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**INCENTIVES FOR THE PARTICIPATION GUATEMALAN INDIGENOUS GIRLS IN
PRIMARY EDUCATION: FINAL EVALUATION OF THE *EDUQUE A LA NIÑA* PILOT
PROJECT**

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INCENTIVES FOR THE PARTICIPATION GUATEMALAN INDIGENOUS GIRLS IN PRIMARY EDUCATION: OVERVIEW OF THE *EDUQUE A LA NIÑA* PILOT PROJECT

I. INTRODUCTION

This document presents the cumulative findings of the three years of implementation of the *Eduque a la Niña* Pilot Project. A series of indicators was used to examine the participation of girls in schools where different “packages” of interventions designed as incentives for encouraging families and the girls themselves to remain in school. The study used two different samples. All schools participating in the Eduque program were used when examining educational statistics collected routinely by the Ministry of Education at the school level. A representative sample of the rural schools using the three packages and a sample of rural public schools not presently receiving one of the packages were used to examine classroom interaction. The study was conducted by members of The Academy for Educational Development’s (AED) technical assistance team, as part of a broader study to measure the effects of the USAID-financed Basic Education Strengthening (BEST) Project on the participation of girls and indigenous students in primary education. In each of the three years, the study was conducted during the months of August and September.

A. BACKGROUND

In defining a plan of action for investing in primary school education, USAID/Guatemala began a review of national and international data on women’s basic education. The consistency of the international evidence of the impact of girls’ education on indicators of social and economic development (e.g. fertility, infant and child mortality and morbidity, nutrition, educational attainment, agricultural, industrial, and domestic productivity), combined with the discrepancy between girls’ and boys’ school attendance rates and the high illiteracy among women in Guatemala, convinced the Mission of the importance of investing in the education of girls for Guatemala’s economic development. An initial effort was to join with other partners to plan a seminar for key Guatemalan leaders to discuss the existing evidence, especially that pertaining to Guatemala and reach a plan of action.

As a result of the seminar, which was co-sponsored by USAID, the UNDP, and the National Office of Women in the Ministry of Labor, Guatemalan leaders, after a careful examination of the data, formed the Association for Girls’ Education (*Asociación Eduquemos a la Niña*). This group developed a National Plan of Action on Girls’ Education that consisted of a variety of activities to promote girls’ education, including support of incentives to encourage girls to

remain in school. *Eduque a la Niña* was an outcome of the Plan which systematically tests the effects of different incentive packages.

In 1994, baseline data were collected on the *Eduque a la Niña* pilot project. Subsequent monitoring took place in 1995. This report integrates the data of the first two years of implementation with those collected at the end of the third year of project.

B. EDUQUE A LA NIÑA

Eduque a la Niña was a three-year pilot project that tested combinations of interventions in 36 communities in six departments of the country (Alta Verapaz, Chimaltenango, Quiché, San Marcos, Huehuetenango, and Suchitepéquez) where the gap between girls' and boys' primary school enrollment is greatest. The purpose of the project was to determine cost-effective strategies for promoting girls' attendance and completion of primary school. These strategies will then be considered by the *Asociación Eduquemos a la Niña* and the Ministry of Education for expansion and replication in other areas of the country. The project had the support of seven donor organizations. A local NGO, *la Fundación de Azúcar (FUNDAZUCAR)*, was the implementing organization for the project, supported by USAID/Guatemala matching funds. Five other public- and private-sector organizations participated in the project, under the coordination of the *Asociación Eduquemos a la Niña*. In 1995, the JICA (Japanese Agency for International Cooperation) joined the group of donor organizations, providing materials to support the continuation of the project.

Three intervention packages (combinations of educational actions) were being tested. These actions included:

Small scholarships of Q25 (or about \$4.00) per month. This was consistent with Guatemalan and international research that suggests that small economic incentives motivate families to send their daughters to school;

Community outreach workers (Mayan women) who were assigned to assist in the organization of the parents' committees and to provide academic tutoring and moral support to the girls;

Parent committees, which a) selected the scholarship recipients and monitor the activities of the program in the community and b) actively participated in school activities under "package two"; and

Educational materials for students and teachers, including a teachers' manual, two posters, a flipchart program, four reading books, and a collection of

children’s literature and music focused on the education of girls (written in Spanish and the four major Mayan languages).

As shown in Table 1, these four actions were organized into three distinct packages, each of which was tested in three communities representing each of the four major indigenous language groups: K’iche’, Kaqchikel, Mam, and Q’eqchi’.

Table 1: *Eduque* Intervention Packages

Package	Outreach Worker	Educational Materials	Small Scholarships	Parent Committees
1	X		X	X
2	X			X
3		X		

In 1995, as an outcome of the Evaluation of Special Studies, training was provided to teachers in the three packages, following a format which avoided giving the teachers details about the other packages (to prevent contamination of the experiment). Training was also provided to Ministry of Education (MINEDUC) personnel involved in the project (regional, departmental, and local officials, Technical Pedagogical Trainers, and Supervisors).

