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Final Report for the Panel Study of Sentinel Schools in Guatemala



This study was carried out with funds from the USAID/ Guatemala, under the Task Order No. GEW-I-00-02-00020-00 with Juarez & Associates, Inc., which is financed by the Strategic Objective No. 520-0431, "A better Educated Rural Society".

Education Standards and Research Program

**Final Report for the Panel Study of Sentinel
Schools in Guatemala**

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Contrato No. GEW-1-00-02-00020-00
Orden de Trabajo GEW-1-03-02-00020-00

Guatemala, August 2009.

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EXECUTIVE SUMMARY

Final Report for the Panel Study of Sentinel Schools in Guatemala

Introduction

This document summarizes the results of the three years of fieldwork for the panel study of Sentinel schools being conducted under the Project for the “Development of a National Education Research and Evaluation System to Improve Educational Accountability Quality and Efficiency in Guatemala.” The study allowed the monitoring of progress in the implementation of the system-wide education reforms currently underway in the country at the community, school, and classroom levels. The study took place on a yearly basis over the life of the program and focus on three main reform efforts: 1) curricular reforms that include the implementation of a new curriculum and implementation of national grade-level learning standards of primary schools; 2) decentralization of education services to local community and school levels; and 3) the revitalization of bilingual education.

Methodology

The Sentinel Schools study was designed as a panel study, which measured changes in the same group of subjects at different points of time. Panel studies are particularly useful in predicting long-term or cumulative program effects and in answering questions about the dynamics of change. Thus, the same schools, teaching staffs and student bodies were examined over a four-year period. To carry out the panel study, a multi-method design consisting of inventories, checklists, classroom observation forms and focused interviews was employed to measure the implementation of the changes planned by the MOE. This was combined with testing of student achievement in selected grades as part of the development of national standards and assessment procedures. The design was post-test only, as measurement is being undertaken at the end of each school year, with data collected in the 2004 national assessment of first and third grade serving as baseline data for the Sentinel study.

Study variables were of three principal types: those associated with system support, those associated with the teacher, and those associated with the student. System support variables included technical input provided by supervisors to school directors and teachers, as well as the activities of school directors in promoting teacher use of active learning methodologies and parent participation in student learning. Teacher variables were related to background characteristics, training received, and application of training to teaching-learning

situations. Student variables included those related to the student's background, those related to the structure of the classroom to which the student was assigned, and those related to situational and behavioral characteristics within the classroom. Data analysis for the baseline study consisted of calculating the absolute and relative frequencies of each variable. In addition, other analyses such as t-tests and chi-square were used as appropriate.

Major Findings

Supervisors

The focus on monitoring at the school level among supervisors in Sentinel schools increased over the three years of study. The number of visits to a school tripled from 2006 to 2008. This greater emphasis on monitoring at the school level is a result of a focus by the Ministry to give follow-up support to the new curriculum and standards.

There was a significant change from the baseline in 2006 when a majority of supervisors saw administrative activities including reviewing records and plans as their principal function. In 2008, a majority saw technical orientation and visits to classrooms to observe teachers as their main functions.

Most supervisors had distributed materials supporting the reform effort. When asked in 2008 if they had distributed materials prepared by the Ministry, the majority of supervisors replied affirmatively. Ninety-four percent of the supervisors had distributed materials on educational standards and student evaluation cards, whereas 86% had distributed both an evaluation manual and a teacher review document.

Directors

Educational quality is the principal concern of school directors. A majority of directors mentioned either improving educational quality or improving reading or mathematics specifically as their priority in each year of the study.

There has been a significant increase in the use of school-level information on student progress. At baseline, although over 90% of directors stated that students were evaluated regularly in their schools, 65% said the information wasn't used. In 2008, the percentage of directors who stated that information wasn't used decreased to 35%.

Training for directors was an important result of the reform effort. Such training was primarily related to pedagogy. Directors who stated that they received Ministry training increased from 65% in 2006 to over 90% in both 2007 and 2008. Training in pedagogy increased from 11% to 41%.

In 2008, over 90% of the directors were familiar with the materials on standards and three-fourths had put the materials to use. Eighty-six percent of directors said they had received the student evaluation cards distributed in 2008. Sixty-four percent had received the teacher review materials.

Teachers

The higher turnover rate among female teachers in than males in study schools continued throughout the study. The difference in age, years teaching and time in the school that favored female teachers in 2004 had been eliminated in 2006 and continued to decrease in 2007 and 2008. Such increases in these variables on the part of the male teachers suggest greater continuity in the same schools.

There is a consistent gender difference in class size. Female teachers averaged more students than male teachers in all years of the study. The difference was largely a result of the greater number of girls in the classrooms of female teachers. Female teachers averaged two more girls per class in 2006 and one more girl in 2007 and 2008.

Student-teacher ratio decreased over the study. After increasing in 2006 and 2007, the average number of students was lower than that of the 2004 baseline in 2008.

Female teachers were more likely to be assigned to early grades than their male colleagues. In all years of the study a greater percentage of female teachers were found in the first three grades, whereas male teachers predominated in fourth, fifth and sixth grades.

There was a significant increase of about 30% in the number of teachers who received classroom materials from the Ministry of Education in 2008. Although the percentage of teachers stating that they had received chalk, sheets of paper, markers or large sheets of paper for displays increased slightly in 2006 and 2007, it remained at less than 20% of all teachers. In 2008, nearly 50% of teachers stated that they received materials.

A majority of teachers used classroom management strategies generally associated with successful instruction. There were significant increases in the use of grouping students within the class, use of learning corners, and use of a common system of discipline over the years of the study. The exception was showing exhibits of student work in the classroom. This strategy was in use by the majority of teachers in both years.

Despite the importance of active learning to teachers, large-group work was the principal methodology used in mathematics and language lessons in all years of the study. Spanish was the predominant language of instruction, as it was used in more than 75% of interactions between teachers and students.

Students

The percentage of students demonstrating mastery of the curriculum increased consistently among third graders. Students increased 14% in mathematics and 6% in reading from 2006 to 2008. Results among sixth graders were mixed.

Classroom environment in the sample schools became more positive for students. There was more than a 10% increase in the quality of the respect, nurturing and equity during the lessons observed from 2006 to 2008.

Learning materials are more available in lessons at all grade levels. On the average, about three additional texts were available across the grades. The greater number of materials contributed to a higher percentage of materials available per student at each grade level. Similarly, the use of texts during lessons increased by about 5%. It should be noted, however, that no grade had sufficient materials for each student, and on the average, materials were available for only about half the students. Use of textbooks and other learning materials in lessons is also extremely low. Less than 10% of students use materials during mathematics and language lessons.

Ladino and Indigenous children have somewhat different experiences in sample schools. In all years, there were significant differences in the number of times that teachers were out of the classroom when Indigenous students were observed in comparison to non-Indigenous students. Engagement with subject matter increased by 10% for Indigenous children from 2006 to 2008. However, for Ladino students it increased 13%. There was a decrease in the teachers' use of Mayan as the language of instruction. Spanish language use by Indigenous students increase by about 20%

Parents

The majority of parents have been to school and can read and write Spanish. This is true even though women predominate in the parent sample. About two-thirds of each group is highly positive about their children's success in school. However, many parents are not involved in supporting children's learning, as only about half said that they regularly assist students with their homework and the percentage of those who never helped their children rose over the years of the study.

Parental knowledge of specific grade level competencies and standards is almost non-existent. Less than 10% of parents in any year could identify a specific standard for any grade.

Implications

The study showed that a system-wide strategy to promote educational quality among supervisors, directors and teachers can be successful. The MOE should continue to build on this perspective by the provision of tools and information that help teacher support personnel like supervisors and directors to contribute to the improvement of teachers' classroom practice.

The use of information on student achievement for decision-making by school directors should be targeted as a training area. This is likely to make ongoing information on student progress in meeting standards more useful.

The effort to provide classroom materials such as chalk, paper, and markers should be continued. Although there have been gains in each year of the reform, only slightly more than half of the teachers report having sufficient materials of this type.

