Fernanda has been in existence for about 30 years. It was originally part of the municipality of San Ramón but now belongs to the municipality of Matagalpa. It has been a multigrade school since its inception. It is located 10 kilometers from Matagalpa on the road to Muy Muy that is the main thoroughfare to Puerto Cabezas. The catchment area of the school traditionally contained around 80 families, most of whom were employed at a neighboring plantation. In the last year the plantation was sold and many of the families who had lived in the area for many years were dismissed. This has resulted in high unemployment and out-migration among the population typically served by the school.

The school has a director and a sub-director, who do not have teaching duties, as well as staff members who are responsible for maintaining the resource center. The school has a preschool class and a first grade, as well as a combined 2<sup>nd</sup>/3<sup>rd</sup> grade classroom and a combined 4<sup>th</sup>/5<sup>th</sup>/6<sup>th</sup> grade classroom. The current principal has been at the school for two years, the same amount of time that the *Escuela Modelo* has been functioning in the school.

Santa Fernanda was refurbished in the late 1990s. It has four classrooms and two additional buildings that house the resource center, as well as the school administrative offices. There is potable water and electricity and the school is protected by a gated wire fence.

In 2000, school staff received training sessions where the different elements of the program were covered as separate units. They have also attended sessions in the teacher self-training centers.

### **Enrollment**

Student enrollment among girls has had a steady decline in Santa Fernanda. The female student population has decreased more than 30% since the baseline year of 1997. Boys have suffered a similar drop in enrollment. This is the result of the sale of the plantation that supported many of the families and the economic hardship and out-migration created by that situation.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
girls	64	59	60	49	45	43
boys	58	48	53	48	54	41
total	122	107	113	97	99	84

## Completion

As might be expected, the enrollment in upper grades has also decreased for girls. The lower percentage of girls in upper grades would seem to be a result of withdrawal of older girls to support household economic needs. Boys' enrollment in the upper grades has actually increased as a percent of total enrollment, from the 1997 baseline.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	26.6%	42.4%	35.0%	36.7%	28.9%	23.3%
Boys	25.9%	27.1%	41.5%	35.4%	31.5%	34.1%

As enrollment lists by year for San Fernanda were not available, the actual completion rates of cohorts of individual children, shown in terms of the percentage of students reaching fifth and sixth grade in five or six years, respectively, could not be calculated.

## Classroom Organization

First grade is a "regular" classroom, which means that it does not have multiple grades. As that grade is seen as fundamental to learning reading and writing skills, the teacher is to concentrate on only one grade. Teachers mentioned that the automatic promotion of students in the first three grades is somewhat problematic for multigrade classes. As the active learning program relies on self-instructional guides, reading ability is critical to success, and some students have not mastered reading skills sufficiently to use the guides, when promoted to second grade. The school is an "autonomous" school that is supposed to have 35 students per teacher. This has made grouping difficult as student population began to decline. Thus, since 1999, there has been a combined second and third grade classroom and a combined fourth, fifth, and sixth grade classroom. First grade has 28 students (16 girls and 12 boys). Second grade has 17 students (11 girls and 6 boys). Third grade has 15 students (6 girls and 9 boys). Fourth, fifth and sixth grade have a combined total of 24 student of which 10 are girls and 14 are boys.

In all of the classes, children were organized into small groups. Teachers stated that children are organized into work groups by grade in all classes. They are arranged in terms of the unit of the guides with which they are working. The teachers appoint monitors for each small group. Appointments are made based on a student's mastery of the subject being covered.

## Instructional Materials

The school had self-instructional guides for all grades. In each of the multigrade classrooms children were observed using the guides to carry out a collaborative assignment. Classroom learning corners for civics, mathematics, language and science, as well as posters and other manipulatives were located around the room on shelves that are low enough so that they could be reached easily by children. Children's work was displayed prominently. Teachers mentioned that the students also used the library of the resource center to carry out work.

## Pedagogy and teacher student interaction

Student directed small groups predominated in the classrooms observed. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, no interactions between teachers and students took place in teacher-directed small groups. The vast majority of the interactions occurred in the context of student-directed small groups at all grade levels.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	81	15	4

Despite the emphasis on small group work, the teachers initiated about three-fourths of the interactions between teachers and students. Girls initiated more interactions with the teacher than did boys. These interactions were primarily requests for clarification of the instructions in the guides or discussions about the progress of the work. Girls and boys received the same percentage of teacher-initiated interactions (24%). When corrected for the number of children of each gender in the classroom, girls had a higher index of interaction than boys because of the fewer number of girls in all classrooms.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	73	11	16

A high percentage of the teacher's interactions involved asking the students about their work (57%) and providing additional explanation (41%). Giving directions also occurred fairly often (31%). Dictation was almost non-existent and positive reinforcement in the form of praise of work occurred in 8% of the interactions. The following sequence of

observations illustrates the environments observed in the classrooms during the school visits.

11:50am. The students in the combined 2<sup>nd</sup>/3<sup>rd</sup> grade classroom are doing science lessons in the respective guide for each grade level. The second graders are working together in their small groups to identify parts of the body and write them down. The third graders are working on body functions. The teacher walks around the class and answers questions that arise in the groups. When it appears that most children have finished, she calls on members of the different group to report on what they have done.

The combined 4<sup>th</sup>/5<sup>th</sup>/6<sup>th</sup> grade class is working with the mathematics guides for their grade. They are doing exercises in geometry, volume, and fractions, respectively in each class. The students in each group work together. The monitor for the group directs the progress of the work. The teacher circulates and provides further explanation to the exercise or responds to questions raised by a group. As a group finishes the exercises the teacher tells to pick a group member to come to the board and explain what they had learned 12:25pm.

In both classes, the teachers focus on similar material appropriate for each grade level in the class. Students work together following the instructions in the guides. Upon completion of the exercise, they are encouraged to explain their work in their own words, rather than be forced to answer questions for which the teacher expects a “right” answer.

### **Student Government**

The student government is made up of five students. It includes representatives from all six grades. Girls in fourth and sixth grade hold the positions of treasurer and secretary, respectively. Boys in fifth, third and first grades fill the three positions of president, vice president and first speaker, respectively. All members of the student government were elected. Students interested in a position told teachers of their interest and two slates were formed. Students on each slate then made presentations on their platform to each grade. The students voted individually for the candidate of their choice in a secret ballot. Elections are held once a year.

The school director felt that participation in the election process and the responsibilities of the student government were very important in helping girls become less timid. He said the active learning program showed them that their words and their education were important (*su palabra y su preparación tiene valor*). Teachers added that student government projects such as study classes on weekends in the home of a student and creating a school garden made children more responsible and taught them to deal with adults.

### **Parent Participation**

School staff commented that parents were very supportive of the school. The example cited was the opening of their homes for the weekend study circles organized by the

student government. They mentioned, however, that the poverty of the area limited collaboration and the sale of the plantation reduced the local population.

## **Puente Cortés – Carazo, Nicaragua**

Only the third/fourth grade teacher had received the full year of training in the Proyecto Aprende multigrade methodology, and the student self-learning guides had only arrived a month before. Her training consisted of 40 days during the school vacation period and Saturday classes for the rest of the year. When I entered the classroom to observe interactions, the student desks were all lined up traditionally, facing the teacher and blackboard, boys on the left and girls on the right.

The teacher tells students to rearrange the desks into groups and hands out the mathematics self-learning guides, insufficient in number, to the groups. She tells everyone to turn to the same page, and proceed to do the exercise. During the remainder of the observation period, she walks around to the various groups, and then calls the attention of all of the groups to something she just observed that was wrong at one group, or trying to keep them all on the same theme. Students in the groups stop what they are doing and turn around in their seats to pay attention to the teacher, who then moves on to another group, and the process repeats itself. Most students do not respond verbally, and not a single interaction was initiated by a student during the observation period.

## **Background**

Puente Cortés was founded in the 1980's and has always had all six grades. It serves the children of about 70 families, most of whom work in the surrounding sugar cane area as day laborers—the fifth/sixth grade teacher points out that sugar cane is not something that lends itself to small-farmer ownership and production.

The school is located about three kilometers on a dirt road leading off of the Interamerican highway at about kilometer 56 south of Jinotepe. In terms of infrastructure and layout, Cortés was completely renovated a few years ago: electricity, water (supply, however, was a problems because the municipal water line keeps getting broken as it runs exposed on the side of the road), good bathrooms, good ventilating windows and bars to protect them, suspended ceilings, secure doors, and adequate desks and so forth. Paved walkways between classrooms, play areas and perimeter fencing gives the school an impressive “formal” sense.

At this school, there are no “projects” that support the school— “just the MED (Ministry of Education),” a point made by both the third/fourth (female) and fifth/sixth grade (male) teachers, both of whom are 19 year veterans of the Ministry system. The school is organized with a pre-school section (run by a female teacher with specialized pre-school training), one first grade class (female teacher), a second grade (female teacher), and the multigrade third/fourth (female teacher) and fifth/sixth (male teacher). There are a total of 116 students in first through sixth grades, and the total school population has remained more or less constant over the past five years. The teachers interviewed felt that there were relatively few children in the community who were not enrolled in school, although



among older children there was a tendency to not re-enroll after the end of a school year in order to help their parents with domestic or agricultural activities.

Although the multigrade teachers indicated that there were no “special” teaching programs at the school, both classrooms used the self-learning guides of the MED’s Proyecto Aprende. The third/fourth grade teacher had been trained in the use of the materials from October 2000 through October 2001 at the Escuela Normal in Jinotepe. The training took place during approximately 40 days during school vacations and every Saturday during the entire year. The fifth/sixth grade teacher had received formal training “only through the regular training workshops the MED conducts, nothing special.”

The Proyecto Aprende self-learning guides were brand new but in short supply in both classrooms, and had only been received a month or so before the visit. Apart from the guides, student government, both for classrooms and the school, existed. The elected school government was comprised of exactly the same individuals in the same positions as the fifth/sixth grade classroom government (see details later in this report for the composition of the student government). An additional element found was the use of classroom “teams,” such as clean-up, materials, etc.

## Enrollment

As mentioned, the school’s total primary enrollment has remained relatively stable over the past six years. Enrollment is shown by gender for school years 1997-2002 in the following table.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	57	72	65	57	63	61
Boys	59	53	55	59	51	55
Total	116	125	120	116	114	116

Girls comprised 53% of the primary enrollment overall. Lower grades (first through third) have averaged 56% of total enrollment, and girls have made up 55% of lower grade, and 50% of upper grade, enrollments. These patterns are fairly stable over the six years examined.

## Completion

Given that the total student population has been fairly stable over the years for which we have data available, the variation in upper grade enrollment was examined to evaluate continuance in school. The following table presents, by year, the percentage of all enrolled students of each gender who were enrolled in the upper grades (fourth through sixth grade). If all children make normal progress through primary school, one would expect that about one-half of the population of girl students to be in upper grades each year, and the same should hold for boys as well. The relatively high figures for both

genders suggest that drop-out before sixth grade completion has not been a serious problem at the school.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	45.6%	43.1%	43.1%	38.6%	34.9%	45.9%
Boys	44.1%	41.5%	49.1%	47.5%	51.0%	47.3%

Perfect progress (no repetition, no drop-out) is an ideal situation for both the internal efficiency of the school system and the student. The following table looks at the results of following up in 2002 on students enrolled in first grade in 1997. Obviously, not all students who fail to appear in 2002 have dropped out: some may have moved to other schools, for example. Nonetheless, 60% of girls had achieved ideal or close to ideal progress, compared to 47% of boys.

**Table 3: Fifth and Sixth Grade Completion by Year and Gender**

		1st grade	5th grade	%	6th grade	%
1997-02	boys	17	4	23.5%	4	23.5%
	girls	10	4	40.0%	2	20.0%

### Classroom Organization

The third/fourth grade teacher indicated that the two grades were mixed together in the classroom. The fifth/sixth grade teacher said that the two were kept separate. Initial observations supported these statements. Boys and girls tended to sit together in gender groups in both classrooms. Whereas in the fifth/sixth grade classroom, seating followed both grade and gender, in the third/fourth grade classroom gender was a more predominant dividing factor than was grade level.

The layout in both classrooms was initially traditional, but small groups were quickly formed by turning the desks to make grade-specific groups of 3, 4 or 5 students. In the fifth/sixth grade class, three groups were formed for each grade. Only one of the groups (fifth grade, five participants) was mixed gender (one boy, four girls).

Both multigrade classrooms were oriented towards the front, consisting of a blackboard, the teacher's desk, a first-aid kit and a bookcase "protected" by the teacher's desk. There were few resources other than the few old textbooks and insufficient student guides kept in the bookcase, and these were kept high enough to require a student to stand on a chair to get to them. The third/fourth grade classroom did have a "cleaning corner" (*rincón de aseo*) and a "civics learning coner" (*rincón cívico*), and there were murals relating to the teacher (teacher's day had recently been celebrated), a mural relating to children, and a natural resource mural. The fifth/sixth grade class had no formal learning corners (*rincones*,) but a number of posters filled the back wall of the classroom, including lists of members of the various classroom committees and a poster the students had made for teacher's day.

## Pedagogy and Teacher-Student Interaction

Despite the use of the self-learning guides and classroom organization in small groups, fully 60% of interactions observed in the third/fourth grade classroom took place in the context of the whole group. This was particularly distracting as the teacher would loudly address the entire class, requiring students to stop their group work, and turn around to pay attention to whatever point the teacher was making about what she had just observed a small group doing. The use of the guides was very traditional as well, where all students would work for the same time on the same theme or topic. It appeared that groups were formed more for sharing the insufficient number of guides than any other purpose.

In the fifth/sixth grade classroom the teacher basically went from small group to small group, either dealing with the whole small group (42% of interactions) or dealing individually with students in a group (26%). Interactions with the whole class accounted for 26% of interactions, and were generally caused by a teacher-led dynamic review and evaluation exercise at the end of the class session that was lively and well received by the students.

11:42 am: In this dynamic, the center of the classroom was cleared away and all students stood up in a circle facing each other. A list of “evaluation” questions had been prepared on strips of paper and placed faced down on a desk. The teacher handed his pencil to one of the students and this was passed around in a circle while the teacher, looking away, tapped loudly on a desk. Whoever had the pencil in their hand when he stopped had to pick up one of the slips of paper, read aloud the question and answer it. The whole group would loudly applaud the person who answered the question. This process was repeated for about eight questions. At the end the students enthusiastically applauded themselves, with the teacher loudly joining in. 11:52 am

**Table 4: Percentage of Observed Student-Teacher Interactions by Context**

Context		Teacher directed small group	Student directed small group	Large group	Seat work
Percent of interactions	3 <sup>rd</sup> /4 <sup>th</sup>	25.7	0	60.0	14.3
	5 <sup>th</sup> /6 <sup>th</sup>	42.1	0	26.3	26.3
	Total	33.9	0	43.2	20.3

As indicated earlier, teachers were the principal initiators of all interactions. The following table confirms this, especially for the third/fourth grade classroom where the teacher initiated 94% of interactions. The fifth/sixth grade teacher was less dominant (79%). The small group environment also seems to favor girl-initiated interactions: in third/fourth grade, no boys initiated interactions, whereas in fifth/sixth, girls were three times as likely to be initiators.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator		Teacher	Male Student	Female Student
Percent of interactions	3 <sup>rd</sup> /4 <sup>th</sup>	94.3	0	5.7
	5 <sup>th</sup> /6 <sup>th</sup>	78.9	5.3	15.8
	Total	86.6	2.6	10.8

Classroom teams were observed to handle either the clean-up functions (mostly girls) or handing out or retrieving the self-learning guides (mostly boys).

The third/fourth grade teacher expressed that girls talk more and are generally more active in the classroom, so much so that she felt that she had to exercise control over their behavior. The fifth/sixth grade teacher said that the boys were more timid in the classroom. These appreciations were clearly observed in both classrooms—boys were generally quiet and participated little during group work. Girls discussed their work more or fell into giggling among themselves.

### **Instructional Materials**

As has been mentioned, the new Proyecto Aprende self-instructional guides had been received little more than a month before the observations were made. The old textbooks were still in the classrooms, but were not being used. But the quantity received was clearly insufficient for each student to have a guide, especially since all students were required by the teacher to stay on the same subject and topic. In third grade, for example, there were 13 copies of each of the Spanish language and mathematics guides for 36 students enrolled in the two grades. In the fifth/sixth grade classroom, there were 9 guides each for mathematics, Spanish language and science for fifth grade, and 13 each for the sixth grade for enrollments of 13 and 18 students, respectively.

The teachers, while welcoming the new guides, criticized the quantity and the lack of additional materials (such as math manipulatives, dictionaries or other resource materials). A sixth grade girl member of the student government commented that the new guides were much better than the old textbooks: “uno aprende más.”

Clearly, though, the guides are not being effectively used as self-learning guides, and are not backed up with additional resources and materials in a self-learning approach. Students cannot take the guides home, and all students go through them at the same pace.

### **Student Government**

Each classroom elects its government. At a minimum, this consists of a president, vice-president, secretary and a treasurer. The third/fourth grade class elected all fourth graders, and the fifth/sixth grade class elected all sixth graders. Girls held 4 of the 6 positions (vice-president, secretary, treasurer and “vocal”) in the third/fourth grade classroom, while boys held 6 of the 8 positions (president, vice-president, secretary, treasurer and two “fiscal”) in the fifth/sixth grade classroom.

As mentioned, the school government consists of exactly the same positions and persons as the fifth/sixth grade classroom.

I interviewed the one female member of student government that attended school that day. She is in sixth grade and is 11 years old. Her position in the student government is Vocal I, or “speaker.” She said that she was elected through a campaign process that included the use of posters. Her job is to go to each classroom and make announcements (hence the “speaker” title) of such matters as special ceremonies or events, whether a teacher was going to be absent or to inform the students that there was to be a parents’ meeting. She said that she really liked her position, that it was “really nice to go to the classrooms and announce these things,” and that she felt that by doing this she helped her school to function better.

She said that her parents feel that her having this position is very good, and that they were very happy when she was elected. She feels that there are no drawbacks to being in a multigrade school—on the contrary, “we all help each other.” When she graduates from primary this year, she plans to go to Jinotepe (the nearest town with a secondary school) to continue studying.

### **Parent Participation**

The teachers interviewed both expressed that parental involvement in the school is fundamentally limited by the poverty in the surrounding area and the expectation that the government should be responsible for equipping and maintaining the school. Given the rather privileged infrastructure of the school, especially as compared to other schools in the area, the teachers felt that parents had concerns greater than the needs of the school. The fifth/sixth grade teacher, who had been active during the Sandinista days, lamented the evolution of the school-community relationship towards one where parent participation in school matters no longer seems as important.