C. METHOD

A multi-method design consisting of inventories, checklists, classroom observation forms, and focused interviews was employed to measure the increased participation of girls in the first year of implementation of the *Eduque a la Niña* project.

Sample. The sample of schools for the participation study was obtained using a random, stratified sample. Strata were each of the different packages of actions in the *Eduque* project. A comparison sample was chosen from the 12 schools created as a control group for the project. Comparison schools were schools with similar characteristics but not participating in the BEST program. Nine schools, three representing each package, made up the sample. These schools were 25% of the schools involved in the program. The sample had an adequate number of schools and teachers to determine significant differences among groups (two or more standard deviations) with a level of confidence of 95% with a power of 80%.

The universe of 36 *Eduque* schools and 12 comparison schools formed the basis for data on year-long attendance and final drop-out, repetition, and promotion rates.

Instruments. In order to implement the multi-method design of the research, a battery of instruments was developed. The principal instruments were records of attendance collected by the outreach workers, enrollment, promotion, failure, and drop-out data collected by the Ministry of Education's management information system, as well as classroom observation forms and focused interviews used during the BEST participation and teacher effectiveness studies. The teacher records and the Ministry's data provided end-of-the-year results at the school level. The classroom interaction form focused on teachers' interactions with individual students and the nature of those interactions in different academic classroom activities on selected days at one point in time. The form was used for ten minutes at six different times during the instructional day in classrooms at all grade levels. Two open-ended interview schedules were also developed. These interviews explored the behaviors of teachers and directors, respectively, in implementing the innovation with which they were working and collected additional data on enrollment, repetition, and drop-out.

Training of Fieldworkers. The training was designed and developed by the BEST project evaluation team. Training took place over a one-week period immediately prior to the start of the data collection activities. Training was holistic in the sense that each aspect of successful qualitative research or fieldwork in the school settings was continually related to other aspects, and learning was highly experiential. The general content of the training was: introduction to the BEST project; introduction to the study; introduction to qualitative methods, role management, use of checklists, use of observation protocol; field interviewing techniques; and simulation fieldwork in local schools. Training included exercises using videotapes of classroom interaction in schools and served to pilot and refine the instruments.

Field procedures were developed in which local researchers worked in two-person teams and spent one or two days at each school. Field manuals were developed as a reference guide to field procedures during the investigation, and procedures such as instrument editing, re-interviewing, and parallel observation by supervisors with a small number of sample teachers were created to ensure the quality of the data collected.

In order to collect the annual data on attendance and days of class taught, as well as general data on scholarship recipients, a training session was held each year for the outreach workers. This consisted of reviewing the types of data needed and the protocols for data collection. A Field Manual was also developed a reference in carrying out this data collection.

Cost data were collected by the authors from the Ministry of Education statistical yearbook published annually and from AID and FUNDAZUCAR records of expenditures. Cost per student was determined by dividing the total number of students enrolled in a program by the average cost per student for the rural area in general plus the average cost per student of each intervention package.

Data Analysis. Preliminary data analysis consisted of calculating the absolute and relative frequencies of each indicator and making within-group comparisons between each *Eduque* package and with the comparison group. Special indices were created to control for differences in enrollment or attendance among target groups where such differences might affect participation. Where necessary, ANOVA comparisons, with POST HOC Bonferri tests and z-tests were conducted to compare the two percentages. The hypothesis tests were conducted with an alfa error of 0.05 or smaller.

Operational Definitions :

- Daily Attendance =** Number of children of each sex observed to be present on a given day of research compared to the total enrollment of children of that sex.
- Annual Attendance =** Number of days each child attended classes during a given month compared to the total number of classes held during the same month tabulated for all months in the school year.
- Completion =** The number of children completing the year compared to the initial enrollment of children (assumes enrollment of children during the year to be random in study schools).
- Drop-outs =** Number of children of each sex identified by individual teachers as having left school at the time of data collection in August, and at the end of the school year in the official Ministry report.
- Enrollment =** Number of children enrolled as reported by the director in the school records.
- Failure =** Number of children of each sex identified by their teachers in the final reports turned in to MINEDUC as failing the grade.

Promotion = Number of children of each sex advanced to the next grade by their teachers at the end of the school year.

Repetition = Number of children of each sex that the teacher indicated were repeating a grade.

Index of Active Participation (IAP) = Ratio of the percent of interactions initiated by target children with the teacher and the relative frequency of attendance of these children.

Index of Responsive Participation (IRP) = Ratio of the percent of interactions initiated by the teacher with children of each gender and the relative frequency of attendance of these children.

Normal progress = The percentage of students in a given cohort that are in the next higher grade in the following year.