Despite improvement in academic achievement, only about a third of students reach mastery levels in math and language. These results suggest that greater emphasis on teacher professional development strategies that encourage the use of textbooks and active learning approaches during lessons should be a priority.

If the MOE is to meet the stated goal of the reform in terms of the revitalization of bilingual education, emphasis on both the importance of instruction in two languages and good teaching practice such as teacher-student interaction and student engagement with the curriculum should be emphasized in the professional development of bilingual teachers.

Strategies to inform parents about grade level strategies should be developed. Where possible such strategies should be tied to parental participation in student learning.

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Final Report for the Panel Study of Sentinel Schools in Guatemala

I. Introduction

This document presents the final report for the panel study of Sentinel schools conducted under the Project for the “Development of a National Education Research and Evaluation System to Improve Educational Accountability Quality and Efficiency in Guatemala.” The study was designed to monitor the progress in the implementation of the system-wide education reforms currently underway in the country at the community, school, and classroom levels. The study took place on a yearly basis over three years and focused on three main reform efforts: 1) curricular reforms that include the implementation of a new curriculum and implementation of national grade-level learning standards of primary schools; 2) decentralization of education services to local community and school levels; and 3) the revitalization of bilingual education. Results come from field work undertaken in July-August of 2006, 2007 and 2008 by the Education Standards and Research Program and from other appropriate Ministry of Education (MOE) databases.

The Sentinel Study has generated several other documents that can be of use to administrators or researchers interested in conducting a national panel study of education interventions. These are: a short “Frequently Asked Questions” document on the study; and a detailed implementation manual.

II. Background

Under the Berger government’s pledge to promote education throughout Guatemala, the Ministry of Education disseminated lines of action for an aggressive program directed toward: improving the education system’s transparency, efficiency, and effectiveness; achieving universal access to primary education; decentralizing educational services; and improving educational quality in the nation’s classrooms. Included within the Ministry’s action plans were specific activities for the development and dissemination of content standards for grades 1-6, establishment of a national system of research and evaluation, review of the curriculum for grades 1-9, and teacher training in standards and new curriculum for primary grades.

In the Colom government, the emphasis on educational quality has continued. There has been a greater focus on student testing and a special interest in improving the experience of bilingual children in the nation’s primary schools. As part of the ongoing reform efforts, the MOE has developed an entity charged with the assessment of teaching and learning and the reporting of outcomes. The activities undertaken through the Sentinel study will become a product of this unit

and assist the MOE in monitoring the implementation of its plan and reporting progress to the larger educational community.

The variables to be examined under the Sentinel Study were defined through discussions with the MOE units for educational quality, the General Directorate for Intercultural Bilingual Education and the General Directorate for Quality of Education (DIGEBI and DIGECADE, respectively, by their acronyms in Spanish). Four basic areas were identified for monitoring ministry efforts to improve the education system. These were 1) leadership, in which schools directors become leaders in the education communities where their schools are located and encourage parents and teachers to work together to improve learning for all children. School supervisors were also to be given the administrative and technical tools to become effective providers of technical support for schools and teachers. 2) Improvement of teacher training by emphasizing active learning pedagogy in both pre-service and professional development activities. 3) Curriculum development that focuses on learning standards and criterion referenced assessment and includes values education aimed at students becoming citizens who are proud to participate in the development of their country. 4) Financial support such as scholarships, textbooks, and school libraries to ensure equity in learning opportunities. These objectives and strategies served as the basis for determining the variables to monitor system performance through the sentinel school study.

III. DESIGN

The Sentinel Schools study was designed as a panel study, which measures changes in the same group of subjects at different points of time. Panel studies are particularly useful in predicting long-term or cumulative program effects and in answering questions about the dynamics of change. The same schools, grade levels, types of students and their parents were examined over a three-year period. To carry out the panel study, a multi-method design consisting of inventories, checklists, classroom observation forms and focused interviews was employed to measure the implementation of the changes planned by the MOE. This was combined with testing of student achievement in selected grades as part of the development of national standards and assessment procedures. The design was post-test only, as measurement was undertaken at the end of each school year, with data collected in the 2004 national assessment of first and third grade by PRONERE serving as baseline data for the Sentinel study. Data from 2006 served as a baseline for areas not covered in the 2004 study.

Field data were complemented by secondary data provided by the school infrastructure and equipment survey, in years when such data were available and by the national databases on student enrollment and completion. The first year of the study, 2006, also served to test instruments to be used of the life of the study.

A. Variables

Study variables were of three principal types: those associated with system support, those associated with the teachers, and those associated with the student. System support variables included technical input provided by supervisors to school directors and teachers, as well as the activities of school directors in promoting teacher use of active learning methodologies and parent participation in student learning. Teacher variables were those related to background characteristics, training received, and application of training to teaching-learning situations. Student variables included those related to the student's background, those related to the structure of the classroom to which the student is assigned, and those related to situational and behavioral characteristics within the classroom. Variable clusters are as follows:

System Support – Physical condition of school, availability of texts and libraries, Supervisor support (training received, application of training, frequencies of visits, content of visits, understanding of standards and assessment), director support (existence of a school operational plan, content and implementation of school operational plan, involvement of parents in planning and student learning, technical support provided to teachers, understanding of national standards and assessment).

Teacher Characteristics – Sex, Bilingualism, Degree completed, Years of experience, Training received, Implementation of Training (planning, student participation and gender equity, pedagogical techniques, classroom environment, grouping, correction of errors, teaching of values, understanding of national standards and assessment, evaluation), Language of instruction.

Student Characteristics – Background (gender, age of initial entry, maternal language, parental education, parental expectations, family size, school attendance); Structural Classroom Differences (type of school, class size, language of instruction, frequency of classes); Classroom Behavior (promptness, teacher-student interaction, use of materials, student grouping, and interaction with academic content, academic achievement).

B. Sample

The sample of schools for the Sentinel study was obtained using a random, stratified sample. Schools from the representative national sample formed in the 2004 assessment served as a base for the sample. The sample consisted of 117 schools. They were representative of the system as a whole and were stratified in terms of location (rural/urban), size (less or more than six teachers) and linguistic area (Spanish-speaking and the four predominate Mayan languages), selected proportionately to represent the strata in the population of schools. The

original schools in the sample were maintained throughout the study. The report for the sample design can be found in annex A.

Given that the sample was national in scope, all of the supervisors who served the sample schools were interviewed each year. Similarly, the 117 directors for the sample schools participated in the study. For the baseline, there was information from 107 of the 117 directors. In year 2, the number of directors was 112. The teacher sample consisted of one teacher at each grade level (1-6) in each of the sample schools, or approximately 700 teachers and classrooms. In schools where there was more than one classroom per grade, classrooms were selected randomly at each grade level. Interviews were carried out with one teacher from every grade level of a school. Thus, 563 teachers were interviewed in 2006 and 556 teachers in 2007. Two parents were interviewed in each school, creating a database of 1274 parents for the baseline, 1328 parents in year 2. The total of students tested varied with grade level, however, approximately 2500 students at the first, third and sixth grade levels formed the data source for the study.

C. Instruments

The baseline data consisted in part in a reanalysis of the data gathered in a national student assessment of first and third graders carried out in 2004. Norm-based tests in reading and mathematics, developed by the National Program of Evaluation of Student Achievement (PRONERE), situated in the Universidad del Valle, were used. The tests each had two variants (form A and form B), measuring equivalent constructs. The reading test dealt with vocabulary and reading comprehension, whereas the mathematics test focused on basic arithmetic operations. In 2006, 2007 and 2008, curriculum-based, criterion-referenced tests developed by the Ministry of Education were used.

Other instruments used as data sources were a questionnaire for directors that focused principally on a description of the school and teacher attendance, a questionnaire for teachers on demographic data, the type of assistance provided by the Ministry of Education and training needs felt by the teachers, and an interview with a family member on education level, occupation and participation in school activities through helping their children and participating in meetings. Observational protocols were used to document interactions between students and teachers in the classroom.

