New Horizons for Primary Schools/Jamaica

FORMATIVE EVALUATION 2003

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I. Executive Summary

A. Introduction

This document summarizes the results of the 2003 formative evaluation of the New Horizons for Primary Schools (NHP) Project in Jamaica. NHP is a five-year[1] effort to improve the Mathematics and Language arts of Jamaican primary school students, who because of poverty or other factors have had little success in school. The project is a partnership between the Jamaican Ministry of Education, Youth and Culture, USAID, and the NHP technical assistance contractor, Juárez and Associates.

The formative evaluation is conducted yearly near the end of the school year. It is designed to inform the implementation of NHP interventions and thereby permit NHP staff to target interventions in critical areas of the program. The formative evaluation process also serves to measure project results from an established baseline, which will contribute to the measurement of final project results. In 2001, 2002 and 2003, the formative evaluation had the additional purpose of building the capacity of Jamaican Education professionals in systematic qualitative data collection and the integration and interpretation of qualitative and quantitative data.

B. Evaluation Methodology

A team of Jamaican education professionals carried out the data collection for the evaluation. They employed a multi-method design, consisting of inventories, checklists, classroom observation forms, and focused interviews, to measure the conditions in place for effective learning in NHP classrooms. A stratified sample of 25 schools, or 35% of the 72 NHP schools served as the data source for the evaluation. Observational data were complemented by the results of the third grade diagnostic tests and the sixth grade GSAT results for 2003. Evaluators were trained in workshops dealing with qualitative data collection and data reduction, analysis and interpretation. The evaluation took place in May of 2003.

C. Principal Findings

NHP has been most successful in improving the near mastery levels of Mathematics. NHP students have improved over the baseline in1998 in both third and sixth grade and the improvement has been greater than that for children in the system as a whole. NHP students also have higher mean scores in Mathematics in 2003 than a matched comparison group of schools.

Language Arts mastery appears to be a problem for the Jamaican primary education system as a whole. There is a general decrease in Language Arts performance in 2003 at both third and sixth grade levels. This follows a decline in the percentage of students reaching at least near mastery in 2001, 2002 and 2003. The increase in NHP girls reaching mastery over the baseline is equal to the non-NHP schools, but for boys it was considerably lower.

The success of NHP in improving student performance is questionable. Although NHP students have improved in their mastery of Language Arts and Mathematics over the baseline in 1998 to 2003, this improvement is only slightly higher for girls than that of similar schools without the NHP program over the same time period, and for boys it has been about equal or slightly lower.

[1] The original five-year contact was from 1998 through 2003, and in 2003, a two-year extension was signed with USAID/Jamaica

NHP has been successful in changing classroom environments so that they are organized to facilitate learning. Classroom environments improved each year in NHP schools. Children's work was displayed to a greater extent, teachers were positive when interacting with students, and in many classrooms, there was an improvement in the organization of space.

Although some progress has been made by the 2002 school year, the drop in 2003 indicates that the participatory, child-center classroom approaches, emphasized by the NHP program, have generally not been fully implemented in NHP classrooms.

NHP has been highly successful in providing ancillary learning materials to schools. However, such materials continue to be under-utilized in the classrooms.

The concentrated effort by NHP to provide hands-on professional development and other technical assistance at the school level has yet to show a significant impact on teacher behavior.

D. Implications

The decline of language arts performance over three consecutive years is somewhat alarming. NHP might explore these trends at their training activities with teachers and principals. If funds are available, NHP might conduct a special study in collaboration with the Ministry evaluation unit in project and non-project schools to determine the cause of the problem.

The similarity of test performance between NHP students and students in matched comparison schools bring into question the amount of resources needed to make significant change among schools serving those students who have had the least success in school, because of poverty and other factors. NHP performance in relation to the comparison group should be monitored closely over the remaining life of the project.

The increased use of the participatory, child-centered methodologies, espoused by NHP and the new primary curriculum suggests that achieving behavior change in schools and classrooms is a long-term endeavor. It may be that significant changes will only be found as the project nears completion at the end of the two-year extension in 2004. However, the high percentage of traditional pedagogical practices bring in to question whether such change will be sufficient to improve student performance, beyond that related to general system improvement.

The increased availability of materials should be taken advantage of as part of the NHP technical assistance. If not already contemplated, workshops and technical assistance visits should focus on training teachers to effectively use materials.

Although the administrative infrastructure for improvement in learning appears to be in place and is an important achievement of the NHP project, it is not yet focused on supporting NHP objectives. The relatively low percentage of schools implementing activities related to language arts and mathematics improvement may require special training for teachers and administrators

to make diagnosis of student performance and planning of strategies that will enhance student abilities in Mathematics and Language Arts and explicit part of the administrative process.

I. INTRODUCTION

This document describes the results of the fifth year of formative evaluation of the New Horizons for Primary Schools (NHP) Project. The evaluation is carried out near the end of the Jamaican school year (May-June) to provide a barometer of the progress of the project on a series of school and classroom indicators. However, as these indicators are related to the results of the third grade diagnostic and sixth grade GSAT tests, the report is not available until those test results are reported in at the end of August and the beginning of September. Originally, the formative evaluation had two purposes. First, the formative evaluation results inform the implementation of NHP interventions and permit NHP staff to target interventions in critical areas of the program. The results complement those of ongoing assessments of the implementation process undertaken informally through school visits, feedback on professional development efforts and periodic communication with school administrators and teachers. Second, the formative evaluation process serves to measure project results from an established baseline. As it provides systematic monitoring of performance over time, formative evaluation contributes to the measurement of final project results. Baseline indicators and projections of change over time derived from the 1999 formative evaluation are found in Appendix A of this report.

In 2001, 2002 and 2003, the formative evaluation had an additional purpose. In order to respond to the capacity building interests of the Ministry of Education, workshops on evaluation methodology were held for technicians in the Ministry of Education, members of local teachers' colleges, and New Horizon Project personnel. The workshops dealt with observation and interview techniques to measure progress toward NHP objectives. An additional workshop on data analysis and results of the evaluation was also conducted in 2001. Dr. Ray Chesterfield and Dr. Kjell Enge, who are experienced education evaluators, conducted the 2001 workshops. In 2002, Dr. Yasmeen Yusuf-Khalil, together with Heather Simpson and José Ferrel of Juárez and Associates conducted the data collection workshop, and in 2003, the workshop was managed and conducted by Heather Simpson and José Ferrel. Following the data collection workshop training, a team of the workshop participants collected data from a sample of NHP primary schools.

A. Background

The primary objective of New Horizons for Primary Schools (NHP) is to enhance the performance of Jamaican primary school students in numeracy and literacy. The focus of the technical assistance component of the project is on those children who, because of poverty and a lack of other enabling conditions, have had little academic success in school. Increased academic success is to be accomplished through the development of model interventions that, when tested, can be used to improve the performance of low-achieving children throughout Jamaica. Thus, the products of the contractor's work are changes in schools and classrooms that result in individual students having greater academic success in primary school. Such results include measurement of the indicators for the USAID strategic objective.

Systems, such as computerized administrative and student tracking systems, are also being implemented over the life of NHP. These systems are to assist schools in monitoring their own

performance. The results of such individual school monitoring can be aggregated to examine project performance. Similarly, NHP is integrating MOEC databases to provide additional data sources for monitoring performance. Until such systems are fully operational, however, monitoring is being carried out as part of the formative evaluation effort designed to provide feedback to program technicians implementing the interventions. As formative evaluation requires in-depth data collection, a representative sample of NHP schools is selected each year for evaluation purposes.

Many of the indicators for monitoring performance are complex concepts that require the combination of qualitative and quantitative methods to measure accurately. The following pages discuss the procedures used to collect data on NHP indicators. Subsequent chapters present the findings of the formative evaluation, in terms of change from the baseline data, and provide conclusions and implications drawn from these findings.

B. Methodology

1. Indicators

The indicators are taken largely from the U. S. literature on school/classroom effectiveness and on the growing body of international literature on classroom interaction and educational quality. Three levels of indicators were used. The first relates to student performance in terms of mastering the curriculum. The second consists of indicators of teacher performance that are generally associated with greater quality in terms of students' academic performance. The third are the indicators of system support or enabling factors such as efficient school management, professional development opportunities for teachers, and parent participation in the education of their children, that must be in place to improve the performance of individual children.