II. FINDINGS

A. EDUCATIONAL STATISTICS

1. Annual Attendance

Annual attendance was calculated in two slightly different ways. In 1994, the attendance reports provided by the teachers were used. In these reports, the teachers recorded the daily attendance of the students. From the reports, a sample of two days from every week was randomly selected for each student. This information was used to estimate yearly attendance. In 1995 and 1996, the outreach workers asked the teachers for the student attendance records each month and prepared summary tables for each student. This procedure reduced the time needed for data entry and allowed for the inclusion of data from all days of the week (Monday to Friday). In all years, third grade was chosen because it is the grade at which all BEST project activities are monitored. Three indicators were examined: student attendance in relation to the teachers' attendance, student attendance by sex, and attendance from February to May and from June to September (June to October in 1994).

As can be seen in Table 2, student attendance for the *Eduque a la Niña* project students has been higher than that of the comparison group in the last two years of the project. This is a result of the higher attendance for students in the Scholarship and the Educational Materials packages. The attendance of students in the Outreach Worker and Parents' Committee package has generally been lower than that of the other packages and of the comparison group throughout the three years of the project.

Table 2: Student Attendance

PACKAGE	1994	1995	1996
1	89%	93%	91%
2	86	84	86
3	90	91	90
4	90	83	88

In 1994 an unexpected finding was the greater number of days of classes attended by the students in the project when compared to students in the control schools. As shown in Table 3, the same pattern was maintained in 1995. However, in 1996, control schools greatly increased the number of days on which classes were held, resulting in a percentage of class days similar to that of Eduque schools. Analysis by package shows no clear-cut trends favoring one of the packages over the others.

Table 3: Days of Classes Attended by Students

Package	1994*		1995		1996	
	Average Days	Percentage	Average Days	Percentage	Average Days	Percentage
1	121	70	140	86	131	81
2	127	72	132	81	126	78
3	123	71	130	80	131	81
<i>Eduque</i> Average	124	71	136	83	129	80
4	93	54	120	73	132	81

* Estimated

The *Eduque* project appears to have had little effect on children's average attendance. Because in 1994, the implementation of the project was not fully completed until May, it was hypothesized that a change in the pattern of student attendance would be observed once the project was implemented. Thus, the year was divided in two parts: February to May and June to October. As can be seen in Table 4, *Eduque* schools had generally higher attendance than comparison schools in the latter part of the year, in 1994 and 1995. However, no differences were observed between *Eduque* schools and the comparison schools in 1996.

The Scholarship program had consistently higher attendance rates than the other two packages and children receiving motivational materials had better overall attendance than those who were in the program with outreach workers and parent committees. Also the outreach/parent committee group had fluctuations in attendance from year to year, as did the comparison group. The other two packages had fairly consistent attendance figures in each period throughout the research.

Table 4: Attendance from February to May and from June to September

PACKAGE	February-May			June-September		
	1994	1995	1996	1994	1995	1996
1	90.6	93.5	92	87.4	92.1	89
2	86.2	83.3	88	83.2	82.4	85
3	90.2	90.2	92	88.9	88.1	87
4	92.6	84.2	88	71.7	81.9	88

The results found for attendance by sex are shown in Table 5. As can be seen, girls have had consistently higher attendance than boys in the *Eduque* program. In addition, girls attendance has been generally higher than that of girls in the comparison schools. With the exception of the outreach/committee package, boys attendance has also been higher in *Eduque* schools than in the comparison group. Again, participants in the scholarship schools have had the highest overall attendance throughout the project.

Table 5: Annual Attendance by Gender

PACKAGE	Girls' Attendance			Boys Attendance		
	1994	1995	1996	1994	1995	1996
1	90.7	94.2	92	87.7	91.9	89
2	90.1	86.2	86	82.6	82.9	86
3	92	91	90	88.5	90.3	90
4	88.1	84.6	89	87.6	82.2	87

2. Completion

A series of educational statistics were used as indicators of the programs' progress. These statistics included enrollment, completion, drop-out rates, promotion, and failure. Official reports sent by teachers at the end of each academic cycle to MINEDUC annually were used to calculate these indicators.

Table 6: Completion Rates

PACKAGE	Boys			Girls		
	1994	1995	1996	1994	1995	1996
1	89.9	91.6	89	92.6	91.5	92.7
2	89.1	92.6	91.2	91.5	92.7	91.5
3	92.4	93.7	92.7	94.4	92	91.9
<i>Eduque Average</i>	90.5	92.6	91	92.8	92.1	92
4	89.2	89.6	89.5	89.4	92.4	90.2

The completion rate was calculated by subtracting the number of students who left school over the course of the year from the total number of students enrolled at the beginning of the year. As shown in Table 6, completion rate for girls in *Eduque* schools was consistent over the three years and in two of those years was slightly higher than that of girls in comparison schools. However, rates are generally high in all groups and there is little to distinguish among programs in the completion rates of either boys or girls.

The promotion rate was calculated by dividing the total number of students who passed a grade by the total number of students enrolled. As seen in Table 7, the rate of promotion for girls rose consistently in both the Scholarship and Materials incentive programs. The Outreach program also had a rise in promotion from the baseline year but showed a more erratic pattern. Overall, the *Eduque* program had an increase of 7% from 1994 to 1996, whereas the comparison group dropped one percentage point. However, the level of promotion was similar for girls in both *Eduque* and the comparison group.