D. Data Analysis

Data analysis consisted of calculating the absolute and relative frequencies of each variable. These frequencies were used to make comparisons within groups from one year to the next. In addition, other analyses such as t-tests, chi-square, analysis of variance and linear regression were used to examine relationships between individual variables and student school success over the life of the study.

IV. RESULTS

B. Supervisors

As supervisors are responsible for a number of schools, there are fewer supervisors than schools in the sample. As shown in Table 1, the sample of supervisors in 2006 was 89 professionals compared to 98 in 2007 and 70 in 2008. The majority was made up of men (74%, 79%, and 69% respectively). As a group, the supervisors have extensive experience in education, with males averaging 14 years of experience in the first year of the study, 12.3 years in 2007, and 13.9 years in 2008. Females averaged 12.6 years of experience in the first two years and 13.3 years in 2008. Job function differs somewhat by sex, with men somewhat more likely to be CTAs and females more likely to be supervisors. Residence patterns have varied by year for males, with a majority living in the local community in 2006 and less than half living in the community in 2007 and two-thirds in 2008. Slightly over half of the female supervisors lived in local communities in all years of the study. Male supervisors are more likely to read and write Mayan than females, but less than half of either sex had this ability.

Table 1: Supervisor Profile by Gender 2006, 2007, 2008

Year/ Variable	2006		2007		2008	
	Male	Female	Male	Female	Male	Female
Sex	66 (74%)	23 (26%)	77 (79%)	21 (21%)	50 (71%)	20 (29%)
Yrs Experience	14	12.6	12.3	12.6	13.9	13.3
Function						
- CTA	67%	35%	42%	29%	48%	45%
- Supervisor	25%	60%	38%	62%	48%	55%
- CTP or other	8%	5%	20%	9%	4%	0
Residence in Community	65%	56%	44%	57%	63%	51%
Read/Write Maya	45%	5%	36%	14%	39%	15%

Source: Databases, Education Standards and Research Program 2006, 2007.

Table 2 shows the workload of the supervisors by year. As can be seen there was a very slight decrease in the number of schools served by a supervisor from the 2006 baseline. This is largely a result of the change in the workload of female teachers, who reported serving 28 schools in 2007 and 2008 compared with 39 schools in 2006. The number of visits to a school increased significantly from the baseline. Visits were almost four times as high in 2007, and three times greater than the baseline in 2008. This greater emphasis on monitoring at the school level is a result of the Ministry making available motorcycles and money to purchase gasoline of supervisors in many departments in 2007. This support was aimed at monitoring the school food program as well as student and teacher attendance.

Table 2: Supervisor Workload by Year 2006, 2007, 2008

Workload/Year	2006	2007	2008
Number of schools	37.5	32.6	36.3
Visits per Month	2.6	11.1	9.12

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Table 3 shows that the percentage of supervisors with a child-centered philosophy dropped slightly from the baseline. However the majority of supervisors see their role as supporting learning through child-centered approaches or facilitation.

Table 3: Educational Philosophy of Supervisors by Year

Philosophy	Child-Centered	Facilitator	Administrative	National Curriculum	Other
2006	51.7%	13.2%	5.7%	3.3%	26.2%
2007	54.5	21.4%	2.0	8.2%	14.3%
2008	48.6	22.9%	4.3%	2.9%	20%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Supervisors were also asked about their responsibilities with the schools. Table 4 presents the activities that supervisors carried out while at the schools. There has been a significant change from the baseline in 2006 when a majority saw administrative activities including reviewing records and plans as their principal function. In 2008, a majority saw technical orientation and visits to classrooms to observe teachers as their main functions.

Table 4: Principal Professional Functions Identified by Supervisors

Activities/ Sex	Admin	Review	Technical Orientation	Classroom Observation	National Curriculum	Other
2006	24.7%	29.0%	13.5%	6.7%	2.2%	23.5%
2007	40.8%	12.2%	30.6%	11.2%	1.0%	4.1%
2008	15.7%	7.1%	48.6%	17.0%	2.9%	8.6%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

When asked in 2008 if they had distributed materials prepared by the Ministry, the majority of supervisors replied affirmatively. Ninety-four percent of the supervisors had distributed materials on educational standards and student evaluation cards, whereas 86% had distributed both an evaluation manual and a teacher review document.

C. Directors

1. Role and Priorities

The 2006 sample of directors formed the baseline for the study. It consisted of 107 individuals (62 men and 45 women), whereas the 2007 sample consisted of 112 and the 2008 sample 108. As can be seen in Table 5, there were few differences by gender. Directors had similar ages, academic background, experience in education and length of time working as a school director. However, there is a decrease in average age and experience when the samples of 2007 and 2008 are compared with the 2006 baseline.

Table 5: Director Profile by Gender and Year

Year/ Variable	2006		2007		2008	
	Male	Female	Male	Female	Male	Female
Sex	62 (58%)	45 (42%)	62 (55%)	50 (45%)	57 (47%)	51 (47%)
Age	40.5	41.1	38.8	38.7	39.0	37.7
Experience in Education	16.5	15.7	14.5	14.4	14.9	13.5
Experience as Director	7.4	7.1	8.3	6.6	7.1	5.6

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

As can be seen in Table 6, there is an increased emphasis in educational quality and academic performance from 2006 to 2007, with 68.8% of directors mentioning these areas in 2006 compared to 60.6% in 2006. In 2008, educational quality continues to be important but over a third of directors mention student development in terms of general learning skills and life-long learning as a priority.

Table 6: Educational Priorities and Philosophy of Directors by Year

Priority/ Year	Educational Quality	Reading	Mathematics	Student Development	Infrastructure
2006	18.3%	24.0%	18.3%	8.7%	15.3%
2007	30.4%	33.0%	5.4%	14.3%	17.0%
2008	37.7%	14.2%	3.8%	34.9%	6.6%
Philosophy/ Year	Education for Life	Integral Education	Active Learning	Educational Quality	Communication
2006	13.1%	11.2%	12.7%	20.6%	9.3%
2007	42.0%	24.2%	12.5%	15.2%	4.5%
2008	37.0%	28.7%	23.1%	3.0%	8.3%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

In terms of philosophy, the percentage of directors that believe in education for life, including active learning skills grew from 37% in 2006 to 88% in 2008.

2. Support of Instruction

A large percentage of directors give bi-monthly evaluations, there is however no consistent pattern of evaluation procedures. Rather the frequency of evaluations appears to vary with yearly needs. Despite small increases each year in directors' use of evaluations, directors are not the main consumers of school-level evaluations. Rather teachers and school planning commissions are seen to use evaluation results. The percentage of directors who said that the information from evaluations was not used decreased by almost 30% from the 2006 baseline.

Table 7 : Types of Evaluation and Director Information Use by Year

Type of Exam/Year	Daily	Monthly	Bi-Monthly or More	None/ No Response
2006	39.6%	6.1%	46.4%	9.9%
2007	14.7%	33.8%	44.2%	7.4%
2008	23.9%	4.6%	42.3%	29.2%
Use of Information	Director	Teacher	Commission	Nobody/No Response
2006	3%	30%	1.9%	65%
2007	8.6%	33.3%	4.8%	53.3%
2008	18%	35.7%	10.0%	37.3%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

As can be seen in Table 8, the availability of external evaluation results increased greatly in 2007. Over three-fourths of the directors stated that they received such evaluation results compared to 13% in 2006. However, few directors received the results of external evaluations in 2008. The majority of the directors who receive external evaluation results do not use the information.

Table 8: Director Receipt and Use of External Evaluations by Year

Receive External Evaluation	Yes	Sometimes	No	
2006	13.0%	7.6%	79.9%	
2007	75.7%	17.8%	1.9%	
2008	22%	2%	76%	
Use Information	Improve Weaknesses	Compare Institutions	Don't Use	No Response
2006	18.2%	0%	79.0%	2.8%
2007	10.3%	9.3%	70.1%	10.3%
2008	12%	10%	65%	13%

Source: Databases, Education Standards and Research Program 2006, 2007.