2. Design

A multi-method design, consisting of inventories, checklists, classroom observation forms, and focused interviews, was employed to measure the conditions in place for effective learning. This design allows for the measurement of the impact of the interventions implemented to improve learning, especially among students who have had limited success in school. Evaluation efforts focused on both females and males. This is important not only to ensure that initiatives are equitable but also to identify initiatives and strategies that are successful regardless of gender.

Study Sample: A stratified sample of 35% of project schools was drawn from the universe of 72 schools. Schools were stratified by size (small, medium, or large) and type (primary or all age) then randomly selected within strata. As the focus of the project is a "ground-up" approach that begins with needs identified by participating schools, those schools that had been most involved in NHP activities during the year were over-sampled. The final sample consists of 25 schools and 47 classrooms for intensive data collection and analysis.

The focus of the formative evaluation was on third grade. The purpose of the formative evaluation was to obtain in-depth, systematic data, in a limited amount of time. Thus, it concentrated on one grade as an indicator of general progress. Third grade was chosen, because there are test scores available that allow greater diagnostic ability and permit the monitoring of

change in the cohort of third graders serving as the baseline over the life of the project. This is important because both the1998 and 1999 NAP scores suggest that NHP children fall behind principally between third and sixth grade.

In the first two years of the evaluation, first, second, fourth, fifth and sixth grade classrooms were also observed. The data from these classrooms showed the same general patterns as those for the sample as a whole. This suggests that for monitoring purposes, third grade results can be used as a general indicator of progress.

Comparison Sample: A midterm evaluation of NHP conducted in June/July 2002, suggested that a comparison sample of schools similar to the NHP schools should be drawn. The evaluators argued that this would provide a fairer measure of NHP progress than comparing NHP to all non-NHP schools. In order to comply with this request, the formative evaluation team created a retrospective comparison group. Each of the 72 NHP schools were matched by size and by 1998 GSAT performance to a similar school in the same geographical area. The GSAT test results for each year for this group of schools were then compared to NHP schools.

Instruments: Instruments included classroom maps, materials inventories, classroom observation forms, classroom environment assessments, and interviews guides for use with teachers, students and school principals. Maps were employed to identify children and to examine the context in which they interact with teachers. Materials inventories measured both the presence and use of all materials at different times during math and language arts lessons. Observational sweeps were made at three points in time during each academic context. At each sweep, the number of books and ancillary materials available and in use, were counted. Classroom interaction was measured through a teacher-student interaction protocol. This instrument focused on teachers' interactions with individual students and the nature of those interactions in different academic classroom activities. In order to ensure consistency and control for contemporaneous events that might influence behavior patterns, the form was used for ten minutes at six different times during the instructional day in third grade classrooms. Three observations took place during mathematics lessons and three during language arts. Thus, a behavioral sample of 30 minutes for each of the target content areas was created. Researchers used the classroom environment instrument to rate the appropriateness of the classrooms for child-centered learning.

Teachers' perceptions of the interventions, as well as their mastery of and commitment to the new approaches implemented under NHP, were tapped by a teacher interview schedule. Similarly, changes in the school management planning and systems were measured through an interview with the principal. Students were queried about activities in the home and involvement of parents in the children's reading.

Fieldwork Procedures: A schedule of school visits was developed with the field workers, and NHP staff contacted the principals and informed them of the visits. Two of the backstop personnel for the institutional contractor assisted a local researcher coordinator in scheduling and supervising the fieldwork. Fieldworkers synchronized observations through training exercises during the workshop. This training included exercises with the instruments using videotapes of

classroom interaction in schools to ensure consistency in observations and interviewing. Parallel observations were conducted with the instruments until an inter-observer agreement coefficient of above .76 was reached for all observational instruments.

The researchers worked in small teams of up to six people and spent up to one full day at each school collecting data. Procedural guides and operational definitions were attached to specific instruments as references to ensure consistency in field procedures during the investigation. Following each day of fieldwork, the coordinator gathered the instruments from the teams and the backstop personnel monitored the quality of the data collection and entered the information into SPSS spreadsheets. Twenty-five schools were visited and complete sets of data were collected from 48 classrooms.

Data Analysis: The principal unit of analysis was the classroom. As the interventions are focused largely on improving teaching, it is changes in classroom-level environments and behaviors that affect student learning. Data analysis consisted of calculating the absolute and relative frequencies of each behavioral indicator and making comparisons across the three evaluation years. Differences by types of schools were also examined. Special indices were created to measure complex issues such as teaching quality. Where appropriate, statistics such as chi-square and correlations were used to examine relationships among the sample.

C. Assumptions

The ongoing formative evaluation is based on several assumptions. First, the school and the class are the key units of analysis in planning and intervening to improve the quality of learning. Second, the school is a social system and the interaction of all of the elements within a school has an influence on student learning beyond that provided individually by inputs to the school. This is not to suggest that the uniqueness of each school makes aggregate measurement impossible, but rather that accurate measurement of the impact of schooling is a complex undertaking requiring the integration of a variety of data collection approaches.

II. FINDINGS

A. Student Performance

Jamaica is promoting pupil-centered "everyone can learn" concept of teaching rather than a norm-based "cream of the crop" approach. Thus, the focus is shifting to all children's mastery of the curricular content. This means that the array of individual scores will shift from the normal distribution or "bell shaped curve" associated with a norm-based assessment and mean scores, toward a "J-curve" with a few students falling at the low end and the middle and most scores reflecting a high degree of learning. However, with the current inverse J-curve, the first step is to move students to "near mastery" levels. The formative evaluation originally examined both third and sixth grade mastery. Thus, the NAP and Student Assessment Unit criteria of less than 50% of the items in each domain correct as "no mastery" level, was used in the evaluation. Although NAP does not designate mastery levels for the sixth grade GSAT, the criteria used at the third grade level was employed in determining student progress (less than 50% correct = "no mastery," 50% to 75% correct = "near mastery" and above 75% = "mastery".

It has proved somewhat difficult to obtain complete data sets of either NHP or non-NHP third grade tests, owing to their diagnostic purpose, which leads schools not to report results. Thus, the USAID strategic objective team uses only sixth grade in their reporting. The formative evaluation will continue to include third grade tests when they become available. Both third grade and results and sixth grade results for 2003 are included in this report. All test results are reported in relation to 1998, the baseline year.

1. Mathematics

a) Third Grade

Table 1 shows the change in the percentage of children reaching near mastery of the third grade mathematics curriculum, as measured on the diagnostic test for that subject. Changes in student performance in NHP schools are compared to all primary schools not participating in the NHP program. Both yearly change and total change from the baseline are provided. As can be seen, there is a moderate overall change (+9.5%) for NHP from 1998 to 2003. Over these six years, NHP children have made relatively greater gains in test performance in reaching near mastery than Jamaican third grade school children as a whole, and this is true for both boys and girls. However, in the 2000 school year, there was a decline in third grade near mastery performance for all groups of children and NHP children had greater declines than their counterparts. In 2003, the NHP girls experienced a slight decline in comparison to a 3.4% increase for the non-NHP population, whereas NHP boys were 5.4% lower than non-NHP boys.

Table 1: Change in Near Mastery on Third Grade Diagnostic Mathematics Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	37.9		43.0		28.8		33.8	
1999	45.1	+7.2	45.0	+2.0	37.0	+8.2	38.5	+4.7
2000	38.0	-7.1	43.0	-2.0	29.0	-8.0	35.0	-3.5
2001	41.8	+3.8	41.0	-2.0	34.8	+5.8	36.5	+1.5
2002	48.1	+6.3	45.2	+4.2	37.1	+2.2	40.5	+4.0
2003	47.4	-0.7	48.6	+3.4	31.2	-5.9	40.0	-0.5
Change from Baseline		+9.5		+5.6		+2.4		+6.2

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

Lower near mastery levels may be the result of greater numbers of the third grade population reaching mastery. This is shown both by the percentage of children in the mastery category in subsequent years and by the total percentage of children in the mastery and near mastery categories. Ideally, all children will be in the mastery category. Table 2 shows a continued decline for both NHP and non-NHP schools, but the largest declines are in the non-NHP schools for both boys and girls. Overall, girls had nearly twice the decline as compared to boys.