### **Difficulties Detected**

The fifth/sixth grade teacher said he was a true believer in active learning methodologies, especially in the multigrade setting (“it is the only thing that works”), but felt that the MED’s multigrade initiative (Proyecto Aprende) was not designed by teacher’s with actual experience in the multigrade setting. He saw the program as yet another highly visible but rather ineffective attempt of the MED to appear to be addressing the needs of rural schools. But he also felt that single grade classrooms work better—both because the students are more homogeneous in age and because a single methodology could be employed. He also commented that “here, we don’t have special classrooms that help in the use of a multigrade methodology.”

## Río Hondo, Granada, Nicaragua

### Background

The small schoolhouse for this control school is located on an open field about 300 feet from the Pan-American Highway on the road to Rivas. The school opened in 1992 and a new two-classroom building was constructed about three years ago; the old one-room schoolhouse is still standing just behind the new one and is used for storage and the preparation of meals. The school only has grades 1-4, and the students who wish to continue their education must enroll in other primary schools located closer to the Departmental capital of Granada in the towns of Nandaime or Jesús María.

The catchment area of the school is primarily all the families that live within a 2-3 kilometer radius of the school. The surrounding population is very small, consisting of about 25 to 30 families, most are agricultural wage laborers, and a few families cultivate small plots of land near their houses. This means that many of the adult males are absent for long periods of time, and in fact, many of the families consist of just the mother and her children. One of the mothers reported that the 22 children enrolled in 2002 came from 13 households.

On the day of the visit, the area around the school was flooded, making access very difficult. The homes located around the school had also been inundated by the heavy rains the previous night and the entire area was covered with water and mud.

### Enrollment

Since 1997, total enrollment at Río Hondo has decreased from 29 to 22, and most of the decrease has been a lower enrollment of girls. The ratio of girls to boys has remained fairly even except for 1998 when there were almost twice as many girls as boys, the next year there was only one girl more, and by 2000, there were four more boys than girls. The lowest enrollments were in the last two years with two more boys than girls in both years.

**Table 1: School Population by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	15	16	13	12	10	10
Boys	14	9	12	16	12	12
Total	29	25	25	28	22	22

The 22 students in 2002 consisted of five 1<sup>st</sup> graders (4 boys and 1 girl), six 2<sup>nd</sup> graders (4 boys and 2 girls), eight 3<sup>rd</sup> graders (2 boys and 6 girls), and four 4<sup>th</sup> graders (2 boys and 2 girls).

### Completion

The percentage of girls in the upper two grades (3 and 4) was double that of boys by 2002. It is notable that in 1999 there were no students in the upper two grades out of the

total enrollment that year, and for the next three years, the percentage of girls has increased steadily, reaching a high of 30%. The highest percentage of boys was in 2001, which was followed by a decrease in 2002.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	1997	1998	1999	2000	2001	2002
Girls	6.7%	18.8%	0.0%	16.7%	20.0%	30.0%
Boys	14.3%	0.0%	0.0%	12.5%	25.0%	16.7%

Since this school only has four grades, Table 3 shows the percentage of girls and boys who reach fourth grade in four years for three successive cohorts. For the first cohort, 11% of the girls, in reality one girl out of nine, reached fourth grade and none of the boys, and for the middle cohort one boy and one girl out of six for each gender reached fourth, and in the last cohort only one girl out of four went on to fourth in four years.

**Table 3: Fourth Grade Completion by Year and Gender**

Cohorts		1st grade	4th grade	%
1997-02	Boys	4	0	0.0%
	Girls	9	1	11.1%
1998-03	Boys	6	1	16.7%
	Girls	6	1	16.7%
1999-04	Boys	4	1	25.0%
	Girls	7	0	0.0%

### **Classroom Organization**

The classroom was organized with students sitting in rows rather than groups. The fourth graders were in the center row just in front of the teachers, the 3<sup>rd</sup> graders to her right, the second graders on the left, and the three first graders were in the back behind the 4<sup>th</sup> graders. The classroom was quite barren with very little on the walls and books and other teaching materials were located on tables in the corners at the rear of the room. In the far corner opposite the door and to the left of the blackboard was a bookshelf stacked with new curriculum guides produced by the Aprende Project. Next to the bookshelf and in front of a large side window was a portable blackboard with taped-on pictures of birds, flowers and a hand-made map of Nicaragua showing the location of the school. Next to the materials shelf in the rear was a small table where students worked independently.

### **Instructional Materials**

The instructional materials used by students on the day of the visit were the new curriculum guides. Although different grades were working on distinct subjects, there were enough guides for the students present. The school had also received a package from USAID with school supplies that included pencils and erasers.

## Pedagogy and Student-Teacher Interaction

The teacher had attended a three-day workshop at a nearby Microcentro de Intercapacitación (MIC) on how to use the new curriculum guides. The workshop covered problems that may occur when using the guides and then gave practical solutions.

During most of the school day, the teacher directed the classroom activities by addressing the whole class as a single large group. She explained what was in the curriculum guides, and for one grade she explained the math exercises that had to be done, and for the 4<sup>th</sup> graders who were studying history, she handed out a hand written list of questions about the voyages made by Christopher Columbus. Table 4 shows that 60 percent of the interactions took place in the context of large groups and the rest involved students working at their desks.

The 4<sup>th</sup> graders were observed sitting in a tight little group working with the guides and answering the questions handed out by the teacher. When asked a couple of questions by the observer, the group of three boys and two girls appeared very timid and shy, feeling very uncomfortable with being asked questions. The answers were simply yes and no. The students did ask each other some questions about how to formulate their answers.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context**

Context		Teacher directed small group	Student directed small group	Large group	Seat work
Percent of interactions	1 <sup>st</sup> -4 <sup>th</sup>	0	0	60	40

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator		Teacher	Male Student	Female Student
Percent of interactions	1 <sup>st</sup> -4 <sup>th</sup>	77.5	20	2.5

The teacher said that there were no gender divisions in the classroom, except that the boys tended to be more vulgar. Also, some of the girls are very shy, and she calls on them more as an attempt to help them overcome their timidity. She went on to say that the school was multigrade simply because there were so few students, and with the new guides, the teacher is also learning; she gave the use of natural insecticides as an example. She did not mention any specific advantages for girls in her school but did not see any disadvantages either.



### **Student Government**

Río Hondo did not have a formal student government with student elections. According to the teacher, each grade had an organized work group with a group leader designated by the teacher. Most of the activities consisted of washing the floors in the classroom and the outside patio.

### **Parent Participation**

All five of the mothers interviewed felt that it was very important for their children to go to school, and four felt that girls study more and make better progress than the boys. The mothers said that they attend the monthly teacher-parent meetings and also participate in school activities, which consisted mostly of cleaning the school and one mother mentioned food preparation.

**Appendix G: Philippines Country Study**



# **GEMS**

**Girls' Education Monitoring System**

## **Ethnographic Study of the Effects of Active Learning Programs on Girls' Persistence and Completion of Primary School in Developing Countries**

### **Philippines Country Study**

*Prepared for:*

**United States Agency for International Development  
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## Acronym List

ARMM- Autonomous Region of Muslim Mindinao  
CAR- Cordillera Administrati Region  
CPC- Country Programme for Children  
DECS- Department of Education Culture and Sports  
EMIS- Education Management Information Systems  
GEMS- Girls' Education Monitoring System  
MPPE- Multigrade Program in Philippine Education  
NEAT- Sixth Grade Tests  
NEU- *Nueva Escuela Unitaria* (New Unitary School)  
NCR- National Capitol Region  
PLEP- Pupil Learning Enhancement Program  
TIC- Teacher in charge  
USAID- United States Agency for International Development  
UNDP- United Nations Development Programme  
UNICEF- United Nations International Children's Emergency Fund

# **Ethnographic Study of the Effects of Active Learning Programs on Girls' Persistence and Completion of Primary School in Developing Countries**

## **COUNTRY STUDY -- PHILIPPINES**

This study examines the Philippines Multigrade Demonstration Schools Project supported by UNICEF. The study focuses on the elements and processes of this innovative program as they relate to the success of girls in rural primary schools. It is part of a multi-country study on active learning programs in multigrade settings and the relationship of such programs to girls' performance in school. It is hoped that the study will serve as a resource in planning educational interventions to improve quality, especially in those countries where participation of girls in formal school is low.

The study applied rapid ethnographic appraisal methods for school and classroom research to collect data in a sample of 9 multigrade schools (six with the innovative learning programs and three that either were not part of the program or no longer had multiple grades in a single classroom). The study used the qualitative methods of maps, inventories, structured observations, and in-depth interviews with school directors, teachers, students, and principals to conduct cases studies of a sample of multigrade schools with active learning programs, as well as programs using traditional teaching methods. Available program level data were also collected and compared to case study findings. A team of anthropologists with extensive experience in education research in rural settings carried out the study during September/October 2002.

### **I. Context**

The Philippines is a country of 70 million people distributed over more than 7,000 islands. Although the country is divided into 79 autonomous provinces with 1,500 municipalities and 41,000 villages (*barangays*), all with elected officials, public services such as education remain highly centralized. Thus, there are disparities in education service delivery, with the more isolated rural areas least likely to have public schooling. These are also the areas where poverty is highest. The government of the Philippines is aware that the existence of large concentrations of poverty and low level of education is not only inequitable, but also poses a threat to social stability, investor sentiment, and economic competitiveness. Poverty reduction has been one of the country's highest priorities for over ten years. Despite government efforts, more than a fourth of the population remains in poverty.

The Philippine school system has a total primary school enrollment of 11,562,181, distributed in 35,557 schools. Although girls enroll at slightly lower rates than boys (5,647,102 versus 5,915,079) they have higher cohort survival rates (73% versus 64%). Enrollment and cohort survival rates vary by region with girls having low completion rates in rural isolated areas such as the Autonomous Region of Muslim Mindanao (35%). Teachers must have a university degree and pass a qualifying examination to be employed as an elementary teacher.

Throughout the 1990s, the government has emphasized increasing coverage of primary education. According to the World Bank, participation in primary school increased from

92.7% in the 1995/1996 school year, to 97% in the 1999/2000 school year. As the government emphasized increasing coverage, the quality of education was not necessarily addressed with the same resources and attention. As coverage increased, completion rates decreased. At the primary school level, completion rates went from 72.1% in the 1996/1997 school year to 69.3% in the 1999/2000 school year. (World Bank Report Sept 2002). Although worsening economic conditions and social unrest in parts of the country contributed to lower completion rates, the lack of complete primary schooling in a region also denies children the possibility of completing primary school. *Barangays* without a public elementary school have been reduced from 4,234 in 1996/1997 to 1,612 in 2001/2002 (DECS 2002b). However, the number of primary schools that do not offer all grades remains high. As can be seen in Table 1, incomplete schools that have less than all six grades make up 29% of all schools in the Philippines. The highest percentages of incomplete schools are in Region VI, where this study took place, Region VIII, and The Autonomous Region of Muslim Mindanao. As many of the incomplete schools are multigrade schools in isolated rural areas, improvements in multigrade schooling is seen as a strategy to allow children to receive a complete primary education.

**Table 1: Percentage of Multigrade and Incomplete Schools by Region**

GOVERNMENT ELEMENTARY SCHOOLS - School Year 1998-1999						
REGION	All Schools			Multigrade Schools		
	Total	Incomplete	% Incomplete	Total	% of Total	% Incomplete
I	2,267	302	13%	621	27%	35%
II	1,985	591	30%	879	44%	45%
III	2,585	485	19%	449	17%	63%
IV	4,242	614	14%	1,401	33%	36%
V	2,934	432	15%	1,060	36%	43%
VI	3,247	1,678	52%	630	19%	77%
VII	2,790	817	29%	1,159	42%	58%
VIII	3,448	1,648	48%	1,871	54%	67%
IX	2,193	527	24%	673	31%	49%
X	1,556	311	20%	636	41%	28%
XI	2,410	543	23%	707	29%	45%
XII	1,073	392	37%	290	27%	67%
XIII (Caraga)	1,501	444	30%	805	54%	64%
NCR	474	4	1%	-	0%	
CAR	1,278	530	41%	596	47%	61%
ARMM	1,574	971	62%	586	37%	68%
TOTAL	35,557	10,289	29%	12,363	35%	53%

Source: DECS Statistical Bulletin School Year 1998-1999, Research and Statistics Division, Office of Planning Service, June 1999

## II. Background

Although schools with one teacher handling more than one grade have been common in the Philippines since at least the 1920s, the formal Multigrade Program in Philippine Education (MPPE) was launched in 1993. The Program has the objective of improving

access to primary education by providing complete grade levels in all public elementary schools through the organization of multigrade classes. It also aims to improve quality by increasing teachers' abilities to work with more than one grade simultaneously through training and instructional materials. The program legitimized multigrade teaching as a national strategy to improve access to and quality of school in all areas of the country (Miguel & Barsage, 1997). The Program works in five areas: curriculum and materials development; staff development; physical facilities; community support; and research, monitoring and evaluation. It has developed a minimum learning competencies guide for multigrade classes, a budget of work and lesson plan for multigrade teachers to follow, a handbook for teachers and sample lessons, as well as materials to be used at different grade levels within the same classroom and other instructional materials such as a 100-book library, drill cards and other teacher-made materials. Some effort has also gone into preschool training in the form of a handbook for preschool teachers and a workbook for preschool pupils.

Many of the curriculum innovations for multigrade schools were developed as part of the Multigrade Demonstration Schools Project (1995-2000) carried out in partnership with UNICEF. The purpose of this project was to show that multigrade teaching can be a viable alternative to single grade classes in areas where the uneven distribution of the pupil population make the establishment of regular monograde schools with a teacher for each of the six primary grades costly and inefficient. The project established demonstration schools in rural areas that historically received little support in terms of educational delivery. Over the course of the project, 24 demonstration schools were established that provided models of effective teaching-learning strategies, school and classroom management processes and community participation in education. The project provided observation tours to Colombia for teachers and administrators to see the *Escuela Nueva* multigrade program in that country and trained teachers through three workshops. The first of these workshops took place over a two-week period in Manila. This workshop was followed by regional and local workshops for each of the participating teachers and local administrators. Schools were provided with supplementary instructional materials for pupils and teachers in the form of handbooks, a small library, self-instructional guides, and minimum facilities such as a water supply and toilets. Many schools received furniture such as desks that could be easily moved for different activities in the classroom. The demonstration schools served as resource centers for other schools in their areas and the project generated more than 150 expansion schools by 1998.

The Multigrade Demonstration School Project was carried out under UNICEF's fourth Country Programme for Children (CPC IV). Under the fifth CPC (1999-2004), UNICEF continues to support multigrade schools within the framework of the Department of Education Culture and Sports (DECS) Child-Friendly School System efforts. This program focuses on better learning opportunities for children through the involvement of families and communities in promoting inclusive gender sensitive learning environments and effective methods. Multigrade schools are also included in the UNICEF Infotech project that provides computers to schools.

Other projects undertaken by the MPPE include the Pupil Learning Enhancement Program (PLEP), the Little Red Schoolhouse Project, the Multigrade Teacher Achiever

and the Best Practices by Teachers in Multigrade Schools project. PLEP, which had assistance from the United Nations Development Program (UNDP), ran from 1996-2000. It focused on the development and printing of teaching and learning materials, the training of multigrade teachers and school administrators, and creating partnerships of government, non-government and community based organizations to support improved school quality. The program also had assistance from Japan for the repair and construction of school facilities in pilot sites and from Metrobank for the provision of a 100-book library.

The Little Red Schoolhouse Project, which has assistance from the Coca-Cola Foundation Philippines, is providing adequately equipped three-room school buildings in 50 priority multigrade schools in the country. The project includes construction of school buildings, one toilet facility in each room and a water system, the provision of classroom furniture such as tables and chairs, training of multigrade teachers on innovative techniques, and a workshop on community involvement. The program builds on the materials and approaches developed in the Multigrade Demonstration Project.

The Search for the Multigrade Teacher Achiever is an annual effort of the MPPE that began in 2000. It is an award to the most outstanding Filipino teacher assigned to a multigrade school. It recognizes performance and dedication of a multigrade teacher working in a disadvantaged school. The Best Multigrade Teaching Practices will be a training video that can be used in workshops and as a self-learning tape by teachers attempting to improve their teaching. It will showcase the strategies used by the Multigrade Teacher Achievers.

### **III. Results**

This section examines the aggregate results for the sample Demonstration and comparison schools. The common characteristics of the schools in terms of classroom environment, instructional materials and strategies employed and student participation are described. Subsequently, these characteristics are related to the trends in enrollment, completion, and academic performance in the sample schools and the trends found in these schools are compared to overall trends in UNICEF supported schools and non-UNICEF supported schools in the same geographical regions. Available data on sustainability of trends are also presented.

#### **A. Participation**

##### **1. Classroom Organization**

Fourteen classes in six schools that had been part of the Multigrade Demonstration School Project were observed intensively. In all of those classes, children were organized by grade in rows of desks or desks pushed together as a table. Children were all facing the front of the classroom. In 12 of the 14 classrooms, the teachers allowed students to sit where they desired within the seats assigned to their grade. In one of the remaining classrooms the teacher assigned children to seats in alphabetical order. In the other



classroom, the low performing children were seated in the front of the class to allow them more contact with the teacher. In classrooms where children were allowed to choose their seats children of the same gender were observed to sit together. Although the teacher spoke of the advantage for children of having older children in the same class to help those in the lower grade, little formal cross-grade interaction among students, except to ask siblings for pencils or other materials, was observed. Large group activities that combined both grades were observed in all classrooms. However, these activities involved interacting with the teacher rather than with children from the other grade.

All of the Demonstration Project classrooms had a number of learning corners. There were learning corners for science, mathematics, English and Filipino languages, as well as integrated studies and culture. Learning corners were equipped with subject matter texts, instructional games and locally-made instructional materials. The classrooms were also supplied with a mini-library. Charts on the Philippine school system, nutritional information and class officers were also posted on the walls of the classrooms. Pictures of the Philippine president and, in some classes, religious photos, adorned the front of the classrooms. Display of student work was an important aspect of each classroom.



While all of the grades had textbooks and the self-instructional workbooks developed by UNICEF, these were seldom observed in use. Within the classrooms teachers made use of sheets of paper from flip charts, flash cards, and games. The flip chart pages generally contained exercises or tests to be completed during seatwork, when the teacher was working with the other grade. Flash cards, often

placed in paper representations of animals, were used to provide directions for children working in small groups or at their seats. Games were used both for mathematics practice such as counting or multiplication and oral practice such as word identification. The blackboard was used for children to record findings from exercises.