Table 7: National Educational Statistics on Girls Promotion in *Eduque* Schools

Indicator / Package		1	2	3	<i>Eduque</i> Average	4
		%	%	%		%
Promotion	1994	73*	63	62	66	73
	1995	74	75	71	73	71
	1996	76	70	74	73	72
Failure	1994	22	23	22	22	20
	1995	17	17	21	19	20
	1996	18	22	18	19	18
Drop-out	1994	7	13	16	12	8
	1995	8	7	8	8	8
	1996	6	8	8	7	10

*Percentages may not add up to 100% due to rounding

Boys promotion rates also rose in all of the *Eduque* packages from 1994 to 1996, whereas the comparison schools showed a more consistent pattern. Again, there were no overall differences between the pilot schools and the comparison group.

Table 8: National Educational Statistics on Boys Promotion in *Eduque* Schools

Indicator/ Package		1	2	3	<i>Eduque</i> Average	4
		%	%	%		%
Promotion	1994	71*	66	68	68	74
	1995	74	74	76	75	73
	1996	72	71	75	73	72
Failure	1994	21	19	20	20	19
	1995	18	18	18	19	17
	1996	17	20	18	18	17
Drop-out	1994	9	14	12	12	9
	1995	8	8	6	8	10
	1996	11	9	7	9	11

*Percentages may not add up to 100% due to rounding

The analysis of participation of girls and Mayans showed that one of the areas where BEST interventions had had a consistently positive impact was in increasing the percentage of both of these groups of students reaching the upper grades of primary school. As the sample of *Eduque* schools also showed

this tendency when compared to the control group, it was decided to examine this trend for all the Eduque schools in the comparison of the different packages. As can be seen in Table 9, the scholarship program generally had the highest percentages of girls at these grade levels when compared to the student body as a whole. This is significant because the indicator includes all girls and not solely those receiving scholarships. The scholarship program also had the greatest increase in girls in the upper grades as the percentage increased eight points from the baseline year to 1996.

Table 9: Upper Grade Completion Rates

Years/Package	1994	1995	1996
Scholarships	.19	.25	.27
Outreach	.14	.22	.19
Materials	.20	.19	.22
Total Eduque	.18	.22	.23
Comparison	.15	.18	.22

The outreach program had an erratic pattern, with a decrease in 1995 and a gain from the baseline year in 1996. This program had a five percentage point gain over the life of the pilot program. The motivational materials program had relatively high percentages of girls in the upper grade in all three years. This program, however, had an increase over time of only two percentage points.

The comparison group had a pattern similar to that of Eduque as a whole and showed increases slightly less than those of the scholarship program. However, the scholarship program consistently had higher percentages of girls in the upper grades.

3. Cost Effectiveness

In calculating the cost-effectiveness of the other BEST interventions, Nueva Escuela Unitaria and Bilingual Education, normal progress through sixth grade and the cost to produce a sixth grade graduate in six years as the measures of effectiveness and costs, respectively. This was possible because the implementation periods of interventions were at least six years, which allowed tracking of a cohort of students through a complete primary school cycle. In the case of *Eduque*, only a three year database existed. Thus, the primary school cycle was estimated by using the first and fourth grade cohorts that began the project. In each year, the average cost per student reported by the Ministry of Education was used and was augmented by the additional cost

per student of each of the *Eduque* packages. In the case of Outreach and Materials, these additional costs were applied to each student at each grade level. In the case of the Scholarship program, the additional costs were assigned only to the scholarship recipients, however, all student making normal progress were included in the analysis.

By using this type of cross-sectional design rather than a complete cohort, it is likely that the costs of the programs have been overestimated. This is a result of applying the high development and administrative costs associated with the first three years to all six years of cost estimates. It can be assumed that administrative and training costs would decrease somewhat over time as efficient systems were put in place.

Table 10 shows the rate of estimated normal progress using the procedures described above. As can be seen, all of the *Eduque* packages had normal progress rates for girls higher than those for rural schools in general. However, in each case these rates were lower than that of the control group. This rate is even higher than that of boys in all rural schools (21.9%). In the crucial first year where over 40% of all rural girls drop out, the scholarship program maintained 71% of the female first graders in the pilot schools. The other two incentive programs, however, had lower rates of retention than rural schools in general.

Table 10: Rates of Normal Progress through Sixth Grade

	Scholarship	Outreach	Materials	Control	All Rural Schools
First Grade	71.0%	53.4%	57.1%	64.0%	59.0%
Rate	20.5%	21.9%	18.6%	23.4%	17.9%

When the cost per student for each package was examined, the scholarship program was the most cost-effective. As can be seen in Table 11, this package produced a female sixth grade graduate for almost Q800 less than the outreach program and over Q2000 less than the motivational materials package. However, the scholarship program still cost Q2337 more than the control schools to produce a sixth grade graduate.