Table 2: Change in Mastery on Third Grade Diagnostic Mathematic Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	9.3		12.7		4.1		7.9	
1999	19.4	+10.1	28.0	+15.3	11.8	+7.7	19.5	+11.6
2000	18.0	-1.4	24.0	-4.0	9.0	-2.8	15.0	-4.5
2001	21.9	+3.9	35.3	+11.3	11.4	+2.4	25.3	+10.3
2002	17.2	-4.7	28.7	-6.6	8.9	-2.5	19.7	-5.6
2003	10.3	-6.9	19.3	-9.4	6.0	-2.9	15.0	-4.7
Change from Baseline		+1.0		+6.6		+1.9		+7.1

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

Table 3 shows that there has been substantial improvement in third grade children's performance in mathematics from the 1998 baseline to 2002. But one year later in 2003, both genders in NHP and non-NHP schools experienced declines, and the declines in the NHP schools were 2-3% greater than in their non-NHP counterparts. NHP boys had the highest decrease and the lowest was for the non-NHP boys. At the same time, the NHP girls had lower decreases than their non-NHP girls.

Table 3: Change in Mastery and Near Mastery on Third Grade Diagnostic Mathematics Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	47.2		55.7		32.9		41.5	
1999	64.5	+17.3	73.0	+17.3	48.8	+15.9	58.0	+16.5
2000	56.0	-8.5	67.0	-6.0	38.0	-10.8	50.0	-8.0
2001	63.7	+7.7	76.3	+9.3	46.2	+8.2	61.8	+11.8
2002	65.3	+1.6	73.9	-2.4	46.0	-0.2	60.2	-1.6
2003	57.7	-7.6	68.0	-5.9	37.2	-8.8	54.5	-5.7
Change from Baseline		+10.5		+12.3		+4.3		+13.0

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

b) Sixth Grade

Table 4 shows the change in the percentage of children reaching near mastery of the sixth grade mathematics curriculum, as measured on the GSAT test for that subject. Changes in student performance in NHP schools are compared to all primary schools not participating in the NHP program. As can be seen, there is significant change from 1998 to 2002. NHP children have made relatively greater gains in reaching near mastery than Jamaican primary school children as a whole, and this is true for both boys and girls. Both girls and boys in NHP schools had larger gains than their counterparts in the 2001-2002 school year. But all children experienced a decrease in near mastery from 2002 to 2003, and the decreases for both NHP boys and girls were about twice that of their non-NHP counterparts.

Table 4: Change in Near Mastery on GSAT Mathematics in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	13.9		26.5		5.5		13.8	
1999	22.2	+8.3	31.9	+5.4	8.8	+3.3	17.3	+3.5
2000	30.0	+7.8	31.8	-0.1	19.2	+10.4	22.9	+5.6
2001	32.2	+2.2	36.8	+5.0	20.6	+1.4	25.9	+3.0
2002	36.0	+3.8	38.4	+1.6	23.5	+2.9	27.6	+1.9
2003	27.1	-8.9	34.2	-4.2	17.2	-6.3	24.2	-3.4
Change from Baseline		+13.2		+7.7		+11.7		+10.4

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

NHP has been less successful in moving children to mastery than to near mastery. As shown in Table 5, the overall increase in mastery levels have been higher for non-NHP boys and girls, but the NHP girls have increase more than the boys. Although there has been an overall positive increase among NHP children of both genders from 1998 to 2000, there have been annual

decreases for both NHP and non-NHP students from 2000 to 2003, and the largest decline was for girls from 2002 to 2003. Both genders in the Jamaican primary school population as a whole declined in the percentage of students reaching mastery, but the percentage of children at the mastery level in non-NHP schools is almost triple that of NHP boys and girls.

Table 5: Change in Mastery on GSAT Mathematics in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	0.3		2.9		0.2		2.3	
1999	1.7	+1.4	6.9	+4	0.8	+0.6	4.0	+1.7
2000	10.9	+9.2	22.8	+15.9	5.7	+4.9	15.5	+11.5
2001	9.8	-1.1	21.5	-1.3	5.2	-0.5	14.8	-0.7
2002	9.2	-0.6	19.2	-2.3	5.3	+0.1	13.5	-1.3
2003	6.0	-3.2	15.1	-4.1	4.0	-1.3	11.6	-1.9
Change from Baseline		+5.7		+12.2		+3.8		+9.3

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

The change in children at near mastery and mastery has been more almost 20% for girls and 15% for boys (Table 6). This increase is about the same for NHP girls as for girls in the system as a whole. However, the percentage of girls with no mastery is still 16% greater in NHP than in system as a whole, owing to the low initial performance of children in the program. The general population of boys has shown a four percent greater increase in the combined near-mastery/mastery as the boys in NHP.

Table 6: Change in Near Mastery and Mastery on GSAT Mathematics in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	14.2		29.4		5.7		16.1	
1999	23.9	+9.7	38.8	+9.4	9.6	+3.9	21.3	+5.2
2000	40.9	+17.0	54.6	+15.8	24.9	+15.3	38.4	+17.1
2001	42.0	+1.1	58.3	+3.7	25.8	+0.9	40.7	+2.3
2002	45.2	+3.2	57.6	-0.7	28.8	+3.0	41.2	+0.5
2003	33.1	-12.1	49.3	-8.3	21.2	-7.6	35.9	-5.3
Change from Baseline		+18.9		+19.9		+15.5		+19.8

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002 database

Table 7 presents the mean scores in mathematics for NHP and a matched comparison group. As can be seen, NHP progress in Mathematics has been almost identical to that of similar schools

without the NHP program. Both groups have increased by about 15 to 20% in terms of mean scores.

Table 7: Change in Mean Scores on GSAT Mathematics in NHP and Comparison Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Comparison	Change by Year	NHP	Change by Year	Comparison	Change by Year
1998	26.6		28.5		21.2		21.7	
1999	31.3	+4.7	32.3	+3.8	25.9	+4.7	26.3	+4.6
2000	35.3	+4.0	36.0	+3.7	28.3	+2.7	28.0	+1.7
2001	37.0	+1.7	38.0	+2.0	30.2	+1.9	31.1	+3.1
2002	38.2	+1.2	37.9	-0.1	32.1	+1.9	31.4	+0.3
2003	43.4	+5.2	44.0	+6.1	37.9	+5.8	38.0	+6.6
Change from Baseline		+16.8		+15.5		+16.7		+16.3

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

2. Language Arts

a) Third Grade

Tables 8, 9 and 10 show that improvement in students' mastery of third grade Language Arts curriculum has been difficult for NHP to achieve. The percentage of both NHP and non-NHP children reaching near mastery has declined since 1998. As mentioned, such a decline may be the result of a greater percentage of students reaching mastery. This appears to be the case among NHP and non-NHP children, but as shown in Table 8, the 2002 to 2003 decline for NHP boys was the lowest in comparison to the others. Furthermore, in the mastery levels the NHP boys show the smallest increase since 1998. All students have an increase in mastery levels from the baseline that are greater than the decline in near mastery. At the same time, there is a net increase in the combined near mastery and mastery levels non-NHP students and NHP boys, but for the NHP girls there has been a small decrease since the 1998 baseline.