Three of the multigrade classrooms that were used for comparison had a classroom structure similar to that of the demonstration Project schools. This was a result of one of the schools being part of the Little Red Schoolhouse program and the other being a multigrade Demonstration project school that had become a monograde school with the exception of one grade. A teacher who had not been formally trained in multigrade methodology taught this class. These classrooms had a number of learning corners similar to those found in Demonstration schools. They also had lightweight desks that could be used in a modular format. Teachers used flash cards, flip charts, and the blackboard as the principal instructional tools. The third comparison school was an

incomplete school in Negros Oriental. This school had wooden desks and learning corners consisted of a few posters. Flash cards and the blackboard were the main instructional aides.

Teachers in the Demonstration project schools were very positive about the multigrade approach. Twelve of the fourteen teachers interviewed felt that children could be as successful as in monograde class, if the teacher understood the methodology. They pointed out that it gave younger students an opportunity to work with older ones and to build confidence by working alone or in small groups. The two teachers who pointed out disadvantages said that they felt the students would gain by having a teacher who could focus on one class with undivided attention.

The two teachers in the Little Red Schoolhouse program also felt that there was no difference in the education that could be provided for children in multigrade or monograde classes. However, the three teachers in the other two comparison schools all felt that a monograde situation was better for children.

## 2. Interaction in the Classroom

In Demonstration Project schools, a relatively high percentage of teacher-student interaction during lessons took place in large group contexts. Table 1 shows the average percentage of interactions between the teacher and students in the contexts of: teacher-directed small group contexts, where the teacher facilitates a small group activity; student-directed small group contexts, where students work collaboratively on an assignment; large group contexts involving all of the students in the class; and seat work, where children worked individually at their desks on assignments. Seventy-five percent of all interactions in the Demonstration project were in large group contexts. When compared to the schools not in the program, the Demonstration schools also had a relatively high percentage of seatwork. This was a result of teachers making assignments to be done individually by the children of one grade while they worked in a large group context with children of the other grade. Small group work was relatively infrequent, as only 8% of the interactions occurred in this context. This percentage is, however, more than twice as high as the small group work observed in the non-Demonstration school.



Small group interaction between students and teachers in the three comparison schools was limited to one school. This school was implementing the Little Red Schoolhouse program and had used the Demonstration program as a model. The predominant context in comparison schools was that of large group where the teacher addressed all of the children in the class or a particular grade.

**Table 2: Percentage of Observed Student-Teacher Interactions by Context**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percent – Demo Schools	6	2	75	17
Percent – comparison schools	2	1	92	5

### 3. Structure of the Interactions

In eight of the 14 Demonstration Project classrooms where intensive observations were made, girls initiated a higher ratio of interactions than boys. This was true even when observations were adjusted for the number of children of each gender present in the classroom. However, the average frequency of student initiated interactions was similar for boys and girls. This compares to no interactions with the teacher being initiated by girls in the comparison schools. Girls received a higher percentage of the interactions initiated by the teacher than did boys. In 12 of the 14 classrooms girls received a higher percentage of the interactions. They were the recipients of an average of 27% of the teacher-initiated interaction compared to 23% for boys. Across all of the classrooms the differences remained when the percentages were corrected for the number of girls and boys in the classroom

In the comparison schools, girls did not initiate any interactions with the teacher. Boys initiated fewer interactions on the average than in the Demonstration schools. Girls, on the other hand, received a higher frequency of teacher-initiated interactions than did boys. Girls received 34% of the interactions compared to 27% for boys. However, because of the greater number of girls in the classrooms, these differences disappeared, on the average, when the data were corrected for the proportion of children of each sex in the classroom.

**Table 3: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percent – Demo Schools	94	3	3
Percent – comparison schools	98	2	0

#### 4. Quality of Interactions

Oral response was observed to be a key element of the multigrade learning program in the Philippines. Teachers in the Demonstration schools emphasized responding in front of classmates. Students generally responded to requests for information or to direct questions about the subject matter. As shown in Table 4, either commands requesting information or questions occurred in almost 50% of the interactions. Dictation, consisting of rote recitation or repetition, was relatively infrequent in the classrooms, occurring in 21% of interactions. Teachers provided explanation or expansion of the students' responses in about 25% of the cases.

The nature of the interactions was similar in the comparison school classrooms. This is not surprising as two of the three schools had implemented or were implementing programs similar to that of the demonstration schools. There was, however, somewhat greater emphasis on dictation and less explanation than in the Demonstration schools.

**Table 4: Percentage of Different Speech Acts in Interactions Initiated by Teachers and Students**

Type	Question	Explain	Order	Dictate	Feedback
Percent – Demo Schools	46	25	47	13	8
Percent – Comparison Schools	50	17	45	21	9

Display of student work was another strategy to build confidence. With one exception, all of the school classrooms had student work displayed. In several classes, students showed the observers their displayed work.

In all schools, student leaders, who were appointed by the teacher based on their mastery of particular subject matter, or elected by their classmates, assisted the teacher. The leaders were of two types: "little teachers" and small group leaders. Little teachers generally fulfilled the role of the teacher in leading large group activities when the teacher worked with the students of the other grade in the classroom. The little teacher called on students to recite or to display their results on the blackboards in the front of the class. In small groups, the "leader" generally directed the group activity and at times reported on its results. Most of the teachers used the strategy of giving each member of a small group a role. These roles in different schools included: leader, assistant leader, material collector, recorder, reporter and timekeeper. Teachers emphasized the importance of this participation, as well as verbal response in front of the class as important to building student confidence. They felt that girls were more willing and better prepared to take leadership roles. Observations of small group activities showed that this type of collaborative work promoted participatory behaviors. Students helped one another, took turns and provided feedback to one another. Girls in the Demonstration program stated that being a little teacher taught them to help their classmates.

## **5. Student Government**

Observations in the sample schools showed that building leadership is an important aspect of Philippine education. All of the classrooms had posters showing local and national leaders and many had slogans about being a good leader and a good follower. In addition to the leadership roles played by students as leaders in lessons, leadership skills were fostered through participation in student government. In most schools, this took the form of class or grade officers. Eight to fourteen officers were elected in each grade or class. In most classes, girls predominated among the class officers. Girls who served as class officers said that their main responsibilities were to be a role model for other children and to help correct those children who misbehaved. Teachers generally selected candidates. They were selected on the basis of their academic performance or behavior. The students in the class voted for class officers from among these candidates.

Only two of the schools had school-level student governments. They were limited to sixth grade students. Again girls predominated among the officers. These students had organized projects, such as school gardens and planting of trees on school grounds. Participation in school government involved students in formalizing ideas about what they could contribute to their school and expressing those ideas in public. The student officers in these schools also spoke of the importance of their position in serving as a role model for other students.

## **6. Parent Participation**

Parents were highly positive toward the Multigrade Demonstration program. They pointed out that it allowed their children to complete primary school without leaving the community. They mentioned the new materials and in some cases buildings that enhanced the students' learning. All of the parents praised the dedication of the teachers and made comments such as "Children like to come to school because they are active," and "Before, it was all dictation and copying, with maybe one book. The teacher did the talking and we just listened." Girls were seen by all parents as "more active" and "interested in learning" than boys. Student government was consistently mentioned as making the children less shy and more active. Girls were identified as the leaders of student government. In only one of the six sample schools did parents state that monograde classes would be better than multigrade.

Parent committees existed in all schools. Their view of their school varied somewhat by the functions the parents served. Where parents were involved mainly in school maintenance, they felt that they helped the school only in response to requests from the teachers. It was the teachers who understood the needs of the school and could direct parents on how to be helpful. In the three schools where the parents were involved in the teaching and learning activities of the classroom, either through serving as aides or making materials, there was a different view of parent responsibilities. Parents and teachers stated that they were partners in teaching the children.

The groups of parents interviewed in comparison schools felt that their children would learn better in monograde classes. These parents carried out school maintenance and

beautification functions that were common in all schools. They did not serve as teacher aides and did not articulate any programmatic elements that contributed to their children's success in school.

In all schools, parents felt that girls were more interested in learning than boys. They had similar aspirations for boys and girls, hoping that all of their children would complete college. However, when asked about jobs for college graduates, all parents felt that the limited opportunities in the rural areas where they lived would require educated children to find work in large cities or in other countries.

## **B. Student Performance**

Student performance was examined in terms of enrollment, completion, academic and academic performance. Available information on sustainability of program results is also discussed. Two sets of results are presented. One set of results compares all schools in the Multigrade Demonstration program for which data are available to expansion multigrade schools created through the program, as well as other multigrade schools. The second set of results compares the sample schools to the comparison schools that were visited during the study.

### **1. Enrollment**

Access is not considered a problem in the Philippines, except in isolated locations where no elementary schools exist. This is especially true for girls, who usually have higher gross enrollment ratios than boys. However, enrollment data were examined to identify trends in areas served by rural multigrade schools. Department of Education data on enrollment in the three provinces visited: Antique, Guimaras, and Negros Oriental were used to examine trends in Demonstration program schools, other schools with UNICEF support and other multigrade schools. Tables 5,6, and 7 show that average enrollment for all Demonstration schools increased for both boys and girls. However, there was a decline in enrollment in the last year for which national data were available. Boys had consistently higher enrollment than girls and suffered less of a decline in the 2000/01 than girls. Pilot schools had a more consistent decline in enrollment. This decline began in the 1997/98 school year and continued in each year for which data were available. Non-UNICEF-supported multigrade schools had a pattern similar to Demonstration schools. Average enrollment rose for three years, but declined in 1999/00. The decline was severe enough to create an overall average decrease in enrollment for the four-year period.

**Table 5: Overall Demonstration School Enrollment by Year**

	Demonstration Schools					
	Boys			Girls		
	Mean	Annual %	Total %	Mean	Annual %	Total %
96/97	49.3			47.7		
97/98	57.7	16.9%	16.9%	51.3	7.7%	7.7%
98/99	61.0	5.8%	23.6%	57.4	11.8%	20.4%
99/00	60.4	-0.9%	22.5%	48.3	-15.9%	1.3%

Source: Central School Records

**Table 6: Overall Pilot School Enrollment by Year**

	UNICEF Pilot Schools					
	Boys			Girls		
	Mean	Annual %	Total %	Mean	Annual %	Total %
96/97	167.6			164.4		
97/98	165.9	-1.0%	-1.0%	166.4	1.2%	1.2%
98/99	149.1	-10.1%	-11.0%	154.4	-7.2%	-6.1%
99/00	142.7	-4.3%	-14.9%	140.9	-8.8%	-14.3%

Source: Central School Records

**Table 7: Overall Non-UNICEF-supported Multigrade School Enrollment by Year**

	Other Multigrade Schools					
	Boys			Girls		
	Mean	Annual %	Total %	Mean	Annual %	Total %
96/97	52.1			50.7		
97/98	56.1	7.7%	7.7%	56.2	10.9%	10.9%
98/99	59.1	5.3%	13.3%	61.2	8.9%	20.8%
99/00	53.4	-9.6%	2.5%	50.3	-17.8%	-0.8%

Source: Central School Records

Table 8 shows the enrollment trends for the sample schools that were visited during the research. These data, which were extracted from school enrollment records, show a somewhat different trend. As can be seen, the enrollment of boys was higher than that of girls in Demonstration project schools over the entire six years for which data were available. Both boys and girls showed increases in enrollment in every year. However, girls had higher overall enrollment increases in four out of five years.

The three multigrade schools in the comparison sample had an enrollment pattern similar to the Demonstration project schools from 1995/96 through 1998/99. The enrollment of both boys and girls increased but the percentage increase for girls was greater. In this case, girls enrolled in slightly higher numbers than boys. The percentage increase in this period was 3.4% higher for boys in the comparison schools than in the Demonstration schools. On the other hand, the percentage increase in the enrollment of girls in Demonstration schools was 12.9% higher than that of girls in the comparison multigrade schools. In the last two years for which data were available, there was a drop in enrollment in comparison schools, similar to the trends found in the national data. In

Demonstration schools, the yearly increase in enrollment for both boys and girls continued in the same two years.

**Table 8: Sample School Enrollment by School Type, Sex and Year**

Years	Demonstration Schools				Comparison Schools			
	Male Enrollments		Female Enrollments		Male Enrollments		Female Enrollments	
	Total	% Increase	Total	% Increase	Total	% Increase	Total	% Increase
95/96	147	0	123	0	113		116	
96/97	159	8.0%	159	29.0%	119	5.3%	133	14.6%
97/98	181	13.8%	164	3.1%	na		na	
98/99	198	9.4%	194	18.2%	156	31.1%	168	26.3%
Total		34.6%		57.7%		38.0%		44.8%
99/00	231*		221		147	-5.8%	174	3.5%
00/01	244*	5.6%	238	7.6%	121	-17.7%	123	-29.3%

Source: Central School Records

\*Data available for five schools rather than three schools

## 2. Completion.

Completion was examined in two ways. Apparent cohort methodology was used with the 98/99 and 99/00 data for Antique, Guimaras, and Negros Oriental to estimate the percentage of the 98/99 cohort that would make normal progress to sixth grade. Table 9 presents the results of this analysis by school type and gender. As can be seen, the Demonstration schools had a higher percentage of girls reaching sixth grade than either the UNICEF pilot schools or other multigrade schools. This rate of 71.3 was slightly lower than that for monograde schools at 72.2. Higher completion might be expected in these schools as they include urban schools, which traditionally have higher completion rates. The UNICEF pilot schools also had higher completion rates for girls than other multigrade schools. Rates for boys, however, were lower in both Demonstration and pilot schools than in other multigrade and all remaining schools.

**Table 9: Program-level Estimated Completion for the 98/99 Cohort by School Type**

Grade	Demonstration		Pilot		Other Multigrade		Other	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
1	100	100	100	100	100	100	100	100
2	82.7	83.6	81.9	97.3	75.8	82.1	81.8	88.1
3	67.7	76.0	68.6	95.4	64.2	71.2	70.2	85.6
4	69.0	67.2	54.0	94.2	52.1	63.4	61.5	80.2
5	56.8	69.6	63.2	76.0	63.9	60.9	60.8	75.6
6	50.4	71.3	49.9	69.1	56.7	60.3	54.1	72.2

Source: Central School Records

The school level data on completion show a similar trend to that estimated from national data. Tables 9 and 10 show the percentage of individual students in a cohort who could be traced through school records. As can be seen in Table 9, sixth grade completion was somewhat lower in Demonstration schools than the rates estimated from national data for



this study or than national survival rates. There was a decrease for both boys and girls in 94/95 and 95/96 cohorts probably reflecting the onset of economic downturn in the Philippines during this period. Girls consistently had higher completion rates than boys. In the two-school comparison sample (Table 9), data were available for only two cohorts. Girls showed an increase in completion for those years as do girls in the Demonstration schools. The percentage increase was, however, slightly lower. For boys, higher completion rates were found in the comparison schools in the two years for which data were available. These rates were higher than those for boys in any cohort in the Demonstration schools.

**Table 10: Demonstration Sample Schools—Sixth Completion Rates by Year and Gender**

Sample Demonstration Schools						
	92/93-97/98	93/94-98/99	94/95-99/00	95/96-00/01	96/97-01/02	98/99-02/03*
Girls	64%	57%	30%	33%	49%	52%
Boys	33%	36%	20%	40%	31%	33%
Total	48%	43%	24%	21%	40%	42%

Source: Central School Records

\*Based on enrollment in sixth grade

**Table 11: Comparison Sample—Sixth Completion Rates by Year and Gender**

Sample Comparison Schools						
	92/93-97/98	93/94-98/99	94/95-99/00	95/96-00/01	96/97-01/02	97/98-02/03
Girls	Nd	Nd	Nd	33%	43%	nd
Boys	Nd	Nd	Nd	47%	41%	nd
Total	Nd	Nd	Nd	41%	42%	nd

Source: Central School Records

### 3. Academic Performance

Test data for available years were examined for trends in student academic performance in the Multigrade Demonstration schools. Scores are presented in terms of the aggregate average scores on the different subjects covered by the National Education Achievement Tests (NEAT) for sixth grade. As can be seen in Table 12, the Demonstration schools had higher mean scores than the other groups in 1999. However, results were similar for all groups of schools in that year. In 2000, the Demonstration schools made gains that were higher than those made by all other schools in the three provinces. The UNICEF pilot schools also made gains when compared to the multigrade schools that formed the comparison sample for the study. However, these gains were less than those for the population of schools as a whole. It was not possible to disaggregate scores by gender.

**Table 12: Student Academic Performance by School Type and Year**

TYPE		MEAN99	MEAN00
Demonstration schools	Mean	38.98	48.03
	N	7	7
	Std. Deviation	6.77	8.40
Comparison schools	Mean	38.55	39.62
	N	1	2
	Std. Deviation	.	3.09
UNICEF pilot schools	Mean	38.75	41.86
	N	10	10
	Std. Deviation	5.56	6.88
Others	Mean	38.18	45.70
	N	827	845
	Std. Deviation	8.01	11.79
Total	Mean	38.19	45.67
	N	845	864
	Std. Deviation	7.97	11.71

Source: Central School Records

#### 4. Sustainability/Cost Effectiveness

The institutionalization of multigrade schooling through the establishment of a division of multigrade education with the Department of Education speaks to the importance of this strategy in the Philippines. A recent study (University of Philippines, 2002) looked at cost-effectiveness in relation to student achievement in five subjects and to students' attitude toward schooling. It used average teacher salary, Building Furniture & Equipment, instructional materials, and maintenance operating expenses to calculate an average cost per student for Multigrade Funded, Multigrade Regular, and Monograde programs. The study found that Multigrade Funded programs, including those supported by UNICEF were more cost effective than the other types of programs on average and by grade MF = P 5,901.44; MReg = P 8,820.90; Mono = P 6,360.03. The study recommended extension of UNICEF and UNDP assistance. These findings as well as those noted in this study of the spread of expansion of the Demonstration school approach to other schools and the generally positive view of the program by the teachers and parents participating in the program support the viability of the program for meeting the needs of isolated rural areas.

#### IV. Discussion

The Demonstration multigrade program has been effective in changing the classroom environment in multigrade schools. There are a variety of materials for the children to use as well as modular furniture that allows for flexible classroom organization. There has been a broadening of the learning situations for the presentation of subject matter (small groups and large groups, seatwork) when compared to classrooms where teachers did not participate in the UNICEF program. Small group activities and seatwork have allowed girls to work together and an emphasis on verbal recitation has helped build confidence in both boys and girls. Teachers also encourage children's participation by presentation of subject matter using examples from the local environment. Leadership

opportunities in the form of taking the teacher's place to lead lessons and participation in student government further build students' confidence. These leadership opportunities are pursued actively by girls.

Despite the changes brought about by school and classroom organization, teacher-directed work in lessons is predominant in most classrooms. The designers of the program expected behavioral changes to take longer than physical ones. Movement to a child-center approach to learning was listed as an ongoing objective in project documents (DECS/UNICEF, 1998).