Table 11: Cost per Sixth Grade Graduate

Year	Grade	Scholarship*	Outreach	Materials	Control
1994	1st	Q146,595	Q241,035	Q206,379	Q106,240
1995	2nd	Q105,226	Q154,332	Q147,882	Q 68,060
1996	3rd	Q 67,170	Q124,641	Q 98,432	Q 50,215
1994	4th	Q 57,437	Q 77,089	Q 60,448	Q 39,010
1995	5th	Q 42,257	Q 72,798	Q 55,935	Q 29,880
1996	6th	Q 25,730	Q 65,720	Q 47,366	Q 26,145
Cost per 6th grade graduate		Q7662.33	Q8455.34	Q9784.79	Q5325.83

4. Analysis of the Scholarship Program

The analysis of the scholarship package using national statistics compares all children in those schools to the children in the other packages. This is based on the assumption by program developers that, as the scholarship program has community participation components, it may have an impact which extends beyond the girls receiving scholarships. It is also important, however, to examine the experience of the individual scholarship recipients. The scholarship program benefits rural, primarily indigenous, girls. Table 12 details the number of scholarships awarded and the percentage of girls receiving scholarships by grade.

Table 12: Girls Receiving Scholarships by Grade and Year

Grade		1995			1996	
		% Girls	No. of Scholarships	% Girls	No. of Scholarships	% Girls
1	100	35.3	105	33.1	54	16.9
2	84	34	116	45.3	131	47.5
3	60	36.4	86	44.8	114	62.3
4	38	31	61	45.9	97	61.4
5	40	54	38	43.2	54	59.3
6	15	41.7	33	62.3	38	55.1

As shown above, the percentage of girls in higher grades receiving scholarships is greater than that of girls in lower grades. The original assumption in awarding scholarships was that girls in the higher grades would benefit more as they would have a higher economic value to the household and thus be more likely to be removed from school. The 1994 baseline study of Eduque, as well as other research (see Nieves 1994), suggested that girls who reached upper grades were likely to stay in school with or without scholarship support. As a result of these findings, the award of new scholarships in 1995 and 1996 was concentrated in the early grades. However, since the majority of scholarship recipients in the higher grades passed their grade, the girls in these grades continued to receive their scholarships in subsequent year, which accounts for the imbalance by grade level.

The comparison of girls receiving and not receiving scholarships was conducted by including all of the girls in the sample, both those participating in the Outreach and Materials packages and those in the comparison group, in the non-scholarship group. This group was then compared to the scholarship recipients in the Scholarship program. This was done to avoid any possible influence of the scholarship program on girls in Scholarship schools who did not receive scholarships.

Tables 13,14, and 15 show the percentages of completion, promotion and failure for scholarship recipients and the comparison group each year of the *Eduque* program. As can be seen from the tables, the scholarships have an impact on both completion and promotion. In all three years, the scholarship recipients have consistently higher completion rates at almost all grade levels. The greatest impact is in first and second grade where the girls on scholarship have significantly higher completion and promotion rates each year. Thus the Scholarship package was highly successful in meeting both the objectives of keeping girls in school and helping them to complete school.

Table 13: Educational Statistics for Girls Receiving and Not Receiving Scholarships by Grade in 1994

Grade	Completion		Promotion		Failure	
	Scholarship	No Scholarship	Scholarship	No Scholarship	Scholarship	No Scholarship
1	99*	90	76*	56.8	23	26.7
2	100*	94.6	69	68.7	31	24.1
3	90	96.5*	78.3	79	11.7	13.9
4	97.4	96.7	78.9	76	18.4	12
5	100	94.1	85	80	15	8.6
6	100	97.6	93.3	89.5	6.7	1

* Test of percentages of two populations, significant with an alfa of 0.05 or less.

Table 14: Educational Statistics for Girls Receiving and Not Receiving Scholarships by Grade in 1995

Grade	Completi on		Promotion		Failure	
	Scholarship	No Scholarship	Scholarship	No Scholarship	Scholarship	No Scholarship
1	100*	91.3	90.5*+	63.4	9.5*	22.5
2	99.1*	94.9	81+	73.7	18.1	21.7
3	100*+	93.8	88.4*	76.1	11.6*	23.3
4	95.1	93.2	83.6	82.9	11.5	12.4
5	97.4	94.2	89.5	87.2	7.9	7
6	100	96.9	100	93.8	0	3.1

* Test of percentages of two populations, significant with an alfa of 0.05 or less; + same test, 94-95 data comparison.

Table 15: Educational Statistics for Girls Receiving and Not Receiving Scholarships by Grade in 1996

Grade	Completion		Promotion		Failure	
	Scholarship	No Scholarship	Scholarship	No Scholarship	Scholarship	No Scholarship
1	100*	90.8	87.2*	61.9	12.8	28.9
2	99.1	93.3	83.8	71.4	15.3	21.8
3	96.3	93	81.5	75.5	14.8	17.3
4	98.9	92.4	88.8	81.5	10.1	10.9
5	91.2	91.3	78.4	84.3	11.8	7
6	100	97.2	94.3	95.7	5.7	1.5

* Test of percentages of two populations, significant with an alpha of 0.05 or less; + same test, 94-95 data comparison(???)