In all years, the majority of the directors stated that parents help their programs (Table 9). The percentage of directors who felt parents support academic endeavors of the students remained fairly constant. However, those saying that parents helped in the classroom decreased from the baseline year. Directors generally felt that only a small group of parents participated in school activities in all years of the study.

Table 9: Directors' Perception of Parent Participation

Type of Participation	2006	2007	2008
Help Instructional Program	87%	93.8%	89.8%
Help Students learn Reading and Math	58%	49.7%	60.4%
Help in Classrooms	58%	33.9%	31.8%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

3. Training Received During the Year

Table 10 shows that a higher percentage of directors received training in each year of the study. More than 90% mentioned receiving training in 2007 and 2008. There was a greater emphasis on pedagogy in training in both years, and this area was identified as most useful by the greatest percentage of directors.

Training for directors was an important result of the reform effort. Such training was primarily related to pedagogy. Directors who stated that they received Ministry training increased from 65% to over 90% and training in pedagogy increased from 11% to 41%.

Table 10: Director Training by Gender 2006, 2007 & 2008

Training/ Sex	National Curriculum	Admin	Pedagogy	Special Programs	None	No Response
2006	30.1%	6.0%	11.4%	18.8%	28.9%	4.8%
2007	29.7%	16.5%	37.0%	16.5%	5.5%	2.8%
2008	18.3%	11.8%	41.0%	26.8%	2.2%	0

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Several new materials developed by the Ministry were distributed to schools in 2007. As can be seen from Table 11, slightly over half of the directors were familiar with both of the new materials in that year. In 2008, over 90% of the directors were familiar with the materials on standards and three-fourths had put the materials to use. Although familiarity with the evaluation manual increased slightly, fewer directors used it. Eighty-six percent of directors said they had received the student evaluation cards distributed in 2008. Sixty-four percent had received the teacher review materials.

Table 11: Director Knowledge and Use of New Materials by Year

Materials	Familiar with Material		Used Material	
	2007	2008	2007	2008
Standards	55.0%	90%	60.7%	75.0%
Evaluation Tools	58.7%	65.7%	70.8%	52.8%

Source: Databases, Education Standards and Research Program 2007, 2008.

D. Teachers

1. Background and Experience

Teaching staff respondents totaled 553 individuals across the sample schools in 2006, 556 in 2007 and 532 in 2008. The majority of the teachers were female, making up 64% of the sample in 2006, 67% in 2007 and 68% in 2008. As might be expected, the teachers' preparation showed little change. However, it is important to note that there was a 10% change in the number of primary teachers with training as secondary teachers from the baseline year. Similarly, the percentage of teachers with university training increased by about 6% overall. There were also slight decreases in the percentages of respondents trained as urban primary teachers and corresponding increases in those trained as rural primary teachers from the baseline.

There has been very little change in the contracting procedures used by the Ministry. The overall percentage of teachers who are within the Ministry budget or have contracts with benefits has varied by only about one percentage point in the three years of study, as over 90% of teachers are in one of those two categories.

Table 12: Teacher Academic Preparation and Professional Position, by Sex – 2006, 2007 & 2008

Year	Preparation/ Sex	Urban Primary Teacher	Rural Primary Teacher	Secondary Teacher	University	Other
2006	Female	76.3%	12.4%	3.4%	2.0%	5.9%
	Male	61.0%	16.0%	6.0%	3.3%	13.5%
2007	Female	70.3%	16.6%	4.3%	3.2%	5.6%
	Male	58.8%	17.0%	8.2%	1.6%	14.3%
2008	Female	61.7%	13.2%	12.6%	8.9%	4.6%
	Male	43.6%	20.0%	17.6%	9.1%	9.7%
Year	Professional Position	Ministry Budget	Contract with benefits	Contract without Benefits	022	Other
2006	Female	58.5%	35.5%	1.0%	2.6%	2.9%
	Male	68.4%	22.0%	2.1%	4.1%	3.1%
2007	Female	56.7%	30.5%	0	5.4%	7.8%
	Male	65.4%	20.9%	0	4.9%	8.8%
2008	Female	55.0%	36.3%	0	3.5%	5.3%
	Male	70.4%	20.4%	0	3.1%	6.2%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Trends found in 2006 showing a decrease in the age and teaching experience of female teachers, continued throughout the study. This suggests that female teachers in sample schools are less stable than their male counterparts. The consistent increase in age, years of experience, and time in the sample school

among men shows males are continuing in the same position more consistently than females.

Table 13: Teacher Experience by Sex – 2004, 2006, 2007 & 2008

Year	Age		Years Teaching		Years at Present School	
	Female	Male	Female	Male	Female	Male
2004	35.3	31.9	10.6	8.2	6.1	4.5
2006	34.5	35.6	10.8	11.8	6	6
2007	34.2	35.9*	10.3	12.3**	6	6.9
2008	33.6	34.7	12.2	13.4	6.9	7.2

Source: Databases, PRONERE, Universidad del Valle, 2004; Education Standards and Research Program 2006, 2007.

Female teachers average more students than male teachers (Table 14). This is true for both male and female students and for each year of the study. The differences found between teachers by gender are largely a result of the greater number of girls in the classrooms of female teachers. Female teachers on the average had two more girls in their classrooms than male teachers in 2006. This gap had been reduced to a single additional girl in 2007 and 2008. The trend toward an increase in the average number of students per class from the 2004 baseline to 2007 was reversed in 2008, with average enrollments falling below the baseline for female teachers and at close to baseline levels for male teachers.

Table 14: Student-Teacher Classroom Size by Sex – 2004, 2006, 2007 & 2008

Experience/ Sex	Girls				Boys				Total Students			
	2004	2006	2007	2008	2004	2006	2007	2008	2004	2006	2007	2008
Female	16.2	16.6*	15.6	14.9	16.9	17.9	17.5	17.3	33.1*	34.2*	33.2	32.2
Male	14.9	14.5	14.8	13.8	15.8	17.6	17.4	17.0	30.7	32.1	32.2	30.8

Source: Databases, PRONERE, Universidad del Valle, 2004; Education Standards and Research Program 2006, 2007, 2008.

*significant at $p \leq .05$; **significant at $p \leq .01$

Table 15 presents the distribution of teachers by sex and grade in the four years of the study. As many teachers were in multigrade situations, a particular teacher many have responded to more than one grade. Thus, the percentages do not necessarily total 100%. As can be seen, there is a general tendency in for a greater percentage of female teachers to be placed in the first three grades, whereas there is a significantly higher of male teachers in fourth, fifth and sixth grades.

Table 15: Teacher Distribution by Grade and Sex – 2004, 2006 & 2007

Grade	Sex	2004	2006	2007	2008
First	Female	44.9%*	21.20%	23.0*	28.10%
	Male	24.70%	21.5	15.4	23
Second	Female	8.2	24.3	15.1**	30.7*
	Male	11.4	17.5	12.1	20.60%
Third	Female	34.9	24.6	20.6	29.8
	Male	37.6	19.5	22	26.1
Fourth	Female	6.2	21.2	19	24.6
	Male	13.3*	24.5	26.9*	32.1
Fifth	Female	3.2	17.5	16.6	29.1
	Male	7.6*	35.0*	31.3**	37.6*
Sixth	Female	2.3	5.6*	15.2	26.5
	Male	17	32*	34.6*	37.0*

Source: Databases, PRONERE, Universidad del Valle, 2004; Databases Education Standards and Research Program, 2006, 2007, 2008

Percentages may not equal 100% owing to teachers with multiple grades being counted with each grade

*significant at $p \leq .05$; **significant at $p \leq .01$

2. Resources

Teachers were asked about classroom resources that they had received from the Ministry. The distribution of materials was very low in the first two years of the study, with less than 30% of the teachers in any year receiving a particular material. In 2008, however, there has been a dramatic increase with at least a third of the teachers receiving each type of material and increases of 20% to 35% over the 2004 baseline.