The changes in school structure are viewed in a highly positive manner by parents and teachers. They appear committed to the multigrade school both for the teaching strategies employed and for the provision of complete primary schooling to their children. Parents who have actually participated in the teaching-learning dynamics have an especially positive view of the school and their partnership with the teachers to improve their children's education. The Demonstration program appears to have had an effect on student performance. Enrollments show a net increase for both boys and girls, even as overall primary school enrollments appear to have declined in the region under study. Academic achievement was also higher in Demonstration schools than in the region in general, and a study commissioned by the Department of Education suggested that the program is cost-effective when compared to other multigrade and monograde schools. However, the positive effects of the program on boys is open to question. Although boys had consistently higher enrollment, slightly higher participation and appear to have higher achievement than, boys in non-program schools, the completion rates for boys were lower than in the comparison group.

## **APPENDIX A: RESEARCH METHODOLOGY**

In order to examine the persistence of girls in multigrade classrooms, data were collected on multiple levels, including education management information systems, school-level enrollment data, classroom observation, teacher and school director interviews, and student and parent interviews.

### **Education Management Information Systems**

The purpose of collecting data from EMIS was to calculate girls' primary school completion rates in multigrade schools, examine trends from year to year, make comparisons with boys' completion rates, and when possible make comparisons with completion rates in schools that have not been affected by special programs, i.e., the NEU schools in Guatemala, the Model Multigrade Schools in Nicaragua, and the UNICEF Demonstration Schools in the Philippines.

The specific data collected from the EMIS, when available, included enrollment, promotion, and repetition by gender, grade, year, and type of school. The data were then used to calculate completion rates for cohorts of students that enter school in a given year. For example, if 500 girls enter first grade in 1995, the calculations took into account the number of girls who have had to repeat a grade, the number who drop out every year and showed the percent of girls from the original cohort who have graduated from primary school; when data were not complete or available, making normal progress to the fifth grade was used instead.

When no data are available on promotion and repetition but just enrollment, an apparent cohort has been calculated by taking the number of girls who enroll in any given year and calculating the percentage of those girls who remain in school in the corresponding successive years and grades until the required number of years to graduate from primary school. Since the number of repeaters is not known and the differences in enrollments from one grade to the next in two successive years is considered to be the result of dropouts, the completion rates may be somewhat inflated. However, this method has more validity for countries that have a policy of automatic promotion in the primary grades.

In countries where no data are available for enough years to calculate completion for complete primary school cycles, the reconstructed cohort method was used when data were available for a minimum of two successive years. Using these data, promotion and repetition rates were calculated for successive grades from one year to the next, and these rates were then used to construct the progress of a hypothetical cohort of 1,000 students as they progress through all the primary grades based on the promotion and repetition rates for the two adjacent years with complete data. If data were available for another pair of successive years a given number of years later, the reconstructed cohorts can be compared to see how completion rates have changed since the first cohort.

Once the completion rates were calculated, the results have been examined to see the difference between girls' and boys' completion rates in any given year and to see if there are any trends from year to year. In addition, when there has been a specific program intervention in a given number of schools, the completion rates were compared to

identify gender-based differences in completion rates between program schools and other comparable schools that have not been subject to the interventions.

### **School Level Enrollment Data**

Annual school-level data on the enrollment by grade, promotion, birth dates and gender of individual students were also collected at each of the schools visited, generally going from the 2002 enrollments back to at least 1997. With data on individual students, precise completion rates and the percent of girls versus boys in the three lower and three upper grades were calculated. The annual change in the percent of girls in relation to boys has been compared within the schools visited and between schools that have been part of a special program in relation to those that have not.

### **Attendance in Observed Classrooms**

As part of every school visit and individual classroom observations, the teachers were asked how many boys and girls were enrolled in the class, and the observers as part of making a diagram of the classroom—indicating spatial arrangement of the students, the furniture and materials present—the attendance on the day of the visit was also noted. Using the attendance and enrollment figures, the percent of boys and girls present were calculated and comparisons were made.

### **Academic Achievement Testing**

In countries where academic achievement tests have been given to boys and girls in multigrade schools and providing the tests results are available in digital format, the tests scores were analyzed by gender and type of school or program intervention. Test scores were then compared to identify trends from year to year and differences in scores between boys and girls.

### **Classroom Observations**

The observations consisted of drawing a map of the classroom, taking an inventory of classroom materials and noting the extent of student use, structured observation of teacher-student interactions, and descriptive observations of students working in groups.

The first activity in the classroom consisted of drawing a detailed map indicating the location of desks, students by gender, blackboards, posters, learning corners, libraries and other items in the classroom. This map then served as a point of reference for making the other observations, especially student group work.

The inventory of classroom materials consisted of noting the different type of teaching materials available for student use, including text books, curricular guides, other written materials and manipulatives. Next, the observers noted the use of these materials by the students by counting the number of materials actually being used by students at 10 minute intervals, and this information was then used to calculate materials availability ratios per student and a use ratio was calculated by dividing the number of materials in use by students by the total number of materials available.

The observation of interactions was done by observing teachers student interactions over three separate 10 minute intervals. An interaction is defined as verbal or non-verbal communication between the teacher and one or more students on a specific topic. An

interaction ends and a new one begins when there is a change in the individuals involved or a change in the topic. Each individual interaction was recorded on a checklist indicating the initiator of the interactions, gender, the context of the interactions, the quality of each interaction, the receiver of the interaction and whether or not the responses were verbal, non-verbal or simply no response at all. The contexts of the interactions included a large group of more than eight students—often the entire class, a small group of eight or fewer students led by the teacher, a similar small group led by a student, seatwork being done by individual students at their desks or a non-instructional context such as students asking permission to go out and use the bathroom. The quality of the interactions included the asking of questions, explaining or elaborating on a particular topic, lecturing, telling someone to do something, positive reinforcement, and verbal or physical punishment.

The analyses of the interaction data consisted of calculating the relative percentage of all the interactions that were initiated by the teacher, the percentage initiated by students—especially by girls in relation to boys, the percentage of interactions that take place in a particular context, the relative percentages of the different kinds or qualities of the interactions and the nature of the responses as a function of gender. The percentages of interactions initiated by boys and girls were adjusted for the number of boys and girls that were present in the classroom. For example, when the number of boys present was larger than the number of girls, the percentage of interactions initiated by girls would be increased according to the ratio of boys present divided by the number of girls. In other words, when there are fewer girls in attendance, they do not have the same opportunity to initiate interactions, and the percentages must be adjusted to simulate having an equal number of both genders in the classroom.

The descriptive or qualitative observation of students working in groups consisted of the investigators, sitting close to a group in a non-intrusive manner, and making careful and detailed observation of the activities. If the class was divided into groups by grade, each group was observed for two five-minute segments for a total of 10 minutes. If the student groups were based on specific types of activities, then each of these were observed for 10 minutes. Particular attention was paid to the topic under discussion, exactly what each individual student was doing, how each was or was not participating, the nature of the dialogue, whether or not a student was leading the activities and the level of involvement of the teacher. The information from these observations was noted in detail using a form that identified the number and type of groups.

### **Teacher, Student and Parent Interviews**

Three short interview instruments were used, each consisting of a series of open-ended questions. The teacher questionnaire asked about the history of the school, the nature of the surrounding community, organization of the school in terms of grades, attendance and the number of teachers, whether or not there were special programs, facilities, organizations and activities, and teacher training. Next, the teachers were asked to describe how girls participate in the classroom, how many and which girls participate in student government, what the benefits are for girls in the particular school with its special programs, and what are any possible disadvantages.

The student interviews were generally limited to girls who held positions in the student government. They were asked how they got their position, what the responsibilities and purposes were for their position, what they have learned from the experience, what their parents think of their participation, and their feelings about being part of a multigrade classroom. Since these were all open-ended questions, the girls were prompted to expand as much as possible on their responses.

Whenever possible, the parents of the female members of the student governments were interviewed. They were asked five open-ended questions about how they felt about their daughters' participation in student government, what changes they have seen as a result of this participation, whether or not they have other daughters who went to school and who also participated in student government, and whether or not the parent has participated in any school activities. If they have participated, they were asked to provide details about the nature of the participation. In addition, parents were asked how many children they have, how many have gone to school and how many years of schooling the parent has completed.

## **APPENDIX B: SCHOOL CASE STUDIES**

### MULTIGRADE DEMONSTRATION PROGRAM

Atlantico - Guimaras

Saint Inez - Antique

Navarro – Negros Oriental

San Juan - Antique

Saint Isabel – Negros Oriental

Tamarindo - Guimaras

### COMPARISON

San Ignacio – Antique

Saint Thomas – Negros Oriental

Saint Teresa – Guimaras



## **Atlantico – Guimaras, Philippines**

### **Background**

The primary school of Atlantico was opened in 1981. It had four grades until the 1998-99 school year when it became a complete school by opening a combined fifth/sixth grade classroom. The school is located about 30 kilometers from the main municipal center of San Miguel/Jordan. The school is fairly accessible, as it is located on a passable road of dirt and asphalt. The provincial government has paved the area directly in front of the school. The school has both water and electricity. The water system and toilets were built as part of the schools participation in the UNICEF pilot program.

The school serves about 50 families who are located within a kilometer of the school. The principal occupations of the populace is subsistence farming. They cultivate rice and coconuts. School officials stated that most of the elementary school age population was attending school. However, they felt that boys tended to drop out with greater frequency than girls prior to completing primary school.

The school is in two buildings divided into three classrooms and an activity room/kitchen. It sits on a slight rise facing a play area of approximately 20 by 40 meters. The school has three teachers. In addition, parent volunteers serve as aides in each classroom every day. All of the teachers had been trained as part of the UNICEF pilot program in multigrade methodologies. Training in Manila and Cebu City, as well as local training were mentioned. Training by the UNICEF program generally lasted two weeks whereas local training was of one-week duration. The training dealt with integrating instructional materials and visual aids into lesson plans, working with two classes at a time, involving students in leading activities and involving parents in the classroom.

### **Classroom Organization**

In the upper grade classes, children are organized into rows that face toward the teacher and the blackboard in the front of the class. Each classroom has wooden desks for two students. In the upper grades these desks are arranged in with two desks side by side. In the first/second grade classroom several desks were pushed together so that the children sat around a big table. Children are separated by grade level. Teachers stated that there was no organization by ability groupings or gender. Rather, children were seated alphabetically.

Learning corners are located around the room in each classroom. In the upper grade classrooms there are learning corners for science, mathematics, English and Filipino local languages, as well as an area for children's work and an information corner with charts of the Philippine school system. A picture of the Philippine president was posted over the blackboard in the front of the class. The first/second grade class had bookcases along the walls with textbooks as well as areas for math, Filipino, English corners and an area for student work.

Teachers, parents and students all had positive comments about the multigrade classroom arrangement. Female students who were interviewed said that it allowed them to teach

the lower grade students and to receive help when they were in the lower grade. One second grade girl thought that monograde would be better because first grade students were noisy. The girls also expressed a preference for working with other girls. They felt that girls studied hard whereas boys just made jokes. Teachers recognized the opportunity for children from different grades to learn together and the role of multigrade classes in allowing schools in small communities to provide a complete primary education, but suggested that teaching two classes was very tiring at the end of the day. Parents also appreciated the possibility for complete primary schooling afforded by the multigrade school but because of their participation in the classroom were vocal about how difficult it was to teach two grades at the same time.

### **Instructional Materials.**

The classrooms had textbooks in insufficient numbers for the enrolled students. Children were observed to share books when textbooks were in use. The upper grades have material on health and biology, including a plastic skeleton. All the classrooms have permanent blackboards as well as moveable white boards that can be used for flip charts.

### **Enrollment**

Although enrollment data are incomplete, they suggested that enrollment has been relatively consistent since 1998/99, when Atlantico became a complete school. As shown in Table 1, overall enrollment has been between 51 and 60 students. There have been more boys enrolled than girls in each year.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>
Girls	8	na	16	19	25	23
Boys	15	na	35	37	35	30
Total	23*	na	51**	56***	60	53

Source: Central school records

\*data available only for second grade

\*\*no data fifth and sixth

\*\*\*no data third

### **Completion**

The variation in enrollment in upper grades was examined to determine continuance in school. In this case, again the data must be interpreted with caution given the missing information. Table 2 presents the percentage of the enrolled students of each gender in the sixth grade for the four-year period for which data were available. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, the school has been successful in reaching this level in total upper grade participation. In general, higher percentages of the male population are represented in the upper grade. In only one year are there fewer girls in fourth grade, in relation to the female student population than boys.

**Table 2: Percentage of Students Enrolled in the Sixth Grade by Gender and Year**

Students	98/99	99/00	00/01	01/02
Girls	37	63	48	43
Boys	29	49	52	67
Total	31	54	50	57

Data on the progress of individual children to the fourth grade were available for only one cohort of children. This was the cohort beginning in the 96/97 school year. Table 3 shows the percentage of the children who began school in that year who were in sixth grade five years later. As can be seen, a higher percentage of the girls made normal progress through school without repeating or dropping out. Seventy-five percent of girls made normal progress through the school to the six grade compared to 38% of boys.

Gender/Years	Girls – Fourth Grade	Boys – Fourth Grade	Total
96/97-01/02	75	38	47

**Pedagogy and teacher student interaction.**

The majority of teacher-student interaction across the three classrooms took place in the context of large group. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. Ninety-three percent of teacher-student interactions occurred in large groups. Most of the interaction took place in contexts where the teacher was working with one grade level after having given a seatwork assignment to the other grade. Teachers also circulated to examine student progress when both grades were engaged in seatwork. This context made up 11% of the interactions. No small group contexts occurred when teachers divided children into groups and described a collaborative exercise for group work.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	93	7

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Girls initiated 2% of the interactions with the teacher, whereas boys initiated 3% of teacher-student interactions. These student-

initiated interactions were attempts to attract the teachers' attention in order to provide a response or ask a question. Although the relative percentage of interactions initiated by girls was lower than that of boys, girls actually had a higher frequency of interactions when data were corrected for their presence in the student population. Similarly, although boys received a higher percentage (29% to 22%) of teacher interactions directed to individual students, girls had a higher percentage relative to their representation in the population.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	93	3	2

A high percentage of the teachers' interactions involved asking questions in drills about the lesson (53%). Directions to students on providing responses (32%) and dictation (20%) were also relatively common. Explanation or expansion of the information was provided in 28% of the interactions. Positive reinforcement, in the form of praise of work was observed in 10% of the interactions. Negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

10:05 am The teacher of the combined first and second grade class is conducting a math lesson. She assigns the students in grade 2 to pairs and explains that they will do a multiplication assignment. The students begin to work and the teacher turns her attention to grade 1. She explains an addition exercise and the students begin to copy from the board and answer the problems. The teacher goes to the grade 2 side of the room. She begins to call on children to come to the front of the class and write their answers on the board.

In the fifth/sixth grade classroom, the teacher is working with sixth grade on a science lesson. They are discussing sounds. He asks, "What is sound" "Give some examples of things that produce sound" and students raise their hands to respond. Fifth grade is supposed to be copying information on the effects of matter from the board, but they are, for the most part, watching the teacher with sixth grade. The teacher gives an assignment to sixth grade and begins the lesson with fifth grade. He asks what effects mean and when he doesn't receive a response, he says "change" and begins to ask questions "What happened last night - no sun" "Now there is what?" He answers his own question saying "Sunlight." "Man, animals produce carbon dioxide - what kind of change?" A student responds "Chemical." The teacher says yes and continues to present examples. He then tells a student to erase the board and begins to write examples of proportions. He also hands out books that are insufficient for all students to share, so three children share a book. He asks the students of both grades what a proportion is, then answers his question by saying "It is a ratio" He provides an example of "What is the ratio of pupils to visitors - Nine to one" He asks more questions of this type and then moves to the word problem on the board which

says “Venus used 3 eggs for 2 cups of flour in baking a cake. How many eggs for 4 cups of flour?” 10:50am.

These classroom observations illustrate the teachers’ emphasis on drill and practice that is primarily oral in nature. The context is largely that of the teacher in front of the whole group eliciting responses. Student-teacher interactions are mostly those of the teacher calling on individual students or eliciting a group response.

### **Student Government**

The school had a student government for each classroom. It was made up of children from both grades. There were six officers in the upper grade classrooms: a president; vice president; secretary; treasurer; publicist; and business manager. The first/second grade classroom also had an assistant secretary. Officers were nominated by the teacher and voted for by their classmates. Teachers stated that girls were more active in the student government than boys. Both parents and teachers felt that the experience of being a class officer made students more responsible and more disciplined. The experience was seen as creating leaders and helping children learn to teach others. This was reiterated by the class officers, themselves, who said that they acted “as little teachers” and that their parents were proud of them for taking responsibility and helping the teacher. In addition to leading lessons under the direction of the teacher, student officers said that they organized class activities for special events such as the local festivals.

### **Parent Participation**

A group interview was held with 20 parents on their views of the school and their children’s future. Parents were very positive about the teachers and the school. They stated that before the school became a complete school they had to send their children a distance of five to ten kilometers to attend fifth and sixth grade. This was an expense for the family and many children didn’t finish. As most of the parents helped in the classrooms as volunteers, they recognized that the teachers did a good job of handling two classes. They felt that the teachers could do a better job with more support from officials. It was stated that the parents of the community had a partnership with the teachers to help in the education of the children and to improve the school. Statements such as “the students are more active and participate more than when we were in school” and “We take over for the teachers when they have to go to seminars or are sick.” All of the parents wanted their children to attend college and in general they felt that boys and girls had the same opportunity to continue their education and to obtain a job. They felt, however, that the best opportunities for employment were in Manila or in another country.

## **Santa Inez Multigrade Demonstration School in Tobias Fornier, Antique**

The 68 primary school students are distributed in three multigrade classrooms (Grade 1-2, 3-4 and 5-6). There are parent “aides” (all mothers) in each classroom, quietly looking after the side of the classroom that the teacher isn’t working with. Each day different mothers come to the school to help out.

“Mothers are the partners,” says the third/fourth grade teacher, and because of this, “the girls are more punctual, excel more and are good leaders.” The Teacher-in-Charge, who teaches fifth/six grade, comments that in terms of performance, “only one boy [in her class] has the same level as the girls.” While both boys and girls will go to high school, she says that the girls will do better, because they are “more studious, have greater perseverance and determination.” Girls are “more active, participate more in class discussion, are more intelligent than boys, are more extroverted in class,” she says. The honor students usually are girls, as are most of the student officers. Reflecting on why girls do so well at this school, she comments, “all of the teachers are women, and the parent aides, too. Then again, the *Barangay* captain is a woman, as are seven of the nine *Barangay* officials.”

The first/second grade teacher simply said, “girls overpower the boys. The boys don’t have a chance” competing with the girls.