As these statistics are yearly results, they may mask to some extent the full impact of the scholarship for rural indigenous girls. In 1995, the one year where it was possible to track first grade scholarship and non-scholarship children, from one year to the next, it was found that only 1.9% of the scholarship girls who were promoted to second grade did not return to school in 1996. This compares with 10.7% of the first graders who did not receive scholarships and failed to return to begin second grade.

As the Eduque program functioned for only three years, analysis of a cohort of children completing a primary school cycle was not possible. However, for illustrative purposes the cost to produce a sixth grade graduate who received a scholarship was estimated. Given the findings that scholarships are most effective in the early grades, cost effectiveness in terms of scholarship recipients was estimated by assigning the average per pupil cost of the scholarship program to girls in each of first three grades who received scholarships. Promotion percentages were taken from 1994, 1995 and 1996 for first, second and third graders respectively. As the assumption was made that the children would only need the scholarship through third grade, 1996 promotion rates for fourth, fifth and sixth graders without scholarships were used to estimate normal progress through the remaining primary grades.

For simplicity, a base of 1000 children was used. Table 16, shows that significantly higher numbers of children who receive scholarships in the first three grades are likely to make normal progress toward graduation. Almost 13% more children would graduate on time. This greater efficiency does not, however, completely cover the costs of the scholarship. The scholarship

program costs an additional Q1926 over the six years. The figure of Q7332 is lower than that of any of the other packages, including the scholarship program when both scholarship and non-scholarship students are included in the analysis.

Table 16: Cost-Effectiveness for Scholarship Recipients

Year	Grade	Comparison	Scholarship	Cost Comparison	Cost Scholarship
1994	1st	1000	1000	Q415000	Q757950*
1995	2nd	568	760	Q235720	Q640422**
1996	3rd	419	616	Q173885	Q500032***
1997+	4th	316	502	Q131140	Q208330
1998+	5th	257	409	Q106655	Q169735
1999+	6th	217	345	Q 90055	Q143175
Cost per graduate in six years				Q5406	Q7332

* cost per student = Q415 + 342.95

** cost per student = Q415 + 427.66

***cost per student = Q415 + 396.74

+ estimated on 1996 non-scholarship promotion rates and Q415 for both groups

If the assumption is made that scholarships are most important at the first grade level, as the data indicate, then the costs to produce a sixth grade graduate in six years are substantially lower. Using 1996 data, and including the percentage of promoted first graders who return to school to begin second grade in each group, the cost to produce a sixth grade graduate in the scholarship program is Q6670. This compares to Q5885 to produce a sixth grade graduate in six years without scholarship support in the first year. The rate of normal progress in this scenario is .354 or 354 girls in 1000 compared to .181 or 181 girls per 1000 among non-scholarship children. While these figures must be considered largely hypothetical, they suggest that the receipt of a scholarship is a powerful incentive for remaining in school.

There also appears to be the potential to reduce the costs of the scholarship package substantially. If costs of the package were to be reduced by approximately one-third, higher efficiency of the scholarship package would produce a sixth grade graduate at the same cost as the rural system as a whole. As the *Eduque* program was designed as a research and development effort in which new elements such as training for Ministry personnel and teachers were

added throughout the program, costs remained fairly uniform over the three years. Administrative costs averaged slightly over 44% of total scholarship program costs over the three years and training averaged 19% (See Appendix A). Thus, if this 63% could be reduced in half, the scholarships would potentially pay for themselves.

B. PARTICIPATION

1. Daily Attendance

The participation study dealt with first through fourth grade. Although *Eduque a la Niña* serves all six grades, the observed attendance from these four grades provided an indication of the attendance at each school and the overall effect of the program. The attendance rates were relatively high across all programs over the three years. Observed daily attendance was, however, slightly lower than that reported in the national statistics. There are no consistent patterns that differentiate among the packages in terms of daily attendance.

Table 17: Observed Attendance by Sex

PACKAGE				1994	1995	1996
				1	88	73
2	74	89	82.7	80	89	87.1
3	72	87	77.9	89	93	77.9
<i>Eduque Average</i>	78	83	81.8	84	86	80.8
4	71	85	81.7	90	86	77.8

Teacher gender did not influence attendance in any of the packages. As shown in Table 18 similar patterns were found for both male and female teachers in each year of the study. While some within program variation exists, this is similar for teachers of both genders within a program.