Table 8: Change in Near Mastery on Third Grade Diagnostic Language Arts Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	46.9		40.7		37.8		40.0	
1999	42.0	-4.9	34.6	-6.1	37.9	+0.1	34.8	-5.2
2000	42.0	0	39.0	+4.4	34.0	-3.9	37.0	+2.2
2001	36.7	-5.3	32.4	-6.6	33.3	-0.7	32.9	-4.1
2002	42.1	+5.4	35.7	+3.3	36.4	+3.1	36.3	+3.4
2003	40.2	-1.9	36.9	+1.2	36.3	-0.1	36.8	+0.5
Change from Baseline		-6.7		-3.8		-1.5		-3.2

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001 and 2002 database

Table 9: Change in Mastery on Third Grade Diagnostic Language Arts Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	26.2		37.7		13.5		21.9	
1999	31.1	+4.9	46.1	+8.4	16.5	+3.0	29.0	+7.1
2000	28.0	-3.1	38.0	-8.1	13.0	-3.5	23.0	-6.0
2001	32.8	+4.8	48.5	+10.5	16.9	+3.9	33.1	+10.1
2002	33.9	+1.1	45.7	-2.8	16.2	-0.7	29.4	-3.7
2003	32.1	-1.8	44.4	-1.3	15.6	-0.6	28.7	-0.7
Change from Baseline		+5.9		+8.0		+2.1		+6.8

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

Table 10: Change in Mastery and Near Mastery on Third Grade Diagnostic Language Arts Test in NHP and non-NHP Schools by Gender and Year

Year	Third Grade Female				Third Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	73.1		78.4		51.3		61.9	
1999	73.1	0	80.7	+2.3	54.4	+3.1	63.8	+1.9
2000	70.0	-3.1	77.0	-3.7	47.0	-7.4	60.0	-3.8
2001	69.5	-0.5	80.9	+3.9	50.2	+3.2	66.0	+6.0
2002	75.9	+6.4	81.4	+0.5	52.6	+2.4	65.7	-0.3
2003	72.3	-3.6	81.3	-0.1	51.9	+0.7	65.5	-0.2
Change from Baseline		-0.8		+2.9		+0.6		+3.6

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

b) Sixth Grade

Change in language arts performance at the near mastery level follows a similar trend to that for mathematics among NHP students. There are greater gains over time for NHP students than for their counterparts. However, in 2003 there is a continuation of the general decline in the percentage of NHP children at near mastery which started 2002. Boys in the general population follow a pattern similar to NHP children. Non-NHP girls, however, show an overall drop from the baseline year.

Table 11: Change in Near Mastery on GSAT Language Arts in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	34.2		39.6		15.2		23.5	
1999	37.3	+3.1	42.3	+2.7	17.3	+2.1	25.3	+1.8
2000	36.8	-0.5	33.7	-8.6	22.4	+5.1	25.0	-0.3
2001	38.7	+1.9	37.8	+4.1	25.6	+3.2	27.8	+2.8
2002	37.7	-1.0	38.4	+0.6	22.0	-3.6	27.1	-0.7
2003	37.5	-0.2	39.4	+1.0	20.9	-1.1	27.1	0.0
Change from Baseline		+3.3		-0.2		+5.7		+3.6

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

Change in the percentage of students reaching mastery is similar for both NHP and the general population of Jamaican primary students. There is a decline among all groups in 2002, and the declined continued in 2003, except for the non-NHP boys that had a small increase of about 1%. The decline among NHP girls is slightly greater than that of their counterparts. Overall change from the baseline is similar for all groups. However, lower percentages of NHP children are at mastery because of lower initial levels in 1998.

Table 12: Change in Mastery on GSAT Language Arts in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	8.3		20.4		2.1		8.2	
1999	9.3	+1	18.2	-2.2	1.6	-0.5	7.4	-0.8
2000	26.6	+17.3	39.3	+21.1	12.6	+11.0	24.6	+17.2
2001	18.6	-8.0	33.7	-5.6	8.4	-4.2	20.2	-4.4
2002	12.9	-5.7	24.7	-9.0	7.4	-1.0	13.5	-6.7
2003	10.4	-2.5	22.5	-2.2	5.5	-1.9	14.6	+1.1
Change from Baseline		+2.1		+2.1		+3.4		+6.4

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

As shown in Table 13, NHP children of both genders have had larger relative decreases in reaching near mastery or mastery from 2002 to 2003 than the remaining sixth grade population. However, there has not been the same success in closing the original gap between NHP students and the general population in language arts as was found in mathematics. The difference in the combined change is 5.4%, but the boys have nearly double the gain reaching 9.1%. The gap between NHP and non-NHP boys and girls is about 15%. The negative change found in children reaching mastery in 2001, 2002 and 2003 is reflected in the relative drops in the combined percentages across all groups.

Table 13: Change in Near Mastery and Mastery on GSAT Language Arts in NHP and non-NHP Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Non-NHP	Change by Year	NHP	Change by Year	Non-NHP	Change by Year
1998	42.5		60.0		17.3		31.7	
1999	46.6	+4.1	60.5	+0.5	19.9	+2.6	32.7	+1.0
2000	63.4	+16.8	73.0	+12.5	35.0	+15.1	49.6	+16.9
2001	57.3	-6.1	71.5	-1.5	34.0	-1.0	48.0	-1.6
2002	50.6	-6.7	63.9	-7.6	29.5	-4.5	43.1	-4.9
2003	47.9	-2.7	61.9	-2.0	26.4	-3.1	41.7	-1.4
Change from Baseline		+5.4		+1.9		+9.1		+10.0

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

The results for language arts mean scores with the comparison group of children shown in Table 14 are similar to those of mastery for the population as a whole. NHP students have made greater gains over comparison group. However the difference in gains is about three percentage points for the girls and less than one percent for the boys. In addition, both groups have had decline in 2001 and 2002, but increased substantially in 2003. However, all the increase were remarkably similar in magnitude.

Table 14: Change in Mean Scores on GSAT Language Arts in NHP and Comparison Schools by Gender and Year

Year	Sixth Grade Female				Sixth Grade Male			
	NHP	Change by Year	Comparison	Change by Year	NHP	Change by Year	Comparison	Change by Year
1998	37.3		40.5		27.7		28.7	
1999	38.5	+1.2	40.1	-0.4	28.4	+0.7	29.5	+0.8
2000	44.7	+7.4	44.9	+4.8	33.7	+5.3	33.4	+3.9
2001	42.9	-1.8	44.7	-0.2	33.6	-0.1	34.1	+0.7
2002	40.7	-2.2	40.9	-3.8	33.4	-0.2	32.6	-1.5
2003	49.7	+9.0	50.2	+9.3	40.5	+7.1	40.9	+8.3
Change from Baseline		+12.4		+9.7		+12.8		+12.2

Source: NAP 1998 and 1999 database, Student assessment Unit 2000, 2001, 2002, 2003 database

B. Teaching Quality

Teaching quality was measured through an index made up of three generally accepted standards for determining teacher performance: content knowledge of students; environment for student learning; and teaching for student learning. The first of these dimensions has been discussed in the previous section. Third grade performance, measured as the percentage of NHP children reaching near mastery and mastery over all NHP children taking the third grade diagnostic tests was used as the measure of content knowledge. Both mathematics and language arts performance are used in this index. There has been improvement in the overall index each year of project implementation. However, the change has been small. It has gone from .43 in 1999 to .52 in 2002 and then back down to .47 in 2003. As will be shown below, this is largely the result of the minimal change in teaching for student learning.

Learning environment standards relate to the social and emotional components of learning as prerequisites to and context for academic achievement. Thus, the focus is on the physical setting created by the teacher and the resources available. A six-item scale, dealing with the fostering of a positive self-concept, the creation of a nurturing environment that supports gender equity, and the organization of space and materials to allow a variety of learning opportunities, was used to measure the quality of the environment. Researchers used the assessment instrument after a complete series of observations in a classroom. Specific criteria were provided with each item to ground the ratings. Ratings were made on a three-point scale of "not met," "partially met," and "fully met". Thus, scores ranged between a minimum of six and a maximum of 18. Scores were expressed as a ratio of the actual score over the total possible score.

Table 15 compares the classroom environment scores for 1999, 2000, 2001, 2002 and 2003 as been and improvement each year. This improvement is related to the implementation of the new curriculum in NHP schools and the interventions of NHP. Both emphasize changing the classroom environment to create a participatory situation for students. Classroom environment scores that were lower for the large schools in 1999 to 2001 have become quite similar by 2003.

Table 15: Mean Classroom Environment Scores by School Size

Mean/School Size	1999	2000	2001	2002	2003
Small	.5929	.6389	.7350	.7589	.7996
Medium	.5900	.6588	.7359	.7597	.7993
Large	.4867	.5490	.7080	.7845	.7948
Total	.5464	.6115	.7218	.7711	.7977

In 2001, 2002 and 2003, classrooms generally met criteria of lack of physical punishment and interacting with individual children often. Equal lighting, ventilation, and furniture for boys and girls were also generally met, and there was an increase in displaying children's work. Other criteria such as creating a variety of learning opportunities within the classroom, encouraging children to express themselves with peers and adults, using materials that showed males and females in traditional and non-traditional roles, showed improvement in 2003. This reflects teachers increasing ability to use the limited space available in many of the classrooms, especially those in larger schools, in creative ways.