Table 16: Classroom Materials Provided to Teachers – 2004, 2006, 2007 & 2008

Material	Sex	2004	2006	2007	2008
Chalk	Female	8.20%	12.00%	7.80%	37%
	Male	13.40%	16.00%	9.30%	37%
Paper	Female	7.8	16	20.60%	48%
	Male	14.3	18	16.50%	51%
Markers	Female	9.00%	20.90%	28.60%	55%
	Male	11.80%	22.5%	23.10%	59%
Display paper	Female	7.00%	19.20%	19.30%	45%
	Male	13.40%	19.50%	18.90%	50%

Source: Databases, PRONERE, Universidad del Valle, 2004; Education Standards and Research Program 2006, 2007, 2008.

Stated use of Ministry textbooks by teachers has increased substantially from the 2004 baseline. Use of Ministry provided texts increased by about 40% in total.

This is largely the result of the use of learning guides and the “Guatemática” which were part of the reform effort. The percentage of teachers stating that they did not use texts decreased from about 25% in 2004, to 4% in 2006 and 0% in 2007 and 2008.

Table 17: Textbooks Used by Teachers – 2004 & 2006

Text/Year	Commercial Text	Camino a la Excelencia	Tejiendo Nuestro Futuro	Guias de Aprendizaje	DIGEBI Texts	Guatemala
2004	35.2%	26.8%	1.2%	n.a.	2.0%	n.a.
2006	56.7%	31.6%	6.9%	9.1%	2.1%	2.7%
2007	56.1%	28.5%	4.6%	10.7%	1.0%	15%
2008	39.1%	23.8%	2.0%	26.1%	2.4%	24.2%

Source: Databases, PRONERE, Universidad del Valle, 2004; Education Standards and Research Program 2006, 2007, 2008.

Few teachers stated that they participated in Ministry professional development during 2006. Only 157 of the 553 teachers (28%) mentioned receiving training in any of the areas that had been identified in 2004. This seems to be a result of teachers received training in other areas. For example, much of the training given by the Ministry in 2006 focused on motivational techniques. This type of training is not among the areas presented in the table, which included all of the

Table 18: Training Received by Teachers – 2004, 2006, 2007 & 2008

Type of Training	Female				Male			
	2004	2006	2007	2008	2004	2006	2007	2008
Spanish	21%	0	1.7	18.4	19%	0	2.7	13.5
Spanish as L2	5%	0	1.6	4.0	11%	0	1.6	1.8
Mathematics	43%	11%	50.5	46.3	39%	16%	28.0	32.8
Science	28%	0	2.9	1	21%	0	2.2	1
Social Studies	25%	0	2.9	1	19%	0	2.2	1
Bilingual Ed	4%	0	1.9	1	10%	0	2.7	3.7
Mayan Language	6%	0	3.5	4.6	6%	0	1.6	1
National Curriculum	n.a.	0	53.1	34.2	n.a.	0	42.9	29.4
Standards	n.a.	2%	7.8	13.5	n.a.	1%	3.8	6.1
Multiculturalism	17%	2%	3.2	2.3	28%	4%	18.1	4.3
Active Methods	27%	0	15.2	17.8	32%	0	9.9	21.5
Multigrade	11%	0	7.2	11.5	8%	0	1.6	14.7
Civics	15%	0	1.3	1	9%	0	7.7	1.8
Values	26%	0	7.0	7.2	27%	0	1.6	6.1
Mayan Culture	15%	0	1.1	1	16%	0	2.2	1
Evaluation	0	11%	3.2	8.9	0	8%	7.7	8.0

Source: Databases, PRONERE, Universidad del Valle, 2004; Education Standards and Research Program 2006, 2007, 2008.

pedagogical and content areas mentioned by teachers in 2004. As can be seen in Table 18, there was a significant increase in training in 2007, especially in the National Curriculum, where almost half of the teachers received training. Training in the National Curriculum remained important in 2008, with almost a third of

teachers receiving training in this area. Mathematics, multigrade teaching and active learning were also emphasized.

Several materials were provided to teachers as outreach in 2007. These materials included information on the grade-level standards that had been developed the previous year and a guide to classroom evaluation techniques. Table 19 shows distribution of the materials was not universal. Slightly less than half of the teachers in the sample received the materials on standards and the percentage receiving the evaluation guide was slightly greater than 50%. In 2008, those numbers had increased with more than three-fourths of the teachers being familiar with the standards materials and almost 70% with the evaluation guide.

Table 19: Distribution and Use of Key Materials by Teachers - 2007

Year/Material	Standards		Evaluation Guide	
	Received	Used	Received	Used
2007	41.1%	27.1%	54.1%	79.0%
2008	78.2%	78.0%	67.4%	91.0%

Source: Databases, Education Standards and Research Program 2007, 2008.

3. Instructional Practice

As shown in Table 20 student achievement in the core subjects of math and language has consistently been a priority for teachers. About two-thirds of the teachers mentioned Language and Mathematics, either individually or in combination as the number one priority in their instruction. Pedagogy, in terms of motivating the students by actively involving them in learning was mentioned by almost a fifth of the teachers 2006 but only 4.5% and 5.5% respectively in 2007 and 2008. The development of students as a priority has increased in each year.

Table 20: Teacher Instructional Priorities 2006, 2007 & 2008

Priority/Year	Language/Math	Language	Mathematics	Student Development	Method	Practical Learning
2006	45.9%	15.4%	3.1%	8.6%	16.5%	4.0%
2007	36.4%	27.4%	5.6%	16.6%	4.5%	9.0%
2008	31.8%	24.6%	6.3%	22.7%	5.5%	6.5%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Table 21 shows the percentage of teachers that used classroom management strategies generally associated with successful instruction. As can be seen there were significant increases in the use of grouping students within the class, use of learning corners, and use of a common system of discipline from the 2006 baseline. The exception was showing exhibits of student work in the classroom. This strategy was in use by the majority of teachers in all years.

Table 21: Teacher Classroom Management 2006, 2007 & 2008

Presence/Sex	2006	2007	2008
Grouping			
Female	45.6%	91.2%	91.6%
Male	58.6%*	87.4%	90.9%
Learning Corners			
Female	43.1%	62.3%	72.5%
Male	44.7%	57.7%	67.9
Exhibits of Student Work			
Female	92.4%	89.5%	91.8%
Male	85.1%	84.2%	88.3%
Common System of Discipline			
Female	69.9%	71.9%	71.6
Male	64.5%	68.1%	69.4%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

As can be seen in Table 22, there was a slight increase in the number of teachers who stated that they used the strategy of helping students determine the correct answer on their own, when correcting errors. This was accompanied by a decrease in the percentage of teachers who stated that they immediately provided the correct answer to the student.

Table 22: Teacher Correction of Errors 2006, 2007 & 2008

Strategy/Year	Help Figure out right answer	Correct Immediately	Punish	Other
2006	61.4%	29.8%	2.0%	6.8%
2007	74.5%	22.3%	6.5%	5.6%
2008	76.4%	12.6%	6.1%	5.8%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Teachers were observed over time in mathematics and language lessons to determine interaction patterns in the classroom. Table 23 show that there was almost no difference in teach behavior in terms of subject matter. Spanish was used in slightly more than three-fourths of the interactions in each subject and teachers initiated almost 80% of all interactions in each year. There was, however, significantly more Mayan used in 2007 than 2006 or 2008.

Table 23: Teacher Classroom Interaction by Subject 2006 2007 & 2008

Subject/ Characteristic	Language of Instruction		Initiator		Receiver		
	Spanish	Maya	Teacher	Student	Teacher	Student	Group
2006							
Mathematics	91.8%	6.6%	78.4%	21.6%	21.6%	30.1%	48.3%
Spanish	92.5%	5.5%	78.4%	21.6%	21.6%	29.7%	48.7%
2007							
Mathematics	76.9%	22.9%	80.5%	19.5%	19.3%	31.0%	49.7%
Spanish	76.4%	23.2%	80.7%	19.3%	18.9%	28.7%	52.4%
2008							
Mathematics	91.3	7.8	77.6	22.4	22.5	28.4	49.0
Spanish	91.7	8.0	76.1	23.9	23.8	27.2	48.8

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

There was little change in the context of instruction, as teachers generally used large group contexts involving the whole class when initiating interactions. Student initiated interactions were most likely to occur during individual instruction at their desks.