### **Background**

Santa Inez started as a multigrade school offering grades 1-4 with two teachers some 55 years ago. It originally consisted of a simple wood and bamboo structure. The school has since changed quite a bit. It first offered fifth grade in 1996; sixth grade was added in 1997, when the UNICEF CESP4 project was implemented here. The structure and layout of the school is now quite formal—there are three classrooms near the road, and a pre-school class is operated in the lower three-classroom building. One of the lower classrooms was set up to be the school library, but the roof leaks, so it is now unoccupied. In the play area, there are swings and a slide, and the school grounds are nicely landscaped. There is a fence and gate facing the road.

The school is well equipped with the UNICEF desks and chairs, a 100-book library, textbooks and visual aids, a typewriter and a computer. Classrooms are bright and lively with lots of materials displayed and well-supplied “study corners.”

The school serves the children of 43 families, most of whom live in the *Barangay*. For most children, the school is a short walk; a few children come from as far away as 2 km. The school is located on a dirt road some 5 km from the District office in Tobias Fornier.

Most families are subsistence farmers and rice predominates the region. A few work in activities such as carpentry. School personnel feel that all school-aged children in the

*Barangay* are attending school, and that most will go on to high school. They do not expect many to continue their education past high school.

The teachers received their initial training in multigrade classroom management over a total of 15 days in 1996, sponsored by UNICEF. Subsequent training over the past five years has emphasized time management in the multigrade setting, how to make and use visual aids and test construction. Within the UNICEF project, the school is a pilot multigrade demonstration school, and has received visits from teachers in Manila. School staff have also conducted observation visits in Manila under the auspices of the project.

### **Enrollment**

Total enrollment at the school has been quite stable over the seven years of data available, fluctuating around 70 students. In all years, there have been more boys than girls enrolled: overall, boys have made up 58% of primary enrollment. There is a slight tendency for relative female enrollment to be higher in the upper grades and girls accounted for 45% of primary enrollment in the 2002-2003 school year.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>1996-1997</b>	<b>1997-1998</b>	<b>1998-1999</b>	<b>1999-2000</b>	<b>2000-2001*</b>	<b>2001-2002</b>	<b>2002-2003</b>
Girls	28	30	30	31	16	29	31
Boys	45	38	41	43	22	42	37
Total	73	68	71	74	38	71	68

\* Data are missing for grades 1, 2 and 4 in the 2000-2001 school year.

### **Completion**

Several indicators of completion and retention were used based on the data available. Table 2 shows that, overall, 48% of all students enrolled in primary were enrolled in grades 4, 5 and 6. This pattern is identical for boys and girls, and suggests that almost all children enrolled in the lower grades remain in school for the full six grades.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

<b>Students</b>	<b>1996-1997</b>	<b>1997-1998</b>	<b>1998-1999</b>	<b>1999-2000</b>	<b>2000-2001*</b>	<b>2001-2002</b>	<b>2002-2003</b>
Girls	50%	43%	37%	35%	NA	66%	55%
Boys	42%	45%	46%	56%	NA	40%	60%
Total	45%	44%	42%	47%	NA	51%	57%

\* Data are missing for grades 1, 2 and 4 in the 2000-2001 school year.

The cohorts of boys and girls enrolled in first grade in the 1996-1997 and 1997-1998 school years were examined to determine the percentage of students who had progressed to the sixth grade in the 2001-2002 and 2002-2003 school years, respectively. Table 3 shows that girls have a significantly higher percentage of normal progress than boys. In

the 1997-1998 cohort, 80% of girls and 71% of boys reached sixth grade in six years, an important improvement over the 1996-1997 cohort.

**Table 3: Percentage of Cohort Progressing to Sixth Grade in Six Years by Gender**

<b>Students/Cohort</b>	<b>1996-1997 Cohort</b>	<b>1997-1998 Cohort</b>
Girls	60%	80%
Boys	40%	71%
Total	47%	76%

### **Classroom Organization**

All three multigrade classrooms were organized in a similar fashion with the two grades split up on either side of the room. In the fifth and sixth grade class, all of the desks faced forward towards the teacher and blackboards. In the third/fourth grade class, desks were rearranged from groups of two desks facing forward into groups of six or seven desks facing each other. In the first/second grade class, larger square tables each accommodated two students, and were placed together to form one long table.

### **Instructional Materials**

Neat and orderly, the classrooms were well supplied with materials and manipulatives. Accessible learning “corners” and “centers” incorporating local materials complemented displays of student work. Flash cards were observed in use, as were other visual aids, under the direction of the teacher.

### **Pedagogy and Teacher-Student Interaction**

As shown in Table 4, the vast majority (72%) of teacher-student interactions took place in the context of large groups. No student-led small group contexts were observed. Seat work accounted for 19% of the interactions, followed by teacher-directed small groups (9%). In the large group context, interaction frequently consisted of “drilling” of the students, where students would be called to the blackboard to solve a problem, while the rest of the students observed.

**Table 4: Percentage of Observed Teacher-Student Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	9%	0%	72%	19%

All of the classes had parent “aides,” all mothers, who supervised the side of the classroom the teacher was not actively directing and had left an assignment with. This supervision consisted of maintaining order and assisting students with questions about the assignment.



As shown in Table 5, the teacher was almost always (93%) the initiator of the observed interactions. Girls were more than twice as likely (5%) to initiate interactions as were boys (2%).

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	93%	2%	5%

When initiated by the teacher, the majority (51%) of interactions were directed towards individual students. Table 6 shows that girls were more likely (29%) to be the target of these interactions than boys (22%). Interactions directed at the whole grade or a group made up 43% of all interactions observed.

**Table 6: Interaction Recipient Percentages**

Initiator	Male Student	Female Student	Group
Percentage of interactions	22%	29%	43%

Table 7 shows the frequency of types of interactions (multiple types occur in a single interaction). Consistent with a “drilling” environment, teachers ordering or tasking students was frequently (57% of all interactions) observed. Questioning followed with frequency (43%). In 27% of interactions, explanation or expansion of information provided took place. In nearly one of five interactions (18%), some form of dictation occurred. Positive reinforcement was observed in 7% of interactions, but negative reinforcement (punishment or harsh correction) was not observed in any of the classrooms.

**Table 7: Type of Interaction Percentages**

Question	Explanation	Order	Dictation	Praise
43%	27%	57%	18%	7%

### **Student Government**

Student government at this school is based on an election process. Table 8 shows the 13 offices held by gender. Only one boy participated in student government.

**Table 8: Student Government Positions by Gender**

<b>Position</b>	<b>Male</b>	<b>Female</b>
President		1
Vice-President		1
Secretary		1
Treasurer		1
Auditor		1
Public Relations		1
Business Manager		1
Senators		3
Peace Officers	1	2
Total	1	12

Girl members of the student government who were interviewed said that it made them “happy” to have been elected and they gained the “respect” of their peers. They generally saw their responsibilities as related to keeping their fellow students quiet and orderly, or dealing with students who were late or frequently absent.

A sixth grade girl interviewed said that it was “better being a girl at this school.” Asked why, she said it was because “teachers love girls” and “girls are more active in class.”

### **Parent Participation**

The three teachers interviewed were quick to point out how important the contributions of parents were to the school, providing “morale, maintenance and beautification” to the school. Parent brigades also provide and cook daily meals for the children, and help the teachers as teaching aides in the multigrade classrooms. The teacher aides are selected by the community, and a different mother is selected each day. This brings a great number of mothers in close contact with the daily working of the school, and has strengthened the ties to the community.

A group interview was conducted with eight parents, all mothers. One of the mothers is also the *Barangay* captain. In general, the group was very positive about their school, including the multigrade classroom environment, where they felt the student achievement to be very good. The changes they perceived at the school since the program began included the obvious things—the building, electricity, the computer and “lots of learning materials”—but also included a perception that the teaching had improved, that the teachers have a different approach to teaching:

“Before, it was all dictation and copying, with maybe one book. The teacher did the talking and we just listened.”

Girls were universally seen as “more active” and “interested in learning” than boys. Boys were seen as more shy. Student government makes the children less shy and more active, and makes them more responsible, something they don’t have to do at home.

All of the mothers expressed that they wanted their children to at least finish high school, and to study in college if at all possible. “We know education is important for our children, that is why we try to help out here at the school.”

Asked if they felt that girls have the same employment opportunities as boys, the mothers all agreed that they do, because “girls are more responsible than boys.”

Although the mothers recognized the significant contributions of the UNICEF-supported project with the school, they were also proud of their own involvement with the process, and their own impression that their contributions were equally significant to addressing the problems of the school.

## **Navarro – Negros Oriental, Philippines**

Navarro is one of the original UNICEF pilot schools. All of the original teachers who were trained in the pilot program are still at the school. This makes the school somewhat unique, as high turnover is reported to be common in rural multigrade schools in the Philippines.

### **Background**

The primary school of Navarro was opened in 1994. It had one teacher and a single classroom that had 55 students distributed through the first two grades. A second teacher was assigned to the school in 1996 and fourth grade was added. The next year a third teacher arrived and children were divided into combined first/second, third/fourth, and fifth/sixth classes. The increased attendance has forced the school to expand from the original three classrooms and use a health post at the foot of the hill on which the school is situated, as an additional classroom. Thus, the school has four classrooms, one of which serves as an all purpose room for group activities of a large class such as the combined first/second grade, or staff meetings or school events. The school is located in the mountains about 20 kilometers from the municipal center of Tayasan. The school is accessible, as it is located on a passable road of dirt and asphalt. Navarro has both electricity and water.

The school serves a community of 70-100 families who live in a radius of four kilometers from the school. Thus, the maximum time for children to walk to school is about 30 minutes. The principal occupations of the families are subsistence farming, seasonal work on large local coconut plantations and small services such as driving the local motorcycle taxis. Teachers felt that about 105 of the elementary school age population was out of school. These children were said to be mostly boys, who were removed from school as soon as parents felt they could read and write, to help supplement family income.

The school has three teachers and three teacher's aides and a para-professional volunteer who comes to the school three times a week. Each of the teachers has had a specialized two-week training in multigrade teaching in Manila as part of the UNICEF program. Each has also had several follow-up courses in Dumaguete. The training focused on classroom management of two classes, use of the instructional materials created by the program, involvement of parents, and use of games and other techniques to encourage active participation of the children. Aides are recent graduates of teachers colleges who are preparing for or waiting for results of qualifying exams. They are hired under a special municipal program. None have any formal training in multigrade teaching.

### **Classroom Organization**

In all three classes, children are organized into rows that face toward the teacher and the blackboard in the front of the class. Children are generally seated at individual desks but first graders are limited to plastic chairs, owing to the size of the combined first/second grade, which has 97 children enrolled. In the third/fourth and fifth/sixth classrooms several desks were generally pushed together so that six or more children were in a single line of desks. Children are separated by grade level with each grade on one side of the

class. In each classroom, children of the same sex generally sat together. Several teachers mentioned that they organized some activities by ability groupings.

Each classroom had a number of learning corners for subjects such as science, mathematics, English and Filipino languages, as well as attendance lists, responsibility lists and the like. Individual classes had special corners such as a health corner in fifth/sixth and a personality corner in third/fourth. All classrooms had areas where children's work was displayed prominently.

### **Instructional Materials.**

Classrooms had books in sufficient number for all students. The exception was first and second grade with the number of students in that class. Ancillary materials include workbooks, games, and display charts, all of which the teachers saw as important to encouraging participation of the children.

### **Enrollment**

Student enrollment has increased fairly steadily over the years of the pilot project. This has been both the result of opening new grade levels and, in the last two years, a return migration from the Mindinao conflictive areas. The enrollments of boys and girls have both increased by over 300% since the school began functioning. In the late 1990s girls surpassed boys in enrollment. However, in the last two years, enrollment increases have greatly favored boys.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>94/95</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>	<b>02/03</b>
Girls	26	47	49	60	74	78	80	56	87
Boys	29	47	51	71	65	74	79	98	106
Total	55*	94**	100**	131	139	152	159	154	193

Source: Central school records

\*first three grades

\*\*first four grades

### **Completion**

The variation in enrollment in upper grades was examined to determine continuance in school. In the case of 1994/95 only fourth grade existed. Table 2 presents the percentage of the enrolled students of each gender in the fourth, fifth and sixth grades for a nine-year period. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, the school has always been below this level in total upper grade participation. Girls only reached this level in the 2001/02 school year and boys have not surpassed 50%. However, since the creation of a complete school in 1997 there has been a general increase. The increase has not been consistent, as there has been a drop-off in the last two years owing to increased enrollment at the lower grades. Girls are somewhat better represented in the higher

grades than boys. There were a higher percentage of girls in upper grades, relative to their representation in the student body in five of the eight years for which data were available.

**Table 2: Percentage of Students Enrolled in the Sixth Grade by Gender and Year**

Students	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03
Girls	0	13	14	28	47	40	44	59	39
Boys	0	04	20	34	40	41	38	27	31
Total	0	08	17	31	44	40	41	38	34

Data on the progress of individual children to the sixth grade were available for four cohorts of children, beginning in the 94/95 school year. Table 3 shows the percentage of the children who began school in a given year who are in sixth grade five years later. This is somewhat different than the cohort analysis done by the Department of Education, which compares total numbers of children in first grade with the number of children in sixth grade five years later. That is, the cohort here is the group of individual children who made normal progress through school without repeating or dropping out. As can be seen, less than a third of the individual children make normal progress through the school to sixth grade. Girls' completion rates are consistent. They range from 25% to 33% for the four cohorts. There have been no consistent patterns in the completion rates for boys. Girls consistently have higher completion rates than boys.

**Table 3: Sixth Grade Completion Rates by Year and Gender**

Gender/Years	Girls – Sixth Grade	Boys – Sixth Grade	Total
94/95-99/00	25	10	17
95/96-00/01	33	07	23
96/97-01/02	31	27	29
97/98-02/03	28	19	23

**Pedagogy and teacher student interaction.**

The majority of teacher-student interaction across the three classrooms took place in the context of large group. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. Sixty-six percent of teacher-student interactions occurred in large groups. Most of the interaction took place in contexts where the teacher was working with one grade level after having given a seatwork assignment to the other grade. Teachers also circulated to examine student progress when both grades were engaged in seatwork. The few small group contexts occurred when teachers divided children into groups and described a collaborative exercise for group work.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	3.5	3	66	27

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys initiated 4% of the interactions with the teacher, whereas girls initiated 3% of teacher-student interactions. These student-initiated interactions were attempts to attract the teachers' attention in order to provide a response or ask a question. While girls initiated a lower percentage of interactions with the teacher, when this percentage was corrected for their presence in the classroom they had a slightly higher initiation ratio than boys. Girls also received more individual attention (24%) from the teacher than did boys (16%). This difference held when the percentages were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	93	4	3

A high percentage of the teachers' interactions involved asking questions in drills about the lesson (57%). Directions to students on providing responses (40%) and dictation (11%) were also relatively common. Explanation or expansion of the information was provided in 27% of the interactions. Positive reinforcement, in the form of praise of work was observed in 1% of the interactions. Negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

10:00am The teacher of the combined first and second grade class has the children stand and sing "Half way, half way around." She then works with the second grade by uncovering a set of problems on the display board, which they are to copy and solve. They are math problems requiring the children to "find the sum." She then passes out a number of different paper shapes among the first graders. She goes over the shapes with the children to make sure that they can identify apples, triangles and the like, then uses the different materials at the front of the class to demonstrate subtraction by taking away similar objects. At 10:20 the teacher has the Aide take the first graders to the activity room, where they play counting games and turns her attention to second grade. She calls on children to come to the board and write their answers for each question. After going over the answers and asking "Who got a 100%?" she begins to drill the second graders in the fives times tables. After several minutes she divides them in groups, which given the number of children are groups of ten to fifteen. They

play a dice game for multiplication with different children being assigned to throw the dice, provide an answer, and record the group's response.

Meanwhile, in the combined third/fourth grade a mathematics lesson is also in progress. The teacher is calling individual students to the board to answer math problems dealing with addition and subtraction. Both grades are working on the same problems. The teacher then tells both grades to take out a sheet of paper. She uncovers word problems dealing with addition and subtraction for the fourth graders and write problems on the board for the third grade children. Children begin to work quietly on the problems. Occasionally, a student initiates an interaction with the teacher to ask a question.

In the fifth/sixth grade classroom, both grades are studying Filipino language. The teacher questions and drills fifth grade then goes to sixth, leaving the fifth graders to read silently. After alternating between the grades to lead the exercise. The teacher organizes the children into groups to see who can come up with particular words the fastest. After a winner is declared the teacher returns the grades to reading silently. 11:30 am.

These classroom observations illustrate the teachers' emphasis on providing oral and written practice for the children. This practice occurs in different learning contexts, but large group work and seatwork predominate. Teachers make some use of games and familiar objects in learning especially at the lower grades. Small group work is used occasionally but the content of the exercises and the nature of the interactions, for the most part, have been structured by the teacher.

### **Student Government**

Each grade has a student government that includes a president, vice president, secretary, treasurer, auditor, public relations officer and sergeant at arms. Teachers said that girls took a more active part in student government than boys and this was confirmed by tallying the number of children of each sex in the classes. Two-thirds of the class officers were girls. The students who were recognized as good students were eligible to run for office. Several had been class officers in previous grades. They campaign among their classmates to be elected. Students felt that their primary function was to lead others and set a good example. Their primary function was to be "a little teacher" by leading classes and helping to organize school events. Teachers felt that girls took better advantage of the self-instructional materials and that made them more independent and interested in student government. They stated that "girls often teach the boys."

### **Parent Participation**

A group interview conducted with 9 community members, including the *Barangay* captain showed that parents are highly favorable toward the UNICEF program. The most frequent comment about the program was that it provided the children with the infrastructure for good learning. The desks, chairs, and learning materials were cited as important elements of the program. Children were described as learning more, especially to read and write English. They were also seen as less timid and more active than the



children in schools attended by their parents. This was attributed to the teachers who were seen as being “good teachers” who taught “knowledge and values.” Parents felt that both boys and girls had the same opportunities to learn in the school but that girls applied themselves more.

Parents generally felt that they should have more teachers. While they recognized that the multigrade situation had allowed children to complete school, they felt that with the influx of students a mono-grade situation would be better. Parent cited a difficulty in getting some parents to contribute either in the form of money or food donations to the school. This was attributed to the local economic situation that had made sugarcane unprofitable.

## **San Juan – San Jose, Antique, Philippines**

As we arrive at the school, three girls dressed in girls scout uniforms come toward us and meet us on the flowered walkway into the school. They shake hands and introduce themselves as class officers in the combined fifth and sixth grade class. They take us to the teacher in charge (TIC), and then return to their class. The teacher in charge explains that she had asked for volunteers to greet the visitors and many of the girls volunteered, so she allowed those who were class officers to meet us.