Teaching for student learning is concerned with the act of teaching and its overall goal of helping students understand the content that they are imparting and the ability to present the content in a manner that is consistent with the knowledge, interests and abilities of the students. For the purposes of monitoring, the focus has been on interactions in the classroom between teachers and students. Student-initiated interactions were taken as an indicator; as such interactions show teachers' willingness to recognize student input. Student-initiated were found to be a very low percentage of all interactions in teacher-centered classrooms. As mentioned, a corpus of 60 minutes of observations of academic lessons was collected in each classroom. These observations were divided equally between mathematics lessons and language arts lessons.

Table 16 presents the percentage of observed interactions initiated by teachers and students in the normally occurring contexts of the classroom in 1999, 2000, 2001, 2002 and 2003. The table shows the percentage of interactions initiated by each actor in the contexts observed taking place in the classroom. The bottom row provides the overall percentage of interactions initiated by teachers, boys, and girls. Teacher-initiated interactions predominate in all four years. They make up at least 87.7% of all interactions. Student-initiated interactions increased somewhat from 1999 to 2000, but decreased in 2001. They increased slightly in 2002 but went on to decrease in 2003, nearly reaching the 1999 baseline levels. The continued high percentage of teacher-initiated interactions suggest that there has been little progress in changing the pedagogy employed by NHP teachers, as teaching strategies remain centered on the teacher initiating learning opportunities for children. Little difference is noted by the gender of the students, as both boys and girls initiate interactions with similar frequency.

Table 16: Interactions Initiated by Teachers and Students

Year	Interaction Initiator		
	Teacher	Boy	Girl
1999	92.5%	3.8%	3.6%
2000	88.7%	5.2%	6.1%
2001	90.1%	3.6%	4.9%
2002	87.7%	5.1%	6.9%
2003	91.2%	3.8%	5.0%

Table 17 shows the types of contexts in which the interactions occurred. As can be seen there has been a change in use of small group contexts in NHP schools during the 2002 school year. The use of this learning context, which is indicative of student participation and a decentralization of learning, has increased by 10%, but then went on to decrease by about 3% in 2003. At the same time there was a 10% increase in large group activities and a continued decrease in the relative amount of seatwork. The traditional context of a large group in which the teacher works with the entire class remains the principal instructional method and is the context in which three-quarters of interactions occur. As would be expected, the participation in these contexts is very similar for girls and boys.

Table 17: Interactions by Classroom Context

Classroom Context	1999	2000	2001	2002	2003
Teacher-led small group	9.2%	2.4%	7.3%	17.5%	13.3%
Student-led small group	2.1%	.3%	.5%	0.4%	1.5%
Large group	49.2%	75.5%	65.2%	66.0%	75.7%
Seatwork	34.4%	19.4%	23.9%	15.2%	6.4%
No instruction	5.1%	2.5%	3.2%	0.7%	3.1%

C. Teaching Skills

Several indicators of teaching skill are important to the NHP project. Obviously, the ability to effectively create an environment that instills self-confidence in students and allows them multiple learning opportunities, discussed previously under teaching quality, is related to pedagogical ability. The focus here is on specific behaviors engaged in by teachers that encourage children to participate in the learning process. Included are: the quality of teacher-student interactions and the use of materials by students; teachers' mastery of and commitment to the interventions introduced by NHP; and teachers' strategies for encouraging student participation through regular attendance.

Quality of teacher-student interactions: Teachers' ability to impart information and encourage inquiry rests largely with the types of verbal and non-verbal interactions that they use to engage students. To be effective, such interactions create situations that allow students to apply their knowledge and not merely memorize facts. Teachers must also monitor learning to make certain that students assimilate information accurately and can use what they have learned. Permitting students to expand ideas together with providing feedback and explanation as needed are generally considered manifestations of these skills.

The structured observations of mathematics and language arts, described previously, were used to collect data on the quality of student-teacher interactions. The percentage of all interactions that involved explanation and feedback was used as the measure of teaching skill. As shown in Table 18, the percentage of interactions that included explanation or expansion of ideas has increase by about 10% over the life of the NHP project (from 13.4% to 22.5%). Feedback in the form of praise shows a positive increase in the first three years, a slight decline in 2002, and a

5% increase in 2003. Feedback through punishment was similar for the four years and occurs in a small percentage of interactions.

Table 18: Quality of Interactions

Context/Interaction	1999	2000	2001	2002	2003
Questions	37.3%	64.1%	48.3%	59.0%	58.1%
Expands	13.4%	7.3%	17.1%	23.0%	22.5%
Orders	40.6%	30.3%	38.5%	47.7%	51.7%
Dictates/Lectures	20.3%	18.1%	9.2%	3.2%	4.6%
Reinforces	2.9%	3.3%	8.2%	7.7%	12.9%
Punishes	1.5%	1.3%	3.2%	1.6%	1.6%

Questions and commands are the principal types of speech behaviors engaged in by teachers. They have increased over 2001 percentages. Dictation and lecturing decreased from 2001 to 2002, but then increased slightly in 2003. Although explanation and feedback remain a small part of the quality of teacher's speech acts, this again reflects attempts to engage students in the learning process.

Use of materials: A principal focus of the project is on improving the availability and use of instructional materials. Both texts and supplementary instructional provide children with a channel for interacting with academic content on an ongoing basis. Often, however, it is assumed that children have books available and that teachers are trained in using instructional materials effectively. Teachers may lack practical experience in using texts and when working in a development situation may face overcrowded classrooms, children without books and little in alternative instructional resources. Thus, they resort to extensive lecture and use of the chalkboard. The purpose of this indicator is to confirm the provision of sufficient supplementary materials to classrooms of project schools to enrich the teaching and learning of literacy and numeracy. However, availability of materials alone is not an adequate measure, as students must use materials in order to enhance academic achievement.

Use of materials was measured by three visual sweeps of the classroom during both mathematics and language arts lessons. During the sweeps, the number of available books and supplementary instructional materials and manipulatives were counted separately then the number actually in use was noted. The average number of materials available per child, as well as the average number of materials in use was calculated.

As shown in Table 19, both mathematics texts and supplementary materials such as manipulatives, and reading materials increased in the classrooms. This was in part due to the supplementary materials provided by NHP, which were present in a number of sample classrooms. However, in several schools these materials were found stored in the teacher's office or in libraries rather than present in classrooms. The availability of reading materials increased to the extent that almost two texts per child, on the average, were observed to be readily available in the sample classrooms.

Table 19: Availability and Use of Texts and Other Learning Materials

Subject	Availability					Use				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Math	.20	.40	.54	.69	.55	.25	.13	.18	.18	.13
Reading	.40	.90	.91	1.73	.96	.27	.20	.13	.25	.15

The use of materials has remained low. Less that one in five children, on the average were observed to use mathematics texts or manipulatives during lessons. Similarly, only one in four students was observed to use reading/language arts materials during lessons in this area. This is especially alarming given the number of resources that NHP and the Ministry have made available in this area.

Mastery of NHP interventions: There is consensus in the international literature on educational innovation that mastery of new instructional approaches by teachers is a critical factor in adoption and sustainability. As NHP interventions were not yet in place when the formative evaluation was initiated in 1999, mastery was measured by asking teachers about the general objectives of the program. A second factor closely associated with mastery of the innovation is commitment to the new approach. This aspect of teaching skill was measured through a series of hypothetical questions in the teacher interview on circumstances that might deter a teacher from using an approach.

When asked about their knowledge of the NHP program, only about one-fifth of the teachers said it targets less successful students, and almost one-half mentioned strategies for using instructional materials. Since the main focus of NHP is on reading and math skills, the Table 20 shows that in 1999, a little over one-third answered reading and math, about one-half the next year, over two-thirds in 2001, by 2002, the percentage dropped by about 10, but went up to about 70% by 2003. A plausible explanation of the 2002 reduction in knowledge is that many of the teachers were reassigned and new teachers entered the NHP schools and by 2003 more had become familiar with the NHP interventions.