Table 24: Teacher-Student Interaction by Context 2006 2007 & 2008

Initiator/Context	Small Group –T	Small Group – S	Large Group	Seatwork	Transition
2006					
Teacher	11%	1%	59.1%	28.1%	1%
Student	2.2%	3.1%	20.1%	73.1%	1%
2007					
Teacher	11%	1%	58%	29%	1%
Student	4%	1%	19%	74%	1%
2008					
Teacher	12%	2%	58%	25%	3%
Student	8%	4%	20%	66%	1%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

The principal speech acts engaged in by teachers were questioning and explanation. Both of these speech acts increase slightly from 2006 to subsequent years.

Table 25: Teacher Interaction by Speech Action – 2006, 2007 & 2008

Initiator/Action	Question	Explain	Order	Dictation	Support
2006					
Teacher	34.2%	35.3%	13.9%	8.1%	5.4%
Student	82.7%	5.8%	1.0%	0%	1.1%
2007					
Teacher	38%	39%	20%	9%	9.0%
Student	88%	6%	0	1%	1.0%
2008					
Teacher	40%	31%	14.8%	5.4%	5.4%
Student	81%	13%	1.1%	1%	0

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

E. Students

1. Academic Achievement

This section of the report discusses progress in student achievement over the three years under study. Student achievement data was gathered using MINEDUC achievement tests for first, third and sixth grade in Mathematics and Spanish. The tests are based on the national grade-level standards and aligned with the National Basic Curriculum that were part of the reform effort to improve educational quality and make reporting of student progress more transparent to civil society. The tests have been developed in multiple forms from an extensive item bank. Forms A and B of the tests were used throughout the study.

Owing to simultaneous development of standards and tests, analysis is based on a group of “anchor” items that have remained consistent over the process of test refinement. Analysis uses the Rasch logical statistical model based on item response theory (IRT). This model allows assessing the mastery level of students based on their individual responses to the tests. Difficulties with one of the forms of the first grade test at baseline limited valid comparisons of change over time to third and sixth grade. The results for those grade levels are presented in this section.

As can be seen in Table 26, there was an improvement of about 6% in the percentage of students reaching mastery in mathematics in each year of the study and a total improvement of 14%. This resulted in a corresponding decrease in the “needs improvement” level of mastery. In 2008, there was also a decrease in those at the lowest level of mastery.

Table 26: Third Grade Mathematics Mastery 2006, 2007 & 2008

Year	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
2006	22%	49%	25%	4%
2007	26%	39%	26%	10%
2008	18%	38%	29%	14%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

As can be seen in Table 27, there was an increase of 6% in reading achievement from the baseline of 2006 to 2008. However, the progress is not as consistent as in mathematics. The percentage of third grade students reaching mastery dropped 12% in 2007 before increasing in 2008.

Table 27: Third Grade Reading Mastery 2006, 2007 & 2008

Year	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
2006	11%	52%	31%	7%
2007	24%	50%	22%	4%
2008	15%	42%	35%	9%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Tables 28 and 29 show that little change in academic achievement have taken place in sixth grade over the three years of the study. Despite increases in students reaching mastery in both math and reading in 2007, the percentages at the baseline and in 2008 are virtually the same for students reaching mastery in 2006 and 2008.

Table 28: Sixth Grade Reading Mastery 2006, 2007 & 2008

Year	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
2006	24%	60%	13%	3%
2007	26%	47%	25%	2%
2008	27%	57%	14%	2%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Table 29: Sixth Grade Mathematics Mastery 2006, 2007 & 2008

Year	Unsatisfactory	Needs Improvement	Satisfactory	Excellent
2006	43%	54%	3%	0
2007	37%	45%	18%	0
2008	37%	59%	4%	0

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

2. Classroom Interaction

1. Student Interaction

The student observation instrument measures the engagement of students with the activities of teaching and learning over the course of language and mathematics lessons. This measure serves as a proxy for time-on-task. Table 30 shows that there was a general improvement in engagement for all children from the baseline in 2006, when students were observed to not be engaged in academic work about one-fourth of the time. However, there is a decrease in engagement for both males and females from 2007 to 2008. No meaningful differences were found in terms of gender over the course of the study.

Table 30: Student Engagement in Academic Work by Sex

Subject/ Sex	Language			Mathematics		
	2006	2007	2008	2006	2007	2008
Male	75.1%	88.7%	87.5%	75.3%	88.7%	84.3%
Female	75.3%	88.5%	84.2%	75.3%	88.7%	87.9%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

3. Classroom Environment

Observers rated classroom environment after a day of observation in sample classrooms. Table 31 presents classroom environment by grade level in 2006, 2007, and 2008. As can be seen, despite the relatively high ratings in 2006, there was an increase in the classroom environment from 2006 to 2007, and this improvement was maintained in 2008. Classroom environment, which consists of being courteous to children, not using physical or emotional punishment, fostering a positive self-concept and promoting equity and cooperative learning, ratings improved at each grade level in 2007. In 2008, overall ratings were similar to 2007, with small variations by grade. In each year, there was little difference in the ratings by grade.

Table 31: Classroom Environment 2006, 2007 & 2008

Grade	Average of Positive Behavior Observed		
	2006	2007	2008
First	72%	83%	83%
Second	74%	83%	81%
Third	74%	83%	81%
Fourth	73%	84%	81%
Fifth	73%	83%	86%
Sixth	76%	83%	81%
Multigrade	71%	81%	84%
Total	73%	83%	83%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

4. Availability and Use of Materials

Table 32 compares the availability and use of learning materials in the classrooms in 2006, 2007 and 2008. As can be seen, there was an increase in the number of materials available in lessons at all grade levels. On the average, about three additional materials were available across the grades. The greater number of materials contributed to a higher percentage of materials available per student at each grade level. It should be noted, however, that no grade had sufficient materials for each student, and on the average, materials were available for only about half the students. Use of materials increased substantially in 2007 and 2008, with over 5% more students observed to use materials in lessons. Use of textbooks and other learning materials in lessons, however, is extremely low. Less than 10% of students use materials during mathematics and language lessons.

Table 32: Material Availability and Use 2006, 2007 & 2008

Material/ Grade	No. Materials Available			% of Materials per Student			% Students Using Materials in Lesson		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
First	13.5	17.2	17.0	53.1%	70.2%	76.3	4%	9.7%	9%
Second	12.9	13.7	15.7	52.2%	58.5%	55.6	4%	10.6%	6%
Third	9.0	11.9	14.7	35.5%	48.3%	58.6	4%	9.7%	10%
Fourth	8.6	10.7	16.2	34.8%	46.3%	76.0	5%	9.5%	8%
Fifth	8.4	11.6	13.4	34.5%	48.5%	64.7	4%	9.6%	10.1%
Sixth	7.7	11.4	12.8	33.6%	56.5%	64.6	5%	10.5%	13.6%
Total	10.3	13.0	14.9	41.8%	55.5%	65.9	4.3%	9.9%	9.5%

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

F. Parents

Parents were asked questions about their academic background, the support they provide to their children and their knowledge of grade-level standards for student performance. As most of the respondents were women, the principal occupation of respondents each year of the study was homemaker. About 70% of the sample identified this as their primary occupation. Other occupations

included agriculture with about 11% of the sample each year, and commerce, at 6%.

Table 33 shows the academic background of parents. As can be seen, more than two-thirds of the parents said that they had attended school. A similar percentage was able to read and write Spanish. The higher percentage of literate parents found in 2004 may be the result of the differences in sampling techniques for the two groups. The 2006, 2007 and 2008 samples are made up of parents of randomly selected students who were observed in the classroom. The baseline parents are members of a convenience sample, or those most easily interviewed, and thus, likely to live nearest to the schools. Between 10% and 12% of the sample each year stated that they could read and write a Mayan language.