Table 14: Attendance Rate by Teacher's Sex

Year		Male Teachers					Female Teachers				
		Package					Package				
		1	2	3	<i>Eduque</i> Average	4	1	2	3	<i>Eduque</i> Average	4
Girls	1994	82	84	72	79	77	92	66	71	77	60
	1995	86	89	87	87	77	66	90	87	81	91
	1996	86	82	76	82	83	84	84	81	83	73
Boys	1994	79	88	88	85	95	88	73	88	80	79
	1995	86	87	94	89	86	70	89	97	85	86
	1996	77	86	74	78	77	78	88	84	83	79

2. Interaction

Naturally occurring student-teacher interaction was the principal means of studying the **Interaction** component of participation. Interaction was the observed opportunity which students of different genders have to initiate discourse with the teacher, as well as the attention given to students of different genders by the teachers. The index of opportunities which the classroom provided to the students initiate discourse was called the Index of Active Participation (IAP). The index of attention provided by the teachers to different students was called the Index of Responsive Participation (IRP) and was constructed based on the interactions initiated by the teacher.

In general, schools in rural Guatemala provided more opportunities for participation to boys. For all of the packages and the comparison group, there was more active participation by boys than by girls. Although Eduque had lower levels of active participation by boys and higher levels of girls' participation in two of the three years, there were no consistent trends.

Similarly, teachers tended to initiate more discourse with boys regardless of program. The Eduque packages appear to have had little impact on teacher behavior, as the control group teachers, as a group involved girls more than pilot program teachers.

**Table 19: Indices of Active and Responsive Participation
by Package and by Sex**

Package	IAP- Boys			IAP- Girls		
	1994	1995	1996	1994	1995	1996
1	1.14	1.35	1.03	0.83	0.65	.77
2	1.23	1.25	1.32	0.62	0.64	.26
3	1.22	1.21	1.1	.55	0.62	.92
<i>Eduque Average</i>	1.18	1.24	1.13	0.74	0.62	.67
4	1.25	1.10	1.21	0.68	0.79	.58
	IRP- Boys			IRP- Girls		
	1994	1995	1996	1994	1995	1996
1	1.18	1.12	1.15	0.79	0.92	.87
2	1.08	1.17	1.07	0.68	0.68	.90
3	1.10	1.09	1.12	0.83	0.87	.82
<i>Eduque Average</i>	1.25	1.10	1.12	0.81	0.86	.86
4	1.13	1.03	1.02	0.84	0.94	.99

In the 1994 study it was found that girls participate more when the teacher is female. This was confirmed in the subsequent studies conducted by the BEST Project (1995 and 1996). This pattern is generally true of the Eduque program also. Both the Scholarship and Materials packages show increase over the life of the program, and girls generally have higher indices of participation with female teachers. The exception is the Outreach program where a significant drop in girls initiating discourse with female teachers was observed. Girls showed increased active participation ratios only with male teachers in the Materials package. This may have been the result of training received by both male and female teachers.

Table 20: Indices of Active Participation by Teacher's Gender

Package	Female Teachers					
	IAP- Boys			IAP- Girls		
	1994	1995	1996	1994	1995	1996
1	1.16	1.28	1.07	0.80	0.68	.92
2	1.16	1.28	1.13	0.74	0.60	.25
3	1.25	1.37	1.06	0.67	0.35	1.11
<i>Eduque Average</i>	1.19	1.31	1.09	0.74	0.54	.77
4	1.02	1.18	1.19	0.99	0.77	.68
	Male Teachers					
	IAP- Boys			IAP- Girls		
	1994	1995	1996	1994	1995	1996
1	1.11	1.47	1.01	0.86	0.60	.64
2	1.26	1.16	1.51	0.59	0.67	.27
3	1.38	1.04	1.13	0.30	0.90	.76
<i>Eduque Average</i>	1.25	1.22	1.16	0.58	0.72	.58
4	1.28	1.02	1.21	0.64	0.80	.50

III. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. Program Level

The Scholarship package is the most effective of the *Eduque* incentives for keeping girls in school and competing the primary grades.

On indicators of annual and daily attendance, completion and promotion, girls in schools where the scholarship program was being piloted had average rates between 2% and 5% higher than the comparison group over for the three years of the program. They also had generally higher average percentages on these indicators than either the Outreach or the Motivational materials package. In terms of the percentage of girls in the upper grades, the Scholarship package had five percent more girls in these grades (27%) than the comparison group and also had the greatest increase over the three years (8%).

The greatest impact of the Scholarship package was on girls in the first three grades, especially first grade, where for rural schools as a whole, over 40% of girls drop out.

During each year of the *Eduque* project, first and second grade girls receiving scholarships had significantly higher completion and promotion rates than girls without scholarships. In addition, girls in third grade receiving scholarships had consistently higher completion and promotion rates than girls without scholarships. When first graders were examined individually during the 1995 and 1996 school year, it was found that 10% more of the scholarship girls who had been promoted returned to begin second grade than promoted girls without scholarships. Although scholarship recipients generally had slightly higher completion and promotion rates in fourth through sixth grade, the rates for both scholarship girls and those without scholarships were similar.