Table 20: Teacher Support of NHP

Year/Teacher Response	1999	2000	2001	2002	2003
Knowledge of NHP	36%	52%	72%	62.5%	70.2%
Use of Incentives	57%	70%	72%	79.2%	76.6%

Strategies for encouraging attendance: The purpose of this indicator is to measure the extent to which project activities impact absenteeism rates among students. Attendance was examined by student gender, as male attendance is traditionally lower than female attendance throughout the country. As official school attendance may run the risk of inflation or deflation, a correction factor of observed attendance recorded by the evaluation team was built into the measure. The key to the success of incentive programs will be their integration with the teaching-learning process; thus, classroom teachers are the appropriate source of information about incentives. Teachers were asked to list all of those incentives that they were using in their classrooms.

Up to 2002, there was an increase in the percentage of teachers using incentive strategies and a small decrease in 2003. In 1999, half of the teachers interviewed stated that they used incentives to increase attendance. In 2000, 70% of the sample described strategies used to encourage students to come to school. In 2001, 72% of the sample identified the incentives. In 2002, 79% of the sample identified incentives and in 2003 this had dropped to 77%, a very small decrease.

D. School Visits by NHP Specialists

In 2003, 38 of the 47 (81%) teachers interviewed reported that NHP specialists had visited their classrooms, and the table below shows the specific activities carried out by the project specialists. The data show that NHP observation of teaching was reduced considerably by 2002 and 2003 and didactic training and the demonstration of new teaching methods have increased since 2001.

Table 21: Teachers' Recollection of NHP Specialists' Activities

Activity	Number			Percent		
	2001	2002	2003	2001	2002	2003
Observe Teaching	29	28	28	91	58	60
Didactic Training	8	14	26	24	29	55
Demonstrate New Materials	2	9	5	6	19	11
Show how to use technology	n/a	n/a	1	n/a	n/a	2
Demonstrate New Teaching Methods	8	18	16	24	38	34

E. System Support

In order to improve the success of children, teachers must be supported by an infrastructure at the school and national level. This includes support for professional development that will contribute to successful teaching and learning, effective management of the local learning institution to ensure that teachers can focus on teaching, and participation of community members in the education of their children.

1. Professional Development

Training to upgrade skills and knowledge is one of the main ways that a school system provides support for teachers. Such training can come about through in-service courses and workshops or through interaction with colleagues who have specialized knowledge in a particular subject area such as mathematics or language arts. This indicator establishes the number of teachers that have engaged in professional development activities as a consequence of their participation in New Horizons. The indicator takes into account training in Jamaica and abroad. Schools with resource teachers are also used as an indicator. All professional development activities are coordinated with the Professional Development Unit of the MOEC.

Table 22 shows the four-year trends of teachers' participation in NHP training workshops and the percentage of schools that have resource teachers that provide in-service training and support

for the implementation of NHP interventions. In May of 1999, none of the sample teachers had participated in NHP workshops, but by the 2001 evaluation, all of the sample teachers had participated. In 2002, the percent of the sample teachers who had participated had dropped to 88%, and as mentioned above, this was due to teacher reassignments, and some of the new teachers had not yet participated in NHP training workshops. However, in 2003 the percentage who attended NHP workshops was once again up to 100%.

Table 22: NHP Professional Development

Professional Development/Year	1999	2000	2001	2002	2003
Teachers participate in Workshops	0%	85%	100%	88%	100%
Schools with Resource Teachers	15%	94%	100%	98%	100%

2. School management

Tracking of school resources and students is an important function of school management. Such tracking should be undertaken within a framework of specific objectives and activities. Thus, the utilization of school development plans in regard to NHP activities together with the utilization of the computer and accompanying administrative software, which can speed principals' decision-making and ease reporting burdens, are the indicators of effective school management. Effectiveness of school boards is an additional indicator of school management. Measures for this aspect of management will be developed by the NCE.

As part of the NHP program, principals were asked to design development plans taking into consideration school needs, teacher training, curriculum design and parent/community involvement, especially as related to improving student literacy and numeracy. Among sample principals, 30% had completed this task at the time of 1999 formative evaluation data collection. Since most of those interviewed mentioned progress in completing the plans, it was expected that the number would increase rapidly. As can be seen from Table 26, all principals were implementing their development plans by May of 2000.

Given that all of the sample schools had school development, a new indicator that was sensitive to implementation of the plans was developed. The new indicator is an index that measures whether or not schools are implementing activities in their SDPs related to literacy and numeracy by assigning the value of 1 to schools that are doing both, 0.5 to schools that are doing either literacy or numeracy, and 0 to schools that are doing neither; the sum of these values was then divided by the number of schools in the sample. The value of the index was .52 in 2001, .67 in 2002 and dropped to .44 in 2003, reaching less than half the planned target for 2003.

Table 23: NHP School Management

Professional Development/Year	1999	2000	2001	2002	2003
School Development Plan	30%	100%	100%	100%	100%
School Development Plan Implementation	NA	NA	.52	.67	.44
Computer present	25%	68%	100%	100%	100%
Computer used for administration	0	20%	61%	88%	60%

The percentage of schools with computers increased each year, and all NHP schools had computers in 2001 2002 and 2003. In 2001, ninety-four percent of the principals said that they had received a computer from NHP; in 2002, 96% of the principals said they had received a computer from NHP, and 2003 it was 100%. With the training provided by NHP, the use of computers for administration increased from 61% in 2001 to 88% in 2002 and dropped to 60% the following year.

F. Community Involvement

The body of research on parent participation shows positive effects brought about by parental emphasis on literacy and other achievement in the home. As the focus of the project is on improved student learning, parental participation in learning is measured. In addition, parental participation in management is important to assure that schooling is relevant to community interests. Thus, the presence of parent-teacher associations and the frequency of their meetings are also indicators monitored through the formative evaluation. Other indicators, such as the number of schools with parent participation programs and training for parent and community leaders, will be monitored in partnership with the NCE.

Samples of NHP students were asked about parental involvement in their studies. In 1999, these interviews were conducted as part of the NHP school survey, whereas in 2000 and 2001, data were collected as part of the formative evaluation. Table 27 shows that there has been a slight increase each year from 1999 to 2001 in the number of students who stated that either their father or their mother assisted them in their reading, a 10% decrease in 2002, and another small decrease in 2003. When all family members are considered, in 2001, 94% of the children who said that they read at home did so with a family member. In 2002, the percentage had dropped to 76% of the children in the sample, and in 2003 the percentage had dropped to 74.

As with the previous two years, all the schools in the 2002 sample reported having Parent-Teacher organizations, but there was a 10% drop in the percent of PTAs that meet on a regular basis, and in 2003 the same percentage of school PTAs continued to meet regularly as in the previous year.

Table 24: NHP Community Involvement

Year	1999	2000	2001	2002	2003
Parent Participation in Learning	36%	42%	54%	44.4%	42.9%
PTA present	89%	100%	100%	100%	100%
PTA meets regularly	33%	94%	94%	84%	84%

III. CONCLUSIONS AND IMPLICATIONS

The purpose of the study was to assess the progress made by the New Horizons in implementing activities that will lead to increased numeracy and literacy for students who have had limited success in school. The comparisons made from the baseline year of 1998, or in the case of the qualitative data 1999, with the results of the formative evaluation in subsequent years (2000, 2001, 2002, and 2003) allow certain conclusions and implications to be drawn that can help to guide further implementation of the program.

A. Conclusions

NHP has been most successful in improving the near mastery levels of Mathematics. NHP students have improved over the baseline in1998 in both third and sixth grade and the improvement has been greater than that for children in the system as a whole. However, NHP students have mean scores in Mathematics in 2003 similar to a matched comparison group of schools.

The percentage of NHP students reaching near mastery and mastery on the Mathematics GSAT increased 13.2% for girls and 7.7% for boys from the 1998 baseline to 2002. This compares to increases of 11.7% for girls and 10.4% for boys in non-NHP schools. In third grade, the percentages of students at near mastery and mastery were 1.7% lower for NHP girls and 8.7% lower for NHP boys. However, the changes from the 1998 baseline in GSAT mean scores were at least 5.5% higher for NHP girls and 1.3% for boys in relation to the matched comparison group.