Table 33: Parent Academic Background 2004, 2006 & 2007

Year/Characteristic	Attended School	Read/Write Spanish	Read/Write Mayan
2004	69%	82%	12%
2006	65%	63%	10%
2007	68%	67%	11%
2008	68%	67%	11%

Source: Databases, PRONARE databases 2004; Education Standards and Research Program 2006, 2007.

Table 34 shows the opinions that parents held of their children's success in school. Parents have a relatively positive opinion of their students' success in school. Almost 60% of parents in any year feel that their students are doing well in their studies. This compares to less than 3% in any year that see their offspring as doing badly.

Table 34: Parent View of Offspring Academic Success 2004, 2006, 2007 & 2008

Year/Rating	Very Good/Good	Okay	Poor
2004	63%	31%	2.7%
2006	59%	39%	1.4%
2007	60%	37%	1.4%
2008	59%	35%	1.4%

Source: Databases, PRONERE, Universidad del Valle, 2004 & Education Standards and Research Program 2006, 2007, 2008

When asked about helping students with their schoolwork, there is a slightly negative trend in assistance. From 2004 to 2007, the percentage of parents who helped regularly decreased, as did the percentage of parents who sometimes helped their children. This led to an increase of 12% in the total of parents who never assisted their children in their schoolwork. In 2008, there was an increase in the parents who regularly helped their children but overall percentages were still below those of the baseline year.

Among parents who assist students with homework, the two most common types of assistance provided were reviewing what the children had done and offering an explanation of what was needed to the student. These strategies were used by between 25% and 34% of parents each year.

Table 35: Parent Assistance with School Work 2004, 2006, 2007 & 2008

Year/Rating	Regularly	At Times	No
2004	55%	21%	24%
2006	52%	13%	36%
2007	50%	12%	38%
2008	58%	11%	31%

Source: Databases, PRONERE, Universidad del Valle, 2004 & Education Standards and Research Program 2006, 2007, 2008

Table 36 shows the relationship between attending school and assisting students with their homework. As can be seen, school attendance seems to be an important factor in helping children for mothers. A significantly higher percentage of those mothers who had attended school helped students with homework than those mothers with no formal school participation. School participation was not important to helping with homework for either fathers or siblings. The percentage of mothers who helped with homework was also higher than that of other family members.

Table 36: Relationship of Family Educational Experience to Assisting Students with Homework

Representative	School Participation	Help with Homework	No Help with Homework	Chi-square
Mother	Attended	38.9%	61.1%	29.6**
	No	23.1%	76.9%	
Father	Attended	19.3%	80.7%	1.23
	No	16.7%	83.3%	
Siblings	Attended	25.4%	74.6%	.039
	No	26.0%	74%	

*significant at $x^2 \leq .05$; **significant at $x^2 \leq .01$

As might be expected, relationships were found in terms of ability to read and write Spanish. Table 37 shows that again mother’s participation was significantly higher if they could read or write Spanish, whereas there was no difference among fathers and siblings. These relationships were consistent varying by less than a percentage point, in each year of the study.

Table 37: Relationship of Family Spanish Literacy to Assisting Students with Homework

Representative	School Participation	Help with Homework	No Help with Homework	Chi-square
Mother	Read & Write	39.6%	60.4%	35.28**
	No	22.8%	77.2%	
Father	Read & Write	19.2%	80.8%	.044
	No	18.7%	81.3%	
Siblings	Attended	25.5%	74.5%	.049
	No	24.9%	75.1%	

*significant at $x^2 \leq .05$; **significant at $x^2 \leq .01$

Participation in school activities increased significantly from the baseline. As shown in Table 38, the percentage of those responsible for the education of the student sample who attended school meetings has risen by almost 20%. Of those who attend, the percentage of individuals who had been to a meeting within the last month rose by 11% from the 2004 baseline, but showed no improvement from 2006 to 2008.

Table 38: Parent Attendance at School Meetings 2004, 2006, 2007, 2008

Year/Response	Attend Meetings	Attended in Last Month
2004	69%	66%
2006	70%	76%
2007	91%	77%
2008	88%	77%

Source: Databases, PRONERE, Universidad del Valle, 2004 & Education Standards and Research Program 2006, 2007, 2008

Parental knowledge of specific grade level standards was very low at the 2006 baseline for the Sentinel Schools study. As can be seen from Table 39, parents had very little knowledge of the grade level standards to be met by their children. In each area, about 1% of parents correctly identified appropriate standards for their child's grade. The exception was third grade multiplication, where the standard included knowing the equivalent of the multiplication tables. This knowledge raised total parent identification to 3% in that area. The low percentages are understandable, as at the time of the study, national grade-level standards had not been published.

Parental knowledge remained low in 2007, with less than 10% of the sample being able to identify specific standards in any area for any grade. However, there was an increase for every subject at almost every grade. In 2008, the percentages again resemble the baseline.

Table 39: Parent Knowledge of Grade Level Standards 2006 2007 & 2008

Year/Standard	2006	2007	2008
Oral Language	1%	6%	2%
Reading	1%	8%	1%
Writing	1%	6%	1%
Addition	1%	3%	3%
Subtraction	1%	1.5%	1%
Multiplication	3%	5%	2%
Division	0	1%	1%

Source: Databases, Standards and Educational Research Program 2006, 2007, 2008

G. The Experience of Bilingual Students in Sentinel Schools

1. Classroom Interaction

This section of the report discusses progress in student participation in the classroom by ethnicity. As can be seen in Table 40, there has been a decrease of from the baseline in the use of Mayan in the classroom. However, Mayan use increased from 2007 to 2008. Students of both ethnicities initiate a greater percentage of interactions than in the first year of the study. The increase in Mayan students has increased each year, whereas that of Ladinos has shown more variation.

Differences in terms of gender were found, as males were significantly more likely to initiate interactions than females among both groups of students. Males were also more likely to receive interactions from the teacher.

Table 40: Teacher-Student Interactions by Ethnicity and Gender

Language/ Characteristic	Language of Instruction		Initiator			Receiver			
	Sp.	Maya	teacher	boy	girl	teacher	boy	girl	group
2006									
Monolingual	99	0	77.8	13.5	8.7	22.2	16.5	11.2	50.1
Bilingual	72	27	84.4	12.4	6.8	19.6	22.7	13.8	43.8
2007									
Monolingual	98.6	0	80.2	11.8	8.0	19.6	17.1	12.4	50.9
Bilingual	74.1	21.5	82.1	11.3	6.5	17.5	18.2	13.0	51.2
2008									
Monolingual	98.3	1.2	76.9	13.3	9.8	23.1	14.6	11.6	50.7
Bilingual	74.6	24.8	76.9	14.3	8.6	23.3	19.1	12.8	44.8

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

Table 41 shows the difference in the experience of ladino and Indigenous children in sample schools. Across all grades, there were significant differences in the number of times that teachers were out of the classroom when students were observed. In all cases, teachers were more likely to be out of the classroom when Indigenous children were observed during lessons. The percentage of observations that the teacher was out of the classroom increased for Indigenous children of both sexes in each year of the study.

The percentage of observations that the teacher was out of the classroom during observations of Ladino students was relatively constant in 2006 and 2007. However, the percentage more than doubled for both boys and girls in this group in 2008. Indigenous children also had significantly fewer interactions with the teacher than Ladino students in each year of the study.

Table 41: Student Classroom Interactions 2006, 2007 & 2008

Action	Year	Boys		Girls	
		Ladino	Indigenous	Ladino	Indigenous
Teacher Out	2006	2.30%	4.9%*	2.60%	4.4%*
	2007	2.20%	5.5%*	2.60%	5.4%*
	2008	6.00%	8.2%*	5.90%	9.5%*
Student-Teacher Interactions	2006	21.7*	14.6	20.4*	13.3
	2007	22.6*	19.3	17.2	15.5
	2008	24.5**	16.8	24.1*	17.9
Avg. Maya Use	2006	0	21.5**	1	20.3**
	2007	0	18.8**	0	15.9**
	2008	5	29.3**	4.7	30.1**
Avg. Spanish Use	2006	45.9*	23.7	43.7*	20.9
	2007	51.1*	26.4	53.8*	27
	2008	77.4*	50.6	77.2*	48.7

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

As might be expected, the use of Mayan languages was almost nonexistent among Ladino children. Use of Mayan was observed in about 20% of the interactions of bilingual children in the baseline year of 2006. This percentage decreased in 2007, but increased to close to 10% above the baseline in 2008.