### **Background**

San Juan was founded in the 1960s and was an incomplete multigrade school until it participated in the UNICEF pilot project in 1994/95. It is located on the main highway of Antique about five kilometers from San Jose. Currently, only fifth and sixth grade continues to be a multigrade classroom, as enrollment has grown so much that the first and second grade classroom was broken into monograde in 1998 and that the third and fourth grade classes had been separated at the start of the 2002 school year. Thus, the current fifth and sixth grade class will be the last to complete their schooling in a completely multigrade environment.

The catchment area of the school contains about 100 families. They form a village that extends for about a kilometer. Although the village has some service occupations such as jitney drivers and a blacksmith, the primary occupation of the populace is rice farming. Teachers stated that many of the students are involved in harvesting the three rice crops a year produced in the area and that attendance drops dramatically during these periods.

The school has four sets of buildings. The two largest classrooms, which are encountered on entering the school, house the first and second grade. The fifth and sixth grade classroom is on one side of this complex while the school office is on the other side. The building with the third and fourth grade classrooms is behind the office and bathrooms are in back of the fifth/sixth grade classroom. The area behind the school also has a school garden. The front of the school has an area of concrete directly in front of the two lower grade classrooms as well as a grassy play area with swings and a separate area with a stage. Flowered walkways lead to the different areas and buildings.

Since 1998, school staff has received teacher guides, student self-instructional materials and training from Plan International. This training has taken place several times a year for two to four days. Plan uses a training group whose members were part of the original NEU program. It also has a supervisor for the program that visits individual schools several times a year.

### **Classroom Organization**

Children in the multigrade classroom are separated by grade. All children are in rows made up by two-student wooden desks facing the front of the classroom. In each grade a boy and girl generally share the desk. The teacher stated that the slower learners were put in the front of the class to allow them more chances to participate. A blackboard

spans the front of the classroom. Flip charts are also standing in the front, together with a desk to lay out instructional materials. Learning corners for science, math, English and Filipino are along the sides of the classroom. Part of the back of the classroom is devoted to pictures of the students and a corner called “Helping Hands,” which lists the class officers and commission members. The other side of the rear of the classroom holds a computer and printer, as well as a learning resource center filled with reference books and computer manuals.

### **Instructional Materials**

The combined fifth/sixth grade classroom had textbooks for all subjects. However, they seemed to be in short supply, as children shared books during lessons. The most commonly used instructional materials were flash cards with exercises, which were used in group and seatwork and sheets of Manila paper used in large group work.

### **Enrollment**

Data on student enrollment were incomplete. However, it appears that the enrollment has grown since the school became a complete school offering all six grades. In all years where data were complete, boys had higher enrollment numbers than girls. This pattern was also found in five of the eight years where partial data were available.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>89/90</b>	<b>90/91</b>	<b>91/92</b>	<b>92/93</b>	<b>93/94</b>	<b>94/95</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>	<b>02/03</b>
Girls	5	0	9	4	12	6	9	42	60	62	59	0	0	55
Boys	5	0	13	7	7	3	32	50	68	80	64	0	0	62
Total	10*	0**	22***	11*	19***	9*	41#	92##	128	142	123###	0**	0**	117

Source: Central school records

\*Data missing for first, second, third, fifth, and sixth grades

\*\*Data missing for all grades

\*\*\*Data missing for first, second, fifth and sixth grades

#Data missing for first, second, third, and fifth grades

##Data missing for second grade

###Data missing for fifth grade

### **Completion**

Table 2 presents the percentage of the enrolled students of each gender in the upper three grades of fourth, fifth and sixth for the fourteen-year period. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, in the three years (97/98, 98/99, 02/03) for which complete data were available, the percentage of students in the upper grades ranged from 38% to 42%. Girls have generally had somewhat lower representation in the upper grades than boys.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03
Girls	100	Na	44	100	42	100	100	45	45	42	37	Na	Na	36
Boys	100	Na	38	100	43	100	47	56	35	43	28	Na	Na	39
Total	100*	Na**	41***	100*	42***	100*	59#	51##	40	42	33###	Na**	Na**	38

Source: Central school records

\*Data missing for first, second, third, fifth, and sixth grades

\*\*Data missing for all grades

\*\*\*Data missing for first, second, fifth and sixth grades

#Data missing for first, second, third, and fifth grades

##Data missing for second grade

###Data missing for fifth grade

Data on the progress of individual children were available for only one cohort of children, those beginning in the 97/98 school year. Table 3 shows the percentage of the children who began school in a given year who are in sixth grade five years later. As can be seen, at least 45% of the individual children made normal progress through the school in the cohort. Girls had a completion rate that was almost double that of boys.

**Table 3: Sixth Completion Rates by Year and Gender**

Gender/Years	Girls – Sixth Grade	Boys – Sixth Grade	Total
97/98-02/03	60	31	45

Source: Central school records

**Pedagogy and teacher student interaction.**

Table 3 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in a grade and seat work, where children worked individually at their desks on assignments. Large group was the most commonly observed learning context, as 60% of the interactions took place in this context. Twenty-five percent of the interactions occurred in small groups, with student-led small groups slightly more prevalent than teacher directed small groups. Fifteen percent of all interactions took place during seat work. The type of seat work observed encouraged verbal participation by the students as children worked in pairs to complete exercises.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	11	14	60	15

Despite the emphasis on group work, teacher-initiated interactions predominate in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys were never observed to initiate an interaction with the teacher. Girls initiated 2% of teacher-student interactions. These interactions were related to questions about correctly following the directions in the exercises. Girls also received a higher percentage of teacher-initiated interactions than did boys (38% versus 18%). These differences favoring girls remained when data were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	98	0	2

A high percentage of the teacher’s interactions involved giving directions related to how students should carry out the activities (46%) and asking questions to check on understanding of the subject matter (42%). Explanation or expansion of the information provided in the assignments was observed in 30% of the interactions, whereas dictation took place in 2% of the interactions. Positive reinforcement in the form of praise of work occurred in 16% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

10:45 am It is math class. The teacher passes boxes from which the sixth grade children withdraw word problems. Tells them to work in pairs and that one should read the problem and the other answer it. The teacher circulates briefly. She goes to the board and writes  $\frac{1}{3} + \frac{1}{2}$  and says, “What are we going to do with one-third plus one half?” Several children say “Add” The teacher says, “Is it two-fifths?” Students respond “No.” The teacher points to a girl and asks, “What are we going to do?” The girl replies, “Find the lowest common denominator.” The teacher says, “Find the lowest common denominator – What is it?” She points to the same girls and says, “Show on the board what to do to get one-sixth.” The girl goes to the board and does the problem then explains what she has done to her classmates. The teacher has several other students come up to explain their work. She then divides the sixth graders in three groups and tells them to, “Choose a leader and recorder.” As the children form in groups they take name tags and scratch paper out of baskets with the group number. There are tags for the leader assistant leader, material collector, recorder and timekeeper. The teacher passes out problems while explaining, “Write down how we came up with the answer – discuss first” She goes to the fifth grade side of the classroom. The fifth graders have been working on fractions with a female student drilling the group. The teacher begins to discuss unequal fractions. She uses the technique of asking questions with the group filling in the missing word, “Unequal fractions – they are not \_\_\_?” The children respond “The same” What do we call them?” The students respond “Unequal” “To know if two fractions are we \_\_\_\_\_?” The group as a whole continues to answer the teacher’s questions. She then passes out

tin cans with problems relating to unequal fractions for the students to do in pairs and returns to sixth grade.

The teacher tells each group that the representative will come up and explain what they have done. Each representative comes to the front of the room and says, "Good morning classmates" and reads the problem then describes the steps to a solution, "To make a whole number we rename the mixed number and make a whole number with the denominator of 1 \_\_\_\_\_." As the sixth graders report, the teacher returns to the fifth grade and has one member of each pair read their question while the other supplies the answer. She returns briefly to sixth grade to form them in pairs to work on math exercises from the book. Each pair shares a book. She then returns to fifth grade and leads a discussion of division problems.  
11:30 am

This classroom observation illustrates the teacher's organization of different learning contexts in which children work with the same context. She uses seatwork with children working in pairs, small group work in which all children in the group have a role in the group and large group work to go over math subject matter. There is an emphasis on children verbalizing in front of their classmates either by leading exercises or by reporting on solutions to problems.

The multigrade teacher identified the small group work where everyone had a chance to be a part of the lesson as the most important element of the program. Learning corners and libraries were also said to be important in encouraging children to read books as they could choose what interested them. Student government was another aspect of the program that allowed children to participate. However the teacher said that girls were more interested in student government than boys. Similarly, girls were involved in organized extracurricular activities such as the girl scouts whereas boys showed less inclination for such activities. She felt that in time the computer would be another resource for the children.

She stated that there were no adverse affects for children in multigrade classrooms if the students were allowed to participate and help one another. She stated that it is like "one big family."

### **Student Government**

The school has a student government for each grade. The student government is made up of a president, vice president, secretary, treasurer, business manager, public relations person and a sergeant at arms. In the lower grades, teachers appoint student officers from among the better students. In the upper grades, students are elected by their classmates. Among the seven officers for fifth grade at the time of the study, six were girls. In sixth grade four of seven were girls. The president, vice president secretary and treasurer for each grade were female students. The officers in each grade stated that their main tasks were to be a "little teacher." That is, to lead exercises and drills when the teacher was working with the other grade and to help classmates with the work. They also said that they should be models for other children to behave in class and to help keep the grounds clean. Other duties that were mentioned were developing displays for the classroom and

helping to organize the school garden. The students said that their parents were happy about their participation because it made them study harder. Parents reiterated these sentiments.

### **Parent Participation**

A group interview was conducted with ten women. Nine of the women were mothers of students. The final participant was the *Barangay* captain for the village. The women had a total of 14 students in the school, ten of whom were girls. The parents were very happy with the UNICEF program. They cited the quality of the teachers who were recognized as “very disciplined” and “using good techniques.” They felt that the materials available at the school and the teachers helped the children be more active and learn more. They are especially happy about the availability of a computer and believe that learning to use this tool will help their children get jobs. They also would like the opportunity to learn to use the computer. They help the school by cleaning up the grounds and buildings, helping with festivals and helping their children with their studies. They recognized that multigrade classes had helped their children be able to attend school but felt that the school should have more teachers so that teachers could spend their time with a single grade. The mothers want their children to go on to high school and college. They foresee white-collar careers for the girls and technical occupations for the boys.

## **Saint Isabel – Negros Oriental, Philippines**

Upon entering any of the classrooms at Saint Isabel, one's attention is drawn to the large area where student work or "output" is displayed. A section of the wall is covered with art, student newspapers, songs, poetry, and papers. Products are written in both English and Filipino.

### **Background**

The original primary school in Saint Isabel was constructed shortly after the Second World War. It was an incomplete multigrade school until the early-1990s. The UNICEF demonstration program began in 1997. The school is located in the mountains 15 kilometers above the municipal center of Bais. The school is fairly accessible, as it is located on a passable road of dirt and asphalt.

A community of about 300 families makes up the catchment area of the school. This community surrounds the school and extends perhaps a kilometer in all directions. The principal occupations of the populace are cultivation and fishing. They cultivate coconuts and cassava. In recent years, some men have found work as day laborers in construction in Bais. School officials stated that most of the community members had an elementary school education. Estimates varied on the number of children who do not attend primary school ranging from a few to 25%.

The school has three large classrooms in separate buildings. The main classroom, which fronts a basketball court and houses the combined third and fourth grade class, also contains the kitchen facilities for the school. The other classes are in buildings that were reconditioned with the help of the community. These buildings are set off at about 50 meters from the central classroom, housing the combined 3<sup>rd</sup>/4<sup>th</sup> grade class. The combined 1<sup>st</sup>/2<sup>nd</sup> and 3<sup>rd</sup>/4<sup>th</sup> classrooms each have a large area beyond the student desk area that is used for break-out activities, small group work, and at times parent meetings. The combined 5<sup>th</sup>/6<sup>th</sup> classroom is somewhat smaller. Each classroom has a comfort room.

The school has three teachers and a teacher's aide. Only the teacher in charge remains from the initiation of the UNICEF multigrade program. She had two weeks of training at the start of the program and an additional two weeks a year later. She has trained the other two teachers on strategies for working with more than one grade at a time.

### **Classroom Organization**

In all of the classes, children are organized into rows that face toward the teacher and the blackboard in the front of the class. Each classroom has plastic desks that can be arranged in modular format to allow students to work together. Although desks have been arranged to separate several groups of children in each grade, teachers stated that these were not ability groupings. Rather, teachers said that they mixed children of different abilities so that they could help one another. Teachers said that they assigned children to seats so that they would not sit with their friends and that they alternated children by sex. However, with the exception of one classroom, where children were grouped in pairs, children appeared to be seated with students of the same sex. Students



were assigned randomly to small groups and children were allowed to pick their own group leader. In the upper grade class, student leaders served as facilitators for certain lessons.

As mentioned previously, display of student work was an important aspect of each classroom. All grades had learning corners for science, mathematics, English and Filipino languages, as well as integrated studies and culture. Charts on the Philippine school system, nutritional information and class officers were also posted on the walls, together with pictures of the Philippine president and religious photos.

### **Instructional Materials.**

All grades have textbooks in sufficient numbers for the enrolled students. They also have the UNICEF self-instructional workbooks, however these were not observed in use. The teacher in charge identified a number of contexts as important to the instructional process. She pointed out that the classrooms were supplied with a mini-library, instructional games and learning corners that included local materials and subject matter texts. There were also self-instructional workbooks, which were used for developmental activities. Teachers were to use small groups with peer leaders and secretaries to promote cooperative learning. Within the classrooms teachers made use of sheets of paper from flip charts and flash cards. The flip chart pages generally contained exercises or tests to be completed during seatwork, when the teacher was working with the other grade. Flash cards, often placed in paper representations of animals, were used to provide directions for children working in small groups. The blackboard was used for children to record findings from exercises.

### **Enrollment**

Student enrollment has been relatively consistent over the past 10 years. The major change was an increase in 1995/1996, the first year that the school offered fifth and sixth grade. The high numbers during the first two years of being a complete multigrade primary school reflects the number of children, who had completed fourth grade earlier and now enrolled to complete the sixth grade. With the exception of one year, total enrollment of girls has been higher than that of boys from the initiation of the UNICEF pilot program up to the current year.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>92/93</b>	<b>93/94</b>	<b>94/95</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>	<b>02/03</b>
Girls	49	41	76	67	64	68	44	58	52	61	61
Boys	41	41	89	68	59	58	42	53	57	53	57
Total	90	82	165	135*	123	126	86**	111	109	114	118

Source: Central school records

\*Data missing for sixth grade

\*\*Data missing for third grade

## Completion

Given that the student population has been fairly stable over the years since the beginning of the demonstration program, the variation in enrollment in upper grades was examined to determine continuance in school. Table 2 presents the percentage of the enrolled students of each gender in the upper three grades of fourth, fifth and sixth for the ten-year period. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, once the school offered the opportunity to complete all six grades, the percentage of the population in the upper grades has been between 43% and 52%. The percentage of girls in the upper three grades has been above 50% in each of the last four years. This is 7 to 12 percentage points higher than the percentage of all boys in those grades.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03
Girls	28	27	53	46	42	43	55	53	54	57	54
Boys	22	10	42	40	44	59	48	42	42	45	47
Total	25	18	47	43	43	50	51	48	48	52	51

Source: Central school records

Data on the progress of individual children were available for five cohorts of children, beginning in the 92/93 school year. Table 3 shows the percentage of the children who began school in a given year who are in sixth grade five years later. This is somewhat different than the cohort analysis done by the Department of Education, which compares total numbers of children in first grade with the number of children in sixth grade five years later. That is, individual children who have made normal progress through school without repeating or dropping out. As can be seen, less than 50% of the individual children make normal progress through the school. There have been no consistent patterns in the completion rates other than girls consistently have higher completion rates than boys.

**Table 3: Sixth Completion Rates by Year and Gender**

Gender/Years	Girls – Sixth Grade	Boys – Sixth Grade	Total
92/93-97/98	64	33	49
93/94-98/99	57	36	43
94/95-99/00	36	29	32
95/96-00/01	33	0	18
96/97-01/02	44	20	36
97/98-02/03	54	38	45

Source: Central school records

### **Pedagogy and teacher student interaction.**

The majority of teacher-student interaction across the three classrooms took place in the context of large groups. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. Seventy-eight percent of teacher-student interactions occurred in large groups. Most of the interaction took place in contexts where the teacher was working with one grade level after having given a seatwork assignment to the other grade. Teachers also circulated to examine student progress when both grades were engaged in seatwork. The few small group contexts occurred when teachers divided children into groups and described a collaborative exercise for group work.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	5	0	78	16

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys initiated 3% of the interactions with the teacher, whereas girls initiated 1% of teacher-student interactions. These student-initiated interactions were attempts to attract the teachers' attention in order to provide a response or ask a question. While girls initiated fewer interactions with the teacher they received more individual attention from the teacher than did boys. This difference held when the percentages were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percentage of interactions	96	3	1

A high percentage of the teacher's interactions involved giving directions related to how students should carry out the activities (52%) and asking questions to check on the understanding of the subject matter (34%). Explanation or expansion of the information provided in the assignments was observed in 24% of the interactions. Positive reinforcement in the form of praise of work occurred in 4% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

8:55 am The teacher of the combined first and second grade class is conducting an English lesson. She gives grade 1 an assignment to copy questions from the board and underline the correct answer, and then goes to the grade 2 side of the room. She begins to call on children to come to the front of the class to read the questions that they have been working on and supply an answer. She helps the children by modeling the correct pronunciation. After all questions have been answered, the teacher circulates through the classroom looking at the individual work of students in each grade.

In the third/fourth grade classroom, both grades are following a story about animals being read by the teacher. The story is accompanied by pictures. As the teacher reads, she asks question about the characteristics of the animals in the pictures. She expands on the questions by asking children about their own characteristics, such as the color of their eyes. After completing the story, the teacher opens a manila paper on the blackboard of the fourth grade side of the classroom and tells the student to do the assignment on the paper. She goes to the third graders and provides a short lesson on words with consonants. She then divides the students into small groups. She tells them to select a leader and a secretary and write ten words with consonants. One group clears a space among the desks and works on the floor while the other goes to a large table at the rear of the class and begins work. Returning to the fourth graders, the teacher begins to call on individual students to stand and supply answers to the exercise they had been doing.

The fifth and sixth graders are also having English class. The teacher has assigned a sixth grade girl to elicit answers to an exercise from her classmates. She calls on individual students who respond to the questions in the exercise. The teacher then gives the sixth graders an assignment. She goes to the fifth grade side of the room, where the students have been working on plural nouns. She repeats the process of identifying a student to call on others. In this case the student is a boy. As he calls on students, they stand and supply an answer. 9:30 am.