Language Arts mastery appears to be a problem for the Jamaican primary education system as a whole. There is a general decrease in Language Arts performance in 2003 at both third and sixth grade levels. The percentage of children at mastery in third grade and sixth grade declined in Language Arts from 2002 to 2003. Near mastery levels were also generally lower on the GSAT in 2003. NHP students of both sexes in 2003 had a greater decline than their counterparts in the system as a whole.

The success of NHP in improving student performance is questionable. NHP students have approximately the same means in Language Arts and Mathematics in 2003 as that of similar schools without the NHP program. Furthermore, the overall increases in the mean scores have also been remarkably similar from 1998 to 2003.

NHP has been successful in changing classroom environments so that they are organized to facilitate learning. Classroom environments improved each year in NHP schools. Children's work was displayed to a greater extent, teachers were positive when interacting with students, and in many classrooms, there was an improvement in the organization of space.

Although some progress has been made in the 2002 school year, the participatory, child-center classroom approaches, emphasized by the NHP program, have generally not been implemented in NHP classrooms.

In 2003, use of small group learning contexts decreased by 3% as compared to the 10% increase from 2001 to 2002. Furthermore, instructional delivery in NHP schools became even more traditional as teachers initiated 91.2% of the observed classroom interactions, representing a 4% increase over 2002. In other words, the majority of instruction continues to take place in teacher-directed large group context.

NHP has been highly successful in providing ancillary learning materials to school, but there has been a decrease from 2002 to 2003. This may mean that the bulk of the programmed books and materials have been delivered to the schools but were not available and visible at the time of the school visits by the NHP researchers in May. However, such materials are under-utilized in the classroom, and the trend has taken a downward turn from 2002 to 2003.

In 1999, the number of materials observed in the classroom was sufficient for only about 20% of the students. In 2002, there are 1.7 language arts texts or materials for every student. Mathematics materials for almost 70% of the students were readily observable, but by 2003 three, the availability of both had dropped to 96% and 55% for reading and math, respectively. During lessons, such materials were actually used by about 15% of the students.

The concentrated effort by NHP to provide hands-on professional development and other technical assistance at the school level has yet to show a significant impact on teacher behavior. Thirty four percent of the teachers interviewed stated that they had received training in new teaching methods from NHP specialists. Nevertheless, the number of interactions initiated by the teacher and the percent of interactions that took place in large groups both went up, showing a trend contrary to the student-centered active teaching methodologies that are an integral part of the NHP approach to pedagogy.

B. Implications

The decline of language arts performance over three consecutive years is somewhat alarming. NHP might explore these tends at their training activities with teachers and principals. If funds are available, NHP might conduct a special study in both project and non-project schools with a decline and without a decline to determine the cause of the problem. Such a study might be conducted in collaboration with the evaluation unit of the Ministry.

The similarity of test performance between NHP students and students in matched comparison schools suggest that targeted efforts in schools serving those students who have had the least success in school, because of poverty and other factors, may require greater investment to make significant change. The slight difference in increased mastery and average mean scores generally favor NHP students, but they are of such small magnitude to question the cost-effectiveness of the project. NHP performance in relation to the comparison group should be monitored closely over the remaining life of the project.

The increased use of the participatory, child-centered methodologies, espoused by NHP and the new primary curriculum suggests that achieving behavior change in schools and classrooms is a long-term endeavor. It may be that significant changes will only be found as the project nears completion. However, the high percentage of traditional pedagogical practices bring in to question whether such change will be sufficient to improve student performance, beyond that related to general system improvement.

The overall increased availability of materials should be taken advantage of as part of the NHP technical assistance. If not already contemplated, workshops and technical assistance visits should focus on training teachers to effectively use materials.

Although the administrative infrastructure for improvement in learning appears to be in place and is an important achievement of the NHP project, it is not yet focused on supporting NHP objectives. The relatively low percentage of schools implementing activities related to language arts and mathematics improvement may require special training for teachers and administrators to make diagnosis of student performance and planning of strategies that will enhance student abilities in Mathematics and Language Arts and explicit part of the administrative process.

Appendix A: USAID Reporting Tables

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: SO Level 532-004

A. Description

Precise Definition: Percentage of students meeting near mastery in grade 6 of New Horizons schools.
Unit of Measure: Number of grade 6 NHP students meeting the criterion of near mastery/mastery on GSAT divided by all grade 6 NHP students.

Disaggregated By: Gender, grade level and program (NHP; non-NHP)
Management Utility: Project impact on language arts performance, allows comparison with national average. This is important for determining the impact of NHP interventions in relation to overall system improvement, over the life of the project.

B. Plan for Data Collection

Indicator: NHP grade 6 boys' GSAT Language Arts scores
Source: Student test data from Student Assessment Unit
Data Collection: Yearly
Est. Cost of Collection: N/A
Responsible Organization: Institutional contractor's Chief of Party and formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Manipulate Student Assessment Unit database to separate NHP and non-NHP students by gender and mastery levels on GSAT (50% correct= near mastery; 75% correct=mastery) divide by total number for each group, calculate percentage change from 1998 baseline and by year.
Presentation of Data: Combined percentage of near mastery and mastery in Tables of planned and actual improvement by year.
Review of Data: Review is performed by the institutional contractor, SO team's annual portfolio review, and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: The criteria used to designate near mastery and mastery with the third grade diagnostic tests is used. Using these criteria, at the time of establishing the baseline and targets, over 80% of the grade 6 boys were in the "no mastery" group in Language Arts.
Known Data Limitations: The Student Assessment Unit does not designate mastery levels for sixth grade GSAT. Therefore, the third grade criteria of 50% and 75% for near mastery and mastery, respectively are used in determining student progress.
Actions Addressing Limits: The latest available data will be used.

E. Performance Data Table

Method of Calculations: NHP and non-NHP students separated by gender and mastery levels then divided by total number of NHP and non-NHP GSAT scores for each gender.
Key to Table: No key, the table is easily interpreted
Baseline & Target Notes:

Year	Planned	Actual
1998		17.0
1999	19.0	20.0
2000	22.0	35.0
2001	25.0	34.0
2002	30.0	29.5
2003	35.0	26.4

F. Other

Comments: The slight decline is consistent with a decline for the system as a whole. This decline is likely related to an increased number of students, who were formerly held back, taking the GSAT and scoring in the "no mastery" level.

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: SO Level 532-004

A. Description

Precise Definition: Percentage of students meeting near mastery in grade 6 of New Horizons schools.
Unit of Measure: Number of grade 6 NHP students meeting the criterion of near mastery/mastery on GSAT divided by all grade 6 NHP students.

Disaggregated By: Gender, grade level and program (NHP; non-NHP)
Management Utility: Project impact on language arts performance, allows comparison with national average. Important for determining the impact of NHP interventions in relation to overall system improvement, over the life of the project.

B. Plan for Data Collection

Indicator: NHP grade 6 girls' GSAT Language Arts scores
Source: Student test data from Student Assessment Unit
Data Collection: Yearly
Est. Cost of Collection: N/A
Responsible Organization: Institutional contractor's Chief of Party and formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Manipulate Student Assessment Unit database to separate NHP and non-NHP students by gender and mastery levels on GSAT (50% correct= near mastery; 75% correct=mastery) divide by total number for each group, calculate percentage change from 1998 baseline and by year.
Presentation of Data: Combined percentage of near mastery and mastery in Tables of planned and actual improvement by year.
Review of Data: Review is performed by the institutional contractor, SO team's annual portfolio review, and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: The criteria used to designate near mastery and mastery with the third grade diagnostic tests is used. Using these criteria, at the time of establishing the baseline and targets, over 57% of the grade 6 girls were in the "no mastery" group in Language Arts.
Known Data Limitations: The Student Assessment Unit does not designate mastery levels for sixth grade GSAT. Therefore, the third grade criteria of 50% and 75% for near mastery and mastery, respectively are used in determining student progress.
Actions Addressing Limits: The latest available data will be used.

E. Performance Data Table

Method of Calculations: NHP and non-NHP students separated by gender and mastery levels then divided by total number of NHP and non-NHP GSAT scores for each gender.
Key to Table: No key, the table is easily interpreted
Baseline & Target Notes: Year 2000 actual differs from previously reported percentages because of corrections made in the database

Year	Planned	Actual
1998		43.0
1999	45.0	47.0
2000	48.0	63.0
2001	52.0	57.0
2002	56.0	50.6
2003	60.0	47.9

F. Other

Comments: The slight decline is consistent with a decline for the system as a whole. This decline is likely related to an increased number of students, who were formerly held, taking the GSAT and scoring in the "no mastery" level.