Use of Spanish, while significantly higher among Ladinos, increased for both groups of students over the three years of observations. An increase of more than 20% occurred for Indigenous students and Ladinos in 2008. This increase, combined with the increase in use of Mayan, suggests that students were much more verbal during the last year of the study.

The student observation instrument measures the engagement of students with the activities of teaching and learning over the course of language and mathematics lessons. This measure serves as a proxy for time-on-task. Table 42 shows that there was a general improvement in engagement for all children from the baseline in 2006, when students were observed to not be engaged in academic work about one-fourth of the time. However, Ladino students had relatively consistent percentages of engagement over the final two years of the study. Indigenous students, on the other hand, showed improvement in 2007 then decreased in their level of engagement in 2008.

**Table 42: Student Engagement in Academic Work by Ethnicity and Sex
2006, 2007 & 2008**

Sex/Subject	Ethnicity	Language			Mathematics		
		2006	2007	2008	2006	2007	2008
Male	Ladino	76.0%	89.2	89.4	76.4	89.2	89.4
	Maya	72.8%	87.8	83.4	72.9	87.8	75.0
Female	Ladina	76.1	89.2	85.5	76.5	89.2	90.4
	Maya	73.1	87.1	81.7	72.9	87.8	83.4

Source: Databases, Education Standards and Research Program 2006, 2007, 2008.

V. CONCLUSIONS AND IMPLICATIONS

A. Conclusions

1. Supervisors

The focus on monitoring at the school level among supervisors in Sentinel schools increased over the three years of study. The number of visits to a school tripled from 2006 to 2008. This greater emphasis on monitoring at the school level is a result of a focus by the Ministry to give follow-up support to the new curriculum and standards.

There was a significant change from the baseline in 2006 when a majority of supervisors saw administrative activities including reviewing records and plans as their principal function. In 2008, a majority saw technical orientation and visits to classrooms to observe teachers as their main functions.

Most supervisors had distributed materials supporting the reform effort. When asked in 2008 if they had distributed materials prepared by the Ministry, the majority of supervisors replied affirmatively. Ninety-four percent of the supervisors had distributed materials on educational standards and student evaluation cards, whereas 86% had distributed both an evaluation manual and a teacher review document.

2. Directors

Educational quality is the principal concern of school directors. A majority of directors mentioned either improving educational quality or improving reading or mathematics specifically as their priority in each year of the study.

There has been a significant increase in the use of school-level information on student progress. At baseline, although over 90% of directors stated that students were evaluated regularly in their schools, 65% said the information wasn't used. In 2008, the percentage of directors who stated that information wasn't used decreased to 35%.

Training for directors was an important result of the reform effort. Such training was primarily related to pedagogy. Directors who stated that they received Ministry training increased from 65% in 2006 to over 90% in both 2007 and 2008. Training in pedagogy increased from 11% to 41%.

In 2008, over 90% of the directors were familiar with the materials on standards and three-fourths had put the materials to use. Eighty-six percent of directors said they had received the student evaluation cards distributed in 2008. Sixty-four percent had received the teacher review materials.

3. Teachers

The higher turnover rate among female teachers in than males in study schools continued throughout the study. The difference in age, years teaching and time in the school that favored female teachers in 2004 had been eliminated in 2006 and continued to decrease in 2007 and 2008. Such increases in these variables on the part of the male teachers suggest greater continuity in the same schools.

There is a consistent gender difference in class size. Female teachers averaged more students than male teachers in all years of the study. The difference was largely a result of the greater number of girls in the classrooms of female teachers. Female teachers averaged two more girls per class in 2006 and one more girl in 2007 and 2008.

Student-teacher ratio decreased over the study. After increasing in 2006 and 2007, the average number of students was lower than that of the 2004 baseline in 2008.

Female teachers were more likely to be assigned to early grade than their male colleagues. In all years of the study a greater percentage of female teachers were found in the first three grades, whereas male teachers predominated in fourth, fifth and sixth grades.

There was a significant increase in the percentage of teachers who received classroom materials from the Ministry of Education in 2008. Although the percentage of teachers stating that they had received chalk, sheets of paper, markers or large sheets of paper for displays increased slightly in 2006 and 2007, it remained at less than 20% of all teachers. In 2008, nearly 50% of teachers stated that they received materials.

A majority of teachers used classroom management strategies generally associated with successful instruction. There were significant increases in the use of grouping students within the class, use of learning corners, and use of a common system of discipline over the years of the study. The exception was showing exhibits of student work in the classroom. This strategy was in use by the majority of teachers in both years.

Despite the importance of active learning to teachers, large-group work was the principal methodology used in mathematics and language lessons in all years of the study. Spanish was the predominant language of instruction, as it was used in more than 75% of interactions between teachers and students.

4. Students

The percentage of students demonstrating mastery of the curriculum increased consistently among third graders. Students increased 14% in mathematics and 6% in reading from 2006 to 2008. Results among sixth graders were mixed.

Classroom environment in the sample schools became more positive for students. There was more than a 10% increase in the quality of the respect, nurturing and equity during the lessons observed from 2006 to 2008.

Learning materials are more available in lessons at all grade levels. On the average, about three additional texts were available across the grades. The greater number of materials contributed to a higher percentage of materials available per student at each grade level. Similarly, use of texts during lessons increased by about 5%. It should be noted, however, that no grade had sufficient materials for each student, and on the average, materials were available for only about half the students. Use of textbooks and other learning materials in lessons is also extremely low. Less than 10% of students use materials during mathematics and language lessons.

Ladino and Indigenous children have somewhat different experiences in sample schools. In all years, there were significant differences in the number of times that teachers were out of the classroom when Indigenous students were observed in comparison to non-Indigenous students. Engagement with subject matter increased by 10% for Indigenous children from 2006 to 2008. However, for Ladino students it increased 13%. There was a decrease in the teachers' use of Mayan as the language of instruction. Spanish language use by Indigenous students increase by about 20%

5. Parents

The majority of parents have been to school and can read and write Spanish. This is true even though women predominate in the parent sample. About two-thirds of each group is highly positive about their children's success in school. However, many parents are not involved in supporting children's learning, as only about half said that they regularly assist students with their homework and the percentage of those who never helped their children rose over the years of the study.

Parental knowledge of specific grade level competencies and standards is almost non-existent. Less than 10% of parents in any year could identify a specific standard for any grade.

B. Implications

A system-wide strategy to promote educational quality can be successful over time. Over the three years of study, the number of supervisors, school directors and teachers identifying educational quality as their priority grew to be a majority of each group. The MOE should continue to build on this perspective by the provision of tools and information that help teacher support personnel like supervisors and directors to improve classroom teaching.

The use of information on student achievement for decision-making by school directors should be targeted as a training area. This is likely to make ongoing information on student progress in meeting standards more useful.

The effort to provide classroom materials such as chalk, paper, and markers should be continued. Although there have been gains in each year of the reform, only slightly more than half of the teachers report having sufficient materials of this type.

Despite improvement in academic achievement, the fact that only about a third of students reach mastery levels in math and language suggest that greater emphasis on teacher professional development strategies that encourage the use of textbooks and active learning approaches during lessons should be a priority.

If the MOE is to meet the stated goal of the reform in terms of the revitalization of bilingual education, emphasis on both the importance of instruction in both languages and good teaching practice such as teacher-student interaction and student engagement with the curriculum should be emphasized in the professional development of bilingual teachers. Obviously, the use of textbooks in teaching lessons should be emphasized with these teachers as well as the general population of teachers.

Strategies to inform parents about grade level strategies should be developed. Where possible such strategies should be tied to parental participation in student learning.