The Scholarship program is the most cost-effective of the incentives packages appears to have the potential to lower cost sufficiently to pay for itself in terms of greater efficiency.

Using the indicator of cost per student who graduates from primary school in six years, the Scholarship package had a cost per sixth grade graduate which was Q793 and Q2122 lower than the Outreach package and the Materials

package, respectively. When only scholarship recipients were examined and it was assumed that scholarships would only be necessary through third and through first grade, costs were reduced by Q332 and Q992, respectively. These costs are still between Q2337 and Q785 higher than those of the comparison group.

It was estimated that if costs of the package were to be reduced by approximately one-third, higher efficiency of the scholarship package would produce a sixth grade graduate at the same cost as the rural system as a whole. As the *Eduque* program was designed as a research and development effort in which new elements such as training for Ministry personnel and teachers were added throughout the program, costs remained fairly uniform over the three years. Administrative costs averaged slightly over 44% of total scholarship program costs over the three years and training averaged 19% (See Appendix A). Thus, if this 63% could be reduced in half, the scholarships would potentially pay for themselves

The Materials package has some potential for keeping girls in school but is unlikely to motivate them to complete primary school.

The Materials package had a higher percentage of attendance and overall completion rates than did the comparison group. However, in terms of promotion, percentage of girls in upper grades and especially, first grade promotion, rates were lower than those of the comparison group. In addition this package had the highest cost to produce a sixth grade female graduate in six years.

Outreach in the form of occasional visits by outreach personnel to work with parent committees on the importance of keeping girls in school is not an effective incentive.

On most indicators, girls participating in this package had overall percentages similar to or lower than those of girls in the comparison group. This was especially true in terms of first grade promotion where girls were 10 percentage points below the comparison group and six below the average for all rural schools. Girls in this package also had very low indicators of classroom interaction, which were 17% below that of the comparison group.

2. Classroom Level

The Eduque packages have not affected girls' classroom participation patterns.

No consistent classroom interaction pattern was found for girls under any of the three intervention packages which differentiated them from the comparison group or from one another. This appears to be a result of the focus on the school level rather than the classroom level of the first two packages. With the Materials package, the advanced level of the majority of the materials, combined with a lack of specific techniques for training teachers to use them interactively, kept them.

Female teachers are an incentive for the active participation of girls in the classroom.

Over the three years of the project, girls in the classrooms of female teachers consistently initiated more interactions with their teachers than did girls in classes with male teachers. This tendency was most pronounced in the scholarship package and the control group where girls initiated 10% and 15% more interactions, respectively. In all cases, however, interactions initiated by boys remained higher than those initiated by girls throughout the project.

B. RECOMMENDATIONS

Continue scholarships and study ways to reduce program administrative costs.

The success of the scholarship program when compared to the other incentive packages and to the comparison group suggests that scholarship programs should be continued as an incentive for indigenous girls to remain in and complete primary school. As the Ministry of Education is undertaking a scholarship program to be administered through the private sector, it is important to monitor the success of this new effort relative to costs, as the program is using an existing administrative infrastructure which is likely to reduce costs.

Concentrate the Scholarship program on the first three years of primary school, especially first grade.

The Eduque experience has shown that scholarships can significantly increase completion and promotion in the early years of primary school and can influence the decision of families to return successful first graders to school for second grade. These results are consistent with studies of other scholarship programs (see Nieves, 1994), which suggest that the impact of scholarships as an incentive is greatest in the first three years of primary school in Guatemala. Once girls have reached third grade, they seem to have the same level of academic success in subsequent years whether they receive a scholarship or not. As a result, investment should be concentrated on the first three years until completion and promotion rates are the same as those for boys or until a goal for completion and promotion rates considered appropriate by the different actors involved in the education process has been reached.

Continue to use motivational materials in the classroom as an incentive and examine the effects of the materials in the former Eduque pilot schools in 1997, when there will be no associated training and production costs.

As the motivational materials performed well on some indicators, they may be useful at a lower cost or in conjunction with other types of incentives. Therefore, the effects of the materials in former pilot schools should be monitored after research and development has been completed.

Discontinue the use of outreach alone as an incentive strategy to motivate girls to stay in school.

The poor performance of this package on almost all indicators suggests that it is not a viable incentive for encouraging girls to attend, stay in, or complete school. Further investment in this package should not be made.

Investigate further the influence of teacher gender as an incentive for keeping girls in school. If results confirm the importance of teacher gender, study the possibility of placing female teachers in the early grades in rural areas where the loss of female students is high.

The consistently higher active participation levels of girls in classes with female teachers suggests that teacher gender may also influence girls persistence in school. Existing BEST and Ministry data should be used to

determine the influence of gender, both alone and in conjunction with the *Eduque* incentive packages.

Develop other strategies to motivate girls to participate in the classroom.

The lack of impact from the incentive packages on girls' classroom participation is related to the objectives of these packages, which demand an impact at the school level. If the goal is to obtain greater active and responsive participation among girls, strategies which are more closely related to classroom participation should be sought.