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: SO Level 532-004

A. Description

Precise Definition: Percentage of students meeting near mastery in grade 6 of New Horizons schools.
Unit of Measure: Number of grade 6 NHP students meeting the criterion of near mastery/mastery on GSAT divided by all grade 6 NHP students.

Disaggregated By: Gender, grade level and program (NHP; non-NHP)
Management Utility: Project impact on mathematics performance, allows comparison with national average. This is important for determining the impact of NHP interventions in relation to overall system improvement, over the life of the project.

B. Plan for Data Collection

Indicator: NHP grade 6 boys' GSAT Mathematics scores
Source: Student test data from Student Assessment Unit
Data Collection: Yearly
Est. Cost of Collection: N/A
Responsible Organization: Institutional contractor's Chief of Party and formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Manipulate Student Assessment Unit database to separate NHP and non-NHP students by gender and mastery levels on GSAT (50% correct= near mastery; 75% correct=mastery) divide by total number for each group, calculate percentage change from 1998 baseline and by year.
Presentation of Data: Combined percentage of near mastery and mastery in Tables of planned and actual improvement by year.
Review of Data: Review is performed by the institutional contractor, SO team's annual portfolio review, and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: The criteria used to designate near mastery and mastery with the third grade diagnostic tests is used. Using these criteria, at the time of establishing the baseline and targets, over 90% of the grade 6 boys were in the "no mastery" group in Mathematics.
Known Data Limitations: The Student Assessment Unit does not designate mastery levels for sixth grade GSAT. Therefore, the third grade criteria of 50% and 75% for near mastery and mastery, respectively, are used in determining student progress.
Actions Addressing Limits: The latest available data will be used.

E. Performance Data Table

Method of Calculations: NHP and non-NHP students separated by gender and mastery levels then divided by total number of NHP and non-NHP GSAT scores for each gender.
Key to Table: No key, the table is easily interpreted
Baseline & Target Notes:

Year	Planned	Actual
1998		6.0
1999	7.0	10.0
2000	10.0	25.0
2001	13.0	26.0
2002	20.0	28.8
2003	30.0	21.2

F. Other

Comments: The slight increase is consistent with that for the system as a whole. This is likely related to an increased number of students, who were formerly held back, taking the GSAT and scoring in the "no mastery" level.

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: SO Level 532-004

A. Description

Precise Definition: Percentage of students meeting near mastery in grade 6 of New Horizons schools.
Unit of Measure: Number of grade 6 NHP students meeting the criterion of near mastery/mastery on GSAT divided by all grade 6 NHP students.

Disaggregated By: Gender, grade level and program (NHP; non-NHP)
Management Utility: Project impact on mathematics performance, allows comparison with national average. This is important for determining the impact of NHP interventions in relation to overall system improvement, over the life of the project.

B. Plan for Data Collection

Indicator: NHP grade 6 girls' GSAT Mathematics scores
Source: Student test data from Student Assessment Unit
Data Collection: Yearly
Est. Cost of Collection: N/A
Responsible Organization: Institutional contractor's Chief of Party and formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Manipulate Student Assessment Unit database to separate NHP and non-NHP students by gender and mastery levels on GSAT (50% correct= near mastery; 75% correct=mastery) divide by total number for each group, calculate percentage change from 1998 baseline and by year.
Presentation of Data: Combined percentage of near mastery and mastery in Tables of planned and actual improvement by year.
Review of Data: Review is performed by the institutional contractor, SO team's annual portfolio review, and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: The criteria used to designate near mastery and mastery with the third grade diagnostic tests is used. Using these criteria, at the time of establishing the baseline and targets, over 85% of the grade 6 girls were in the "no mastery" group in Mathematics.
Known Data Limitations: The Student Assessment Unit does not designate mastery levels for sixth grade GSAT. Therefore, the third grade criteria of 50% and 75% for near mastery and mastery, respectively, are used in determining student progress.
Actions Addressing Limits: The latest available data will be used.

E. Performance Data Table

Method of Calculations: NHP and non-NHP students separated by gender and mastery levels then divided by total number of NHP and non-NHP GSAT scores for each gender.
Key to Table: No key, the table is easily interpreted
Baseline & Target Notes:

Year	Planned	Actual
1998		14.0
1999	16.0	24.0
2000	18.0	41.0
2001	20.0	42.0
2002	25.0	45.2
2003	30.0	33.1

F. Other

Comments: The slight increase is consistent with that for the system as a whole. This is likely related to an increased number of students, who were formerly held back, taking the GSAT and scoring in the "no mastery" level.

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: 4.1 532-004 Improved Teaching Quality

A. Description

Precise Definition: Composite of: 1) content knowledge of students; 2) classroom learning environment; and 3) teaching for learning, aggregated across sample classrooms and expressed as values between 0 (minimum) and 1 maximum
Unit of Measure: Index of third grade mastery levels – mathematics and language arts, score on classroom environment scale and percentage of child-initiated interactions, aggregated across sample classrooms.
Disaggregated By: Unnecessary
Management Utility: To track improvement in the quality of teaching over the life of the project.

B. Plan for Data Collection

Indicator: Index of Teacher Quality
Source: Student test data from Student Assessment Unit, observational data from formative evaluation of a stratified, random sample of NHP schools
Data Collection: Yearly
Est. Cost of Collection: N/A
Responsible Organization: Institutional contractor's Chief of Party and formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Aggregate each measure and average into an overall index of sample schools.
Presentation of Data: Index value between 0 – minimum and 1 – maximum in Tables of planned and actual performance
Review of Data: Review is performed by the SO team, the institutional contractor and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: Data collected by trained observers
Known Data Limitations: Diagnostic purposes of third grade tests results leading to lack of full reporting by schools.
Actions Addressing Limits: The COP for the institutional contractor will ensure that adequate data are available prior to the R4.

E. Performance Data Table

Method of Calculations: Scores of three dimensions are averaged as an overall index
Key to Table: No key
Baseline & Target Notes:

Year	Planned	Actual
1999		.43
2000	.50	.44
2001	.58	.48
2002	.65	.52
2003	.71	.47

F. Other

Comments: Planned levels have not been met owing to teachers' continued use of traditional teacher-centered pedagogy.

Performance Monitoring Plan
Fiscal Year FY2003

Strategic Objective: Increased literacy and numeracy among targeted Jamaican youth
Intermediate Result: 4.3 Improved Management of Schools

A. Description

Precise Definition: Number of schools implementing School Development Plan activities in literacy and numeracy; plus schools implementing activities in either literacy or numeracy; plus schools not implementing activities in these areas divided by the total number of schools in the sample
Unit of Measure: Weighted index where (L&N=1;L or N =.5; and other activities = 0)
Disaggregated By: Unnecessary
Management Utility: To measure the integration of project interventions with school activities.

B. Plan for Data Collection

Indicator: NHP schools implement SDP activities in numeracy and literacy
Source: Principals in a stratified, random sample of NHP schools
Data Collection: Yearly
Est. Cost:
Responsible Organization: Institutional contractor's formative evaluation team

C. Plan for Data Analysis, Reporting, Review

Data Analysis: Weight responses, sum response categories, divide by number of sample schools using Excel or SPSS software.
Presentation of Data: Index value between 0 – minimum and 1 – maximum.
Review of Data: Review is performed by the SO team, the formative evaluation team and other stakeholders
Reporting of Data: Annual performance reports and highlighted tables and narrative of R4

D. Data Quality Issues

Initial Data Qual/Assess: Data collected by trained interviewers
Known Data Limitations: None
Actions Addressing Limits: None

E. Performance Data Table

Method of Calculations: Weighted index of SDP implementation
Key to Table: None
Baseline & Target Notes: New indicator with 2001 as baseline year

Year	Planned	Actual
2001		.52
2002	.70	.67
2003	.90	.44

F. Other

Comments: This indicator was revised after 5-year targets were reached in 2 years with previous indicator.