These classroom observations illustrate the teachers' emphasis on providing oral practice for the children in front of a group. In the upper grade classroom, students are also involved in leading the exercises, either through participation in small groups or by eliciting responses from other students. However, the content of the exercises and the nature of the interactions, for the most part, have been structured by the teacher.

### **Student Government**

The school does not have a school-level student government. Rather there is a government for each classroom. Classroom governments are made up of ten students. There is a president, vice president, secretary, treasurer, auditor, public relations person, two sergeants at arms, a muse and a prince charming. Students nominate their classmates for each position. Nominations usually take place in the second month of the school year when students have gotten to know one another. Depending on the classroom, students campaign for the positions for which they are nominated. In all classrooms, there were

similar numbers of boys and girls among class officers. There were also representatives from each grade within a classroom, although students in the higher grade were generally more prevalent among officers. Responsibilities include leading organizing class contests and projects such as presentations at festivals that take place within the school. Monies may be collected for these activities. Officers may also be asked to lead classes for teachers.

### **Parent Participation**

A group interview conducted with 22 community members, including the *Barangay* captain showed that they are highly favorable toward the UNICEF program. The most frequent comment about the program was that it provided the children with the infrastructure for good learning. The desks, chairs, and building support were cited as important to the children's learning. Children were described as less timid and more active than the children in schools attended by their parents. This was attributed to the teachers who were seen as being specially trained to create a lively classroom. Comments such as "the teachers are very active so children like to come" and "the children are excited about learning" were common. The group felt that the approach used by the teachers did not favor either boys or girls, but benefited both equally.

Parents and other community members were active in supporting the learning activities. In addition to providing labor in building classrooms, they made instructional materials under the direction of the teachers. Four community members also served as para-teachers in the school. Parents understood that teachers who could work with more than one grade at a time had been of benefit to them, by allowing their children to complete primary school. However, they hoped that sometime in the future they could have a single teacher for each grade.

## **Tamarindo – Guimaras, Philippines**

The teacher in the combined third and fourth grade class is working with fourth grade on a word problem. She reads the problem that is written on a sheet of Manila paper “The farmers have 196 baskets of mangoes. If 85 mangoes are in a basket, how many did they harvest in all?” She then asks “what is asked for?” “What is given?” as she continues working with the class on the operations involved in the problem, involving the fruit considered the treasure of the province. She follows up with word problems involving objects familiar to the children in their everyday lives such as seashells and eggs.

### **Background**

The primary school at Tamarindo was opened in 1968. It remained an incomplete school for almost 30 years. It became complete with the initiation of the UNICEF Demonstration Project in 1996 when fifth and sixth grade were added. The school has a teacher for each of the combined 1-2, 3-4, and 5-6 classrooms. All of the teachers are female and have been in the school for more than ten years. The school is located about 10 kilometers from San Miguel. It is accessible by a passable dirt road that is paved in parts.

A community of about 110 families makes up the catchment area of the school. The community surrounds the school. Thus, children have to walk a maximum of about one kilometer, which teachers said took 15 minutes. The principal occupation of the population is farming crops such as rice, cassava and local vegetables. Many community members also engage in crabbing and fishing.

The school has three small classrooms in one building. The classrooms face several walkways lined with plants and flowers that separate recreational space in the form of grass playing areas. These areas set the school about 10 meters off of the road. School gardens are on one side of the school. All of the teachers were trained in multigrade classroom management and teaching. They had three weeks training in Iloilo City Antique and Guimaras. In addition they meet monthly with the provincial program coordinator and with all the multigrade teachers on the island, at least quarterly. The school does not have teacher aides nor do parent volunteers assist in the classrooms.

### **Classroom Organization**

Classrooms in the school are equipped with plastic moveable desks that are arranged in tables so that four or more children can sit in a group. All tables are arranged so that children are facing the teacher at the front of the class. Students are separated by grades. Teachers stated that students were allowed to choose their own seats within a grade but that teachers monitored placement to make sure not all boys or all girls sat together. Thus, boys and girls generally sat side-by-side. Grouping by ability was not a strategy mentioned by the teachers.

The classrooms had a number of learning corners for English, health, Filipino language, and math in the back of the classroom. The learning corners were filled with materials

many of which were gathered from the local environment. They also contained flashcards and games. Textbooks and the UNICEF self-instructional workbooks developed as part of the Demonstration Project were prevalent. Reference materials and other books were part of a mini-library in each classroom. The front of the classrooms had a large blackboard and a table where the teacher kept materials. An area of each classroom was devoted to displaying examples of children's work.

### **Instructional Materials.**

There appeared to be textbooks in sufficient numbers for the enrolled students. However these were not observed in use. Rather, the teachers made use of instructional materials such as large sheets of Manila paper on which she had prepared classroom assignments, flash cards, and activity folders. The flip chart pages generally contained exercises or tests to be completed during seatwork, when the teacher was working with the other grade. Flash cards were used to drill children in a large group situation or to provide directions for children working in small groups. The blackboard was used for children to record findings from exercises.

### **Enrollment**

Although data are complete for only four years, student enrollment has been relatively consistent. As the average number of children in the missing grades for the years where there are data is 14, the total school population fluctuated between 85 and 94 in the years for which data are available. The principal change has been a shift from a majority of boys in the first years of the Multigrade Demonstration project to a slight majority of girls in the last two years for which data are available.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>
Girls	31	0	33	41	50	45
Boys	45	0	39	53	43	40
Total	76*	0**	72***	94	93	85

Source: Central school records

\*Data missing for sixth grade

\*\*Data missing for all grades

\*\*\*Data missing for fifth grade

### **Completion**

Table 2 presents the percentage of the enrolled students of each gender in the upper three grades of fourth, fifth and sixth for the period for which data are available. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, once the school offered the opportunity to complete all six grades, the percentage of the population in the upper grades has been fairly close to 50%. The percentage of boys in the upper three grades has been close to 50% in each

of the last four years. The percentage of girls, on the other hand, has increased over the last four years and surpasses that of boys in the last year for which data are available.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	96/97	97/98	98/99	99/00	00/01	01/02
Girls	42	na	33	39	48	49
Boys	33	na	46	49	49	45
Total	37*	Na**	40***	45	48	47

\*Data missing for sixth grade

\*\*Data missing for all grades

\*\*\*Data missing for fifth grade

Data on the progress of individual children were only available for one cohort of children, beginning in the 96/97 school year. Table 3 shows the percentage of the same children who began school in a given year who are in sixth grade five years later. As can be seen, more than 50% of the individual children in the cohort made normal progress through the school. However, the percentage of girls who completed school in six years is more than double that of boys.

**Table 3: Sixth Completion Rates by Year and Gender**

Gender/Years	Girls – Sixth Grade	Boys – Sixth Grade	Total
96/97-01/02	86	40	59

### **Pedagogy and teacher student interaction.**

The majority of teacher-student interaction across the three classrooms took place in the context of large group. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, 78% of all interactions took place in large groups. Most of the interaction took place in contexts where the teacher was working with one grade level after having given a seatwork assignment to the other grade. An additional fifteen percent occurred during seatwork. In this context, the teacher also circulated to examine student progress when both grades were engaged in seatwork. Small group work accounted for 7% of the interactions. The teacher usually assigns tasks for groups to work on and the group members chose who will report on the results of the tasks. “Little teachers” appointed by the teacher sometimes lead the small group activity.



**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	4	3	78	15

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated over 90% of the interactions. Boys initiated 5% of the interactions with the teacher, whereas girls initiated 2%. The student-initiated interactions were attempts to attract the teachers' attention in order to provide a response or ask a question. Although girls initiated fewer interactions with the teacher, they received more individual attention from the teacher than did boys (27% versus 24%). The differences held when the percentages were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	93	5	2

A high percentage of the teacher's interactions involved giving directions related to how students should carry out the activities (52%). Asking questions to check on the understanding of the subject matter was also fairly frequent, occurring in 41% of the interactions in each case. Explanation or expansion of the information provided in the assignments was observed in 18% of the interactions. Dictation was infrequent, occurring in 5% of the interactions. Positive reinforcement in the form of praise of work occurred in 20% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

1:30 pm. The teacher of the combined first and second grade class is doing a English lesson related to vowels and consonants with both classes. She picks up an object and asks one class what it is then writes the answer on the board. She alternates between classes, adding prepositions and vowels to build short sentences. Almost all children raise their hands to respond and those who are called on stand to supply the answer. She then hands out books and tells the children in each which page to use. The teacher describes the assignment and gives a sheet of paper for completing the assignment to each class. As the children work, she continues to provide an explanation to grade 1. Children then begin to bring their papers to the teacher.

The third and fourth grade teacher is also working with the whole class. She is using flash cards to drill the students on multiplication tables. She then divides

the third grade students in small groups to work on word problems and begins explaining a problem to the fourth grade. She reads the problem that is written on a sheet of Manila paper “The farmers have 196 baskets of mangoes. If 85 mangoes are in a basket, how many did they harvest in all?” She then asks, “what is asked for?” “What is given?” as she continues work with the class on the operations involved in the problem, involving the fruit considered the treasure of the province. She follows up with word problems involving objects familiar to the children in their everyday lives such as seashells and eggs. She gives the students papers with similar problems and returns to third grade. She asks that the group leaders come up and write the answers the group has decided on. Group leaders go to the front of the class and begin to write the answers on the blackboard. 2:15pm

These classroom observations illustrate that the teachers in both classrooms attempt to build on the children’s knowledge by using local objects known by the student in their lessons. There is an emphasis on providing oral and written practice for the children when the teacher is with a particular grade. The learning contexts include small group, large group and seatwork. Teachers stressed the importance of oral practice as an instructional strategy, saying that a lot of oral stimuli encouraged children to participation.

### **Student Government**

The school had a school-level student government in the year of the study. It had sixteen members, including: president, vice president, secretary, assistant secretary, treasurer, assistant treasurer, auditor, assistant auditor, two business managers, a publicist, three sergeants at arms, a muse and an escort. Teachers nominated candidates, based on their academic performance and interest. The student body then voted on these candidates. The school president was a boy. However, teachers stated that girls were more active than boys in organizing and carrying out projects. In addition to student officers, each classroom had a “little teacher” for each grade. In all classrooms these “little teachers” were girls. They stated that their classmates chose them because they know the lessons. Their chief responsibility was to lead class drills or small group activities when the teacher was working with the other grade. Those interviewed said that they liked the job because they were helping their classmates.

Parents also felt that girls participated more in student government than boys. They felt that this occurred because girls had more commitment to carrying out activities than did boys. Parents felt that those children who participated in student government took their studies more seriously and studied harder.

### **Parent Participation**

A group interview was conducted with nine mothers. These women had a total of 17 students in the school, 12 of whom were girls. The parents recognized that the multigrade program had given their children and opportunity to complete sixth grade. They state that that was a big difference from when they were students, as they could only go to fourth grade in their community. They also talked about the teachers being

trained in new teaching methods so that children participated more and liked school better than when they were in school. They were happy that the teachers who had learned these new methods were from the community. All the parents hoped that their children would go on to college. However, they felt that if they received a college education the children would only find a good job in the city.

## **San Ignacio Multigrade School in Tobias Fornier, Antique**

The clean, airy and well-equipped classrooms are full of activity and smiles. In the fifth/sixth grade class, groups of 3-4 boys and girls work together on assignments, and the teacher moves easily around the classroom to the groups. She is very cheerful and dynamic, and both boys and girls respond well. Everyone is doing something with materials-- while the sixth graders are working on an assignment, the fifth graders work together painting geometric shapes with watercolors in groups of two on the floor.

This is a "Little Red Schoolhouse," sponsored by the Coca-Cola Foundation.

### **Background**

San Ignacio started as a multigrade school offering grades 1-4 with two teachers some 40 years ago. It first offered separate first and second grade classes in 1996; and added the fifth/six grade class to become a "complete" school in 1999. The Coca-Cola Foundation's "Little Red Schoolhouse" project started here in January of 2002. Three new classrooms were built, now housing second, third/fourth and fifth/sixth grades. The original two-room structure now houses first grade and the school office.

The school is located on the main paved road. The 113 students come from about 70 families, nearly all of who live nearby to the school. Most families farm rice, fish or both. School personnel felt that almost all children of school age were in school. Attendance was seen as more of a problem with boys than girls: boys will be absent to help with farm chores, particularly among poorer families.

The school is well equipped with new single-student chair-desks, textbooks, reference materials and visual aids and a computer in the fifth/sixth grade class. Classrooms are well illuminated, cheerful, with lots of materials displayed, including "Our Work," a display of student work.

The teachers recently received their initial training in multigrade teaching from the Department of Education with support from the Coca-Cola Foundation. They also visited the Igcadac Multigrade Demonstration School. A three-year training program in multigrade teaching is about to begin, also with the support of the Coca-Cola Foundation.

### **Enrollment**

Enrollment at the school has been stable over the eight years for which data are available, with about 20 new first graders entering each year. In most years, there have been slightly more girls than boys enrolled: overall, girls have made up 53% of primary enrollment. In the last two school years, girls have made up 57% of the school's total enrollment. In the same period, there is a tendency for relative female enrollment to be higher in the upper grades (60%), more so than in the lower grades (54%).

**Table 1: School Population by Gender and Year \***

Students	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003
Girls	38	37	36	30	39	ND	61	63
Boys	41	31	35	41	29	ND	43	50
Total	79	68	71	71	68	ND	104	113

\* Data are missing for grades 5 and 6 for all school years prior to 2001-2002. Grades 5 and 6 were first given at this school in the 1999-2000 school year.

### Completion

Several indicators of completion and retention were used based on the data available. Table 2 shows that for the 2001-2002 and 2002-2003 school years, overall, 48% of all students enrolled in primary were enrolled in grades 4, 5 and 6. This pattern is not identical for boys and girls, suggesting that upper grade drop-out by boys constitutes a greater problem than for girls.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	2001-2002	2002-2003
Girls	49%	52%
Boys	44%	46%
Total	47%	50%

The cohorts of boys and girls enrolled in first grade in the 1995-1996, 1996-1997 and 1997-1998 school years were examined to determine the percentage of students who had progressed to the sixth grade in the 2000-2001, 2001-2002 and 2002-2003 school years, respectively. Table 3 shows there has been a steady increase in the overall percentage of students making normal progress and that for the 1998-1999 cohort girls show 64% normal progress compared to 33% for boys.

**Table 3: Percentage of Cohort Progressing to Sixth Grade in Six Years by Gender**

Students/Cohort	1995-1996 Cohort	1996-1997 Cohort	1997-1998 Cohort
Girls	15%	42%	64%
Boys	41%	50%	33%
Total	30%	45%	50%

### Classroom Organization

The two multigrade classrooms were organized in a similar fashion with the two grades split up back-to-back facing blackboards at opposite ends of the classroom. A teacher explained that this approach was used to reduce student distraction. Students used new, single-person desk-chairs with a fairly small writing surface. In the fifth and sixth grade

class, the sixth graders rearranged their desks to work in groups of four, while the fifth grade desks were lined up in rows during the observation period. The sixth grade groups were made up with equal numbers of boys and girls; in the fifth grade section the two genders were also distributed without forming clusters of either boys or girls. In the third/fourth grade class, there were nearly twice as many girls as boys, and the genders clustered among themselves.

### **Instructional Materials**

Neat and orderly, the classrooms were well supplied with textbooks, reference materials, visual aids and manipulatives. Accessible learning “centers” incorporating local materials complement displays of student work. Students seemed to always be using some material or aid to carry out their assignment.

### **Pedagogy and Teacher-Student Interaction**

As shown in Table 4, the vast majority (87%) of teacher-student interactions took place in the context of large groups. No student-led small group contexts were observed. Seat work accounted for 6% of the interactions, followed by teacher-directed small groups (5%) and student-directed small groups (2%). In the large group context, interaction frequently consisted of “drilling” of the students, where students would be called to the blackboard to solve a problem, while the rest of the students observed.

**Table 4: Percentage of Observed Teacher-Student Interactions by Context**

<b>Context</b>	<b>Teacher directed small group</b>	<b>Student directed small group</b>	<b>Large group</b>	<b>Seat work</b>
Percentage of interactions	5%	2%	87%	6%

As shown in Table 5, the teacher was almost always (99%) the initiator of the observed interactions.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

<b>Initiator</b>	<b>Teacher</b>	<b>Male Student</b>	<b>Female Student</b>
Percentage of interactions	99%	0%	1%

When initiated by the teacher, the majority (63%) of interactions were directed towards individual students. Table 6 shows that girls were more likely (39%) to be the target of these interactions than boys (24%). This was true even after adjusting for male-female attendance. Interactions directed at the whole grade or a group made up 34% of all interactions observed.

**Table 6: Interaction Recipient Percentages**

Initiator	Male Student	Female Student	Group
Percentage of interactions	24%	39%	34%

Table 7 shows the frequency of types of interactions (multiple types occur in a single interaction). Consistent with a “drilling” environment, teachers ordering or tasking students was frequently (52% of all interactions) observed. Questioning followed with frequency (39%). In 37% of interactions, explanation or expansion of information provided took place. In nearly one in eight interactions (12%), some form of dictation occurred. Positive reinforcement was observed in 11% of interactions, but negative reinforcement (punishment or harsh correction) was not observed in any of the classrooms.

**Table 7: Type of Interaction Percentages**

Question	Explanation	Order	Dictation	Praise
39%	37%	52%	12%	11%

### **Student Government**

Student government at this school is based on an election process. In the fifth/sixth grade class, girls held the presidency, vice-presidency, secretary and public relations positions, while boys held the treasurer, auditor and sergeant-at-arms positions. In the third grade class, girls held four out of five positions; in the fourth grade class, three out of five positions. Teachers said that girls participate more in student government because they are “more vocal,” are “more responsible” and have “better communications skills.”

Girl members of the student government who were interviewed said that it made them “happy” to have been elected and they gained the “respect” of their peers. They generally saw their responsibilities as related to helping the teacher and keeping their fellow students quiet and orderly.

### **Parent Participation**

A group interview was conducted with a dozen parents, all mothers. They were positive about the improvements brought about by the Coca-Cola Foundation at the school, and were particularly emphatic about the change in the way teaching is carried out. But they felt that multigrade teaching was difficult for teachers because they have to shift back and forth between the two grades. They want the school to have more teachers so there will be one teacher for each grade. Nonetheless, they expressed that the teachers were “striving hard to teach well,” that they were “better now than before,” because they were better trained and used a lot of visual aids and followed a formal lesson plan.

The infrastructure improvements were particularly satisfying to the mothers. In 1969, the school had only a first grade and a second/third grade classrooms. In order for the school

to offer all six grades, the parents had built a bamboo classroom for the fifth/sixth grade class. The three new classrooms built under the Little Red Schoolhouse project are a source of pride to the parents.

They all agreed that girls do better at this school. They felt that this is because girls are “easier to teach” while boys tend to be “naughty” and more interested in playing rather than studying. Asked why girls predominate in the student government, they said, “Girls get elected because they are smarter and help others.” Another mother said that “girls know how to lead, and boys know how to follow.”

When asked how much they wanted their children to study, they answered in a chorus “College!” Careers they desired for their children included commerce, teaching (a mother expressed for her daughter) and computer engineering. Some mother said that they wanted to learn more themselves, and hoped that through their children’s education they would be able to do so.

All recognized that the opportunities here in the community and on the island were quite limited. There was agreement that their children would have to go to Manila or overseas in order to make a good life. It was generally felt that boys make more money than girls with the same education, but girls, too, do well when they receive a good education. The consensus was that the parents would try their best to send both their boys and girls to college.



## **Saint Thomas – Negros Oriental, Philippines**

The teacher in charge is ill so the third/fourth grade teacher is taking his first/second grade class. The third/fourth grade class is being taught by a teacher aide who is in her first year at the school and has been hired through a district program to support schools by hiring teacher aides who are teacher college students preparing for their certification exams.

### **Background**

The primary school of Saint Thomas was constructed in 1960 and the same two classrooms remain in operation. The school serves students through fourth grade in two multigrade classrooms. The school is located in the mountains about 10 kilometers from the municipal center of Tayasan. The school is fairly accessible, as it is located on a passable road of dirt and asphalt. However, it sits on a hill that requires climbing a set of steps to reach the classrooms. The school has neither electricity nor water. Potable water is brought daily by the *Barangay* captain to fulfill a campaign promise that he made to the community.

A community of about 700 individuals found in 100 families makes up the catchment area of the school. This community is relatively dispersed with some children coming from as far as 10 kilometers. This requires leaving home at 5 am to arrive at school for the starting time of 7:30 am. The principal occupation of the populace is subsistence farming. They cultivate corn and coconuts. School officials stated that most of the elementary school age population was attending school. However, a few older children leave before completion to find domestic work in Manila.

The school is one building divided into two small classrooms. It sits atop a steep hill of about 100 feet in height. At the foot of the hill is a large dirt play area. A latrine is behind the classrooms.

The school has two teachers and a teacher's aide. However, only one teacher and the teacher aide had been in the school for several weeks owing to illness of the teacher in charge. None of the teachers have had any special training in teaching multigrade classes. They did not mention any of the strategies for multigrade teaching that are recommended by the Philippine Department of Education as being in use in the school.

### **Classroom Organization**

In both classes, children are organized into rows that face toward the teacher and the blackboard in the front of the class. Each classroom has two-person wooden desks. In the upper grades these desks seated two to four children, depending on attendance. In the first/second grade classroom several desks were generally pushed together so that six or more children were in a single line of desks. Children are separated by grade level. Teachers stated that there was no organization by ability groupings or gender. However, it was observed that in both classes, children of the same sex sat together. No small group work was observed during lessons.

The back of the room in the upper grade classroom had learning corners for science, mathematics, English and Filipino languages, as well as a family corner. A chart of the Philippine school system was also posted in an information corner. A picture of the Philippine president was posted over the blackboard in the front of the class. The first/second grade class had several tables with textbooks in different sections of the class as well as tables and posters identifying math, Filipino and English corners and an information corner. There was no children's work exhibited on the walls of the classrooms.

### **Instructional Materials.**

Neither classroom had textbooks in sufficient numbers for the enrolled students. Both teachers complained about the number and age of the textbooks and the need for children to share books during lessons. Although children shared books during the lessons observed, most of the teaching was done using the blackboard for written examples.

### **Enrollment**

Student enrollment has been relatively consistent over the past 10 years, fluctuating from a high of 95 students to a low of 59. The major change was a decrease of about 20% from 1993/94 through 1997/98. With the exception of one year, total enrollment of girls has been higher than that of boys.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>90/91</b>	<b>91/92</b>	<b>92/93</b>	<b>93/94</b>	<b>94/95</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>
Girls	42	54	46	44	33	38	39	37	44	51	42	47
Boys	39	41	41	28	26	31	34	38	39	43	36	41
Total	81	95	87	72	59	69	73	75	83	94	78*	88

Source: Central school records

\*no data available for fourth grade

### **Completion**

The variation in enrollment in upper grades was examined to determine continuance in school. In this case, only fourth grade can be included, as it is the last year available in the school. Table 2 presents the percentage of the enrolled students of each gender in the fourth grade for the ten-year period. If all children were making normal progress through primary school, one would expect about one fourth of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, the school has always been below this level in total upper grade participation. Girls have only reached this level in the most recent year for which data are available. In general, higher percentages of the female population are represented in the upper grade. In only two years are there fewer girls in fourth grade, in relation to the female student population than boys.

**Table 2: Percentage of Students Enrolled in the Fourth Grade by Gender and Year**

Students	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02
Girls	21	22	09	16	24	24	15	16	03	16	na	26
Boys	15	14	17	14	23	19	12	05	18	14	na	12
Total	18	19	13	15	24	22	14	11	10	15		19

Data on the progress of individual children to the fourth grade were available for eight cohorts of children, beginning in the 90/91 school year. Table 3 shows the percentage of the children who began school in a given year who are in fourth grade three years later. This is somewhat different than the cohort analysis done by the Department of Education, which compares total numbers of children in first grade with the number of children in sixth grade five years later. That is, individual children who have made normal progress through school without repeating or dropping out. As can be seen, less than 50% of the individual children make normal progress through the school to fourth grade. There have been no consistent patterns in the completion rates other than girls consistently have higher completion rates than boys.

**Table 3: Fourth Completion Rates by Year and Gender**

Gender/Years	Girls – Fourth Grade	Boys – Fourth Grade	Total
90/91-93/94	50	07	27
91/92-94/95	25	17	22
92/93-95/96	0	0	0
93/94-96/97	33	30	32
94/95-97/98	33	0	18
95/96-98/99	0	31	14
96/97-99/00	27	22	25
97/98-00/01	Na	na	Na
98/99-01/02	50	11	33

**Pedagogy and teacher student interaction.**

All of teacher-student interaction across the two classrooms took place in the context of large group. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. One hundred percent of teacher-student interactions occurred in large groups. The teachers did not distinguish between grades during the classes but rather taught the same material to both grades. All of the classes observed consisted of the teacher orally drilling children.

**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	100	0

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys initiated 3% of the interactions with the teacher, whereas girls did not initiate any interactions. While girls initiated fewer interactions with the teacher they received more individual attention from the teacher than did boys. Girls received 35% of the teacher-initiated interactions compared to 21 percent for boys. This difference held when the percentages were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	97	3	0

A high percentage of the teachers' interactions (75%) involved asking questions in drills about the lesson. Directions to students on providing responses (21%) and dictation (28%) were also relatively common. No explanation or expansion of the information provided in the assignments was observed and neither positive reinforcement, in the form of praise of work or negative reinforcement, in terms of punishment or harsh correction, was observed. The following fieldnotes show the nature of teaching and learning in this school.

1:05pm The teacher in the third/fourth grade classroom is using flashcards to drill the students of both grades on local language diphthongs. She puts up two words and asks the group to identify the diphthong. At times, she calls on individual children, while at others, she allows the whole group to respond. Students are very orderly. They raise their hands to respond and when called upon stand up to answer. After the same girl has answered several questions, the teacher asks this child to go to the front of the room and read all the flash cards with diphthongs. All of the other students watch while she performs the task.

In the first/second grade class, the teacher is also giving a lesson developing local language skills. She works with both grades together, holding up posters of animals for the children to identify. She calls on a child to identify the animal, then the teacher models the pronunciation of the word and has the group repeat it. After about 15 minutes working with different posters, the teacher changes the exercise. She tells the children to sit together so that they can see the language book. She tells them the page then calls on individual children to read. She has

to help several children find their place in the book, as five or six children read the same passage individually. 1:35pm.

As shown in this vignette, the strategy used by the teacher is that of large group, centered on the teacher. Individual children are asked to respond to questions and provide the correct answer that the teacher wants. There is a high degree of group recitation and repetition.

### **Student Government**

Teachers said that there was a student government for each classroom. Its primary function was to organize class activities for special events such as the local festivals and Christmas. Activities are planned with the help of the teachers. Although students vote for class officers, nominees are selected by the teachers.

### **Parent Participation**

Owing to the distance of most of the community members' residences from the school and the lack of time for the school to prepare for the observation visit, no community interviews were conducted. Teachers said that there is a parent committee and parents assist the school when requested. Assistance is mainly in the form of school maintenance activities. As mentioned, the *Barangay* captain is fulfilling a campaign promise to bring water to the school each day.

## **Saint Teresa – Guimaras, Philippines**

The teacher in charge has been at the school since it began in the 1970s. Both she and the parents take pride that it has gone from a single teacher school to a school with five teachers. Parents insist that their children will receive a better education when there are sufficient teachers so that combination classes are not necessary.

### **Background**

The primary school at Saint Teresa was opened in the 1970s and has been in existence for 30 years. It began with one teacher, who is still the teacher-in-charge. She taught children in first through fourth grade. The school was incomplete until the UNICEF program began. Two new classrooms for fifth and sixth grade as well as an office were built. The school is now largely monograde. There are five teachers, who are distributed in first grade, a combined second/third grade, fourth grade, fifth grade and sixth grade. There is also a preschool classroom that serves about 25 students. The school is located in the interior of the island about 20 kilometers from San Miguel. It is fairly accessible, as it is located on a passable dirt road.

A community of less than 100 families makes up the catchment area of the school. Part of the community surrounds the school. However, teachers stated that children come from several kilometers away and parents mentioned that they live at some distance from the school. The principal occupation of the populace is cultivation. Rice, coconuts and cassava are the main crops.

The school has six classrooms in three separate, modular buildings. The classrooms face a large recreational space that has a slide, a grass playing area and a theater. This area sets the school about 15 meters off of the road. Student created gardens are in back of the school. Of the five primary school teachers, only the teacher in charge and one other teacher have been trained in multigrade teaching. Neither of these teachers currently teach in the one multigrade classroom at the school. The school does not have teacher aides nor do parent volunteers assist in the classrooms.

### **Classroom Organization**

Only the multigrade classroom was examined for the study. As the teacher in that classroom had no training in multigrade teaching and the school as a whole was dedicated to moving away from a multigrade environment, the classroom was treated as a comparison classroom. In the combined second/third grade, the third grade class was in rows of two desks in which children side-by-side facing the front of the classroom. Second graders were at plastic tables, constructed to the size of the students. They also faced toward the front of the classroom. Children were mixed by gender, with boys and girls generally sitting side-by-side. The teacher said that she mixed children of different abilities so that they could help one another.

A large area on the rear wall of the classroom was devoted to children's "Best Work." The classroom also had learning corners for health, Filipino language, and math in the back of the classroom. A bookcase under one window at the side of the classroom

contained textbooks while a table under the window on the other side held paper that the teacher used in the instructional activities of the day. The front the classroom had a large blackboard and a table where the teacher kept materials.

### **Instructional Materials.**

There appeared to be textbooks in sufficient numbers for the enrolled students. However these were not observed in use. Rather, the teacher made use of instructional materials such as large sheets of Manila paper on which she had prepared classroom assignments, flash cards, and activity folders. The flip chart pages generally contained exercises or tests to be completed during seatwork, when the teacher was working with the other grade. Flash cards were used to drill children in a large group situation or to provide directions for children working in small groups. The blackboard was used for children to record findings from exercises.

### **Enrollment**

Although data are complete for only four recent years, student enrollment has been relatively consistent. The major change was an increase in enrollment when the school began to offer fifth and sixth grade in 1998/99. The high numbers during the first two years of being a complete multigrade primary school reflects the number of children, who had completed fourth grade earlier and now enrolled to complete the upper grades. Total enrollment of girls has been higher than that of boys in four of the six years for which data were available.

**Table 1: School Population by Gender and Year**

<b>Students</b>	<b>95/96</b>	<b>96/97</b>	<b>97/98</b>	<b>98/99</b>	<b>99/00</b>	<b>00/01</b>	<b>01/02</b>
Girls	40	57	0	82	84	77	64
Boys	41	54	0	88	75	74	63
Total	81*	111**	0***	170	159	151	127

Source: Central school records

\*Data missing for fourth, fifth, and sixth grades

\*\*Data missing for fifth and sixth grades

\*\*\*Data missing for all grades

### **Completion**

The variation in enrollment in upper grades was examined to determine continuance in school. Table 2 presents the percentage of the enrolled students of each gender in the upper three grades of fourth, fifth and sixth for the period for which data are available. If all children were making normal progress through primary school, one would expect about one half of the population of girl students to be in the upper grades each year and the same would hold true for boys. As can be seen, once the school offered the opportunity to complete all six grades, the percentage of the population in the upper grades has been fairly close to 50%. The percentage of boys in the upper three grades has been close to 50% in each of the last four years. With the exception of the last year, this has been as high or higher than the percentage of girls in the upper grades.

**Table 2: Percentage of Students Enrolled in the Upper Grades by Gender and Year**

Students	95/96	96/97	97/98	98/99	99/00	00/01	01/02
Girls	0	23	Na	40	43	49	53
Boys	0	22	Na	50	55	49	48
Total	0*	23**	na***	45	48	49	50

\*Data missing for fourth, fifth, and sixth grades

\*\*Data missing for fifth and sixth grades

\*\*\*Data missing for all grades

Data on the progress of individual children were available for two cohorts of children, beginning in the 95/96 school year. Table 3 shows the percentage of the children who began school in a given year who are in sixth grade five years later. As can be seen, at least 50% of the individual children made normal progress through the school in the first cohort. In the second cohort this percentage has dropped for both boys and girls. There have been no consistent patterns by gender in the completion rates.

**Table 3: Sixth Completion Rates by Year and Gender**

Gender/Years	Girls – Sixth Grade	Boys – Sixth Grade	Total
95/96-00/01	50	53	52
96/97-01/02	44	36	40

**Pedagogy and teacher student interaction.**

The majority of teacher-student interaction across the three classrooms took place in the context of large group. Table 4 shows the percentage of interactions between the teacher and students in teacher-directed small group contexts, student-directed small group contexts, large group contexts involving all of the students in the class and seat work, where children worked individually at their desks on assignments. As can be seen, no interactions took place in small-group learning contexts. Eighty-six percent of teacher-student interactions occurred in large groups. Most of the interaction took place in contexts where the teacher was working with one grade level after having given a seatwork assignment to the other grade. The teacher also circulated to examine student progress when both grades were engaged in seatwork. This context accounted for 14% of the interactions.



**Table 4: Percentage of Observed Student-Teacher Interactions by Context (2002)**

Context	Teacher directed small group	Student directed small group	Large group	Seat work
Percentage of interactions	0	0	86	14

As might be expected, given the emphasis on large group work, teacher-initiated interactions predominated in teacher-student interactions. As shown in Table 5, the teacher initiated almost all of the interactions. Boys initiated 2% of the interactions with the teacher, whereas girls initiated no interactions with the teacher. The single student-initiated interaction by a boy was an attempt to attract the teachers' attention in order to provide a response or ask a question. Girls not only initiated no interactions with the teacher they received less individual attention from the teacher than did boys. Forty-one percent of the teacher's interactions with students were with boys, whereas 22% of her interactions were with girls. The differences held when the percentages were corrected for the number of children of each gender in the classroom.

**Table 5: Percentage of Interactions Initiated by Teachers and Students**

Initiator	Teacher	Male Student	Female Student
Percentage of interactions	98	2	0

A high percentage of the teacher's interactions involved giving directions related to how students should carry out the activities (75%). Dictation and asking questions to check on understanding of the subject matter was also fairly frequent, occurring in 23% of the interactions in each case. Explanation or expansion of the information provided in the assignments was observed in 14% of the interactions. Positive reinforcement in the form of praise of work occurred in 23% of the interactions and negative reinforcement, in terms of punishment or harsh correction, was not observed. The following is a description of classroom life in the school.

9:00 am The teacher of the combined second and third grade class is showing flash cards with addition problems to the second grade. She says, "Step forward if you know the answer." Children step forward and three boys then a girl are called upon to give solutions. The teacher then takes out two circles and says they are pizza. She asks if the children have eaten pizza and when she gets no response, she goes back to calling them circles. Meanwhile the third graders are working on a word problem written on a piece of Manila paper on the blackboard. It says "Analyze and solve: Erwin has 48 candles. He gives these candles to six friends. How many candles does each friend receive? 1) What is asked? 2) What is given?" The teacher moves to this group, leaving the second graders to examine several different shapes. She asks a boy and then a girl to read the problem then leaves the class to work on the problem.

She returns to grade 2 and begins to explain fractions, discussing what is the numerator and what is the denominator of  $\frac{1}{4}$ . She puts up another piece of Manila paper with different fractions for the students to copy. She returns to the third grade and tells the students to exchange papers. She then asks a boy to answer each part of the problem. After they answer she asks who got them right and collects the papers, without ever soliciting that mathematical solution to the problem. 9:25 am.

These classroom observations illustrate that the teacher, despite her lack of training, attempts to keep children of both grade levels engaged in their respective lessons. There is an emphasis on providing oral practice for the children when the teacher is with a particular grade. However, the contexts and instruction materials employed are limited. Textbooks were not used during the entire one and a half hours of observation.

### **Student Government**

The school had initiated a school-level student government in the year of the study. The government was made up entirely of sixth graders. These children were responsible for organizing projects such as the student gardens and school participation in local festivals. There were also class officers for each classroom. Classroom governments are made up of eight to 10 students, including: a president, vice president, secretary, treasurer, auditor, public relations person, sergeants at arms, a muse and a prince charming. Students nominate their classmates for each position. Parents and teacher felt that girls participated more in student government than boys. They felt that this occurred because girls had more commitment to carrying out activities than did boys. Parents felt that those children who participated in student government took their studies more seriously and studied harder.

### **Parent Participation**

A group interview conducted with eight mothers of students. These women had a total of 12 students in the school, ten of whom were girls. The parents were not happy that the school had multigrade classes. They felt that multigrade classes were difficult to teach because there were too many students for one teacher. They stated that they needed to help the students at home when they were in a multigrade class to make up for the lack of teaching. None of the parents had assisted in the school as a teacher's aide. They said that transportation difficulties made it difficult to participate in the activities of the school. They said that their participation was limited to helping to plant the flowers in the schoolyard. The mothers want their children to go to college in Iloilo. They feel that this will lead to a job in Manila or abroad where the children can earn dollars.

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