CREATIVE ASSOCIATES INC

FOURTH ANNUAL REPORT OF THE STUDY OF USAID CONTRIBUTIONS TO THE EGYPTIAN BASIC EDUCATION PROGRAM

(Contract No. 263-0139-C-00-3009-00)

VOLUME I

Submitted to: USAID/CAIRO

October 1987

Wade M. Robinson, Ed.D., Team Leader
Nadia Makary, Ph.D., Project Coordinator
Andrea Rugh, Ph.D., Senior Associate

CREATIVE ASSOCIATES INTERNATIONAL, INC.
WASHINGTON, D.C.

HEADQUARTERS
3201 NEW MEXICO AVENUE, NW, SUITE 270, WASHINGTON, D.C. 20016
(202) 966-5804 TELEX: 440523 CREA

EXECUTIVE SUMMARY

PURPOSE

The Basic Education Project was designed to expand the access of rural children to education, grades one through nine, and improve the quality of education. The $190 million project finances school construction and provides instructional equipment and technical expertise to the Ministry of Education (MOE).

EVALUATION PURPOSE

This evaluation is a four-year effort to examine the impact of USAID contributions in:

- increasing enrollment and persistence;
- increasing student achievement and practical skills;
- increasing the capacity to develop programs that improve the efficiency and effectiveness of education.

The evaluation assesses the extent to which school and community factors influencing educational participation have amplified or constrained project impact. It relies on four interlocking studies: a statistical study of a representative sample of new school and control sites; intensive studies of households and schools in new school sites; a study of equipment use in selected schools; and a study of the effectiveness of technical assistance.

MAJOR FINDINGS AND CONCLUSIONS

I. ENROLLMENT

Construction of new schools significantly increased grade one enrollment.

In the first year after new schools opened, grade one enrollment increased on the average by 41 students per site. This 18 percent increase over expected enrollment is higher than the 9 percent anticipated in the project paper. The second year impact, which added 30 students per site was smaller but still significant. These increases occurred above and beyond the trend of expanding enrollment independent of new school construction. Increases in the first year reflect a need in disadvantaged communities to catch up with backlogs of children previously denied access by the lack of facilities. The smaller second year impact results from the consequent smaller "pool" of eligible but not yet enrolled children.

Impact of new school construction on grade one enrollment has been greatest for target disadvantaged groups.

Prior to the project, girls, poor children, and rural children in remote areas were the major groups of children not enrolled in school. After new schools opened, the highest rates of increase in enrollment occurred among those groups. In the first year, the most rural sites showed that the rate of increase in enrollment of girls (23 percent) was higher than that of boys (15 percent).

The following factors influence enrollment in grade one and therefore have affected project impact:

- Distance: Enrollment rates drop off rapidly for girls and gradually for boys after 1.5 km.
- Crowding: Lack of classroom limits enrollment, especially of girls.
- Household economic level: A strong relationship exists between initial enrollment and economic status.
- Gender: Historically, girls have lower enrollment rates, and tend to drop out earlier than boys.
- School's lack of relevance: Parents of a quarter of the never enrolled did not consider education important enough to enroll their children.
- Need for child labor: Eighteen percent of boys and 11 percent of girls are needed to work at home and thus never attend school.
- Costs of schooling: The average annual cost to a family per enrolled primary child is 72 LE (1984 costs). For a preparatory child, the average annual cost is 102 LE.

New school construction has significantly reduced crowding in grade one of the related schools.

The average per-site impact on reducing crowding in the related schools is 99 students per site.

II. PERSISTENCE

The new schools have significantly increased the persistence of children in grades two through six in the 10 governorate sample.

In the first year of new school operation, 87 students were added per site to the enrollment in grades 2-6. At sites where new schools had been open two years, 127 students were added per site. These increases were in addition to already increasing persistence that has taken place independent of the project over the last few years.

Impact of new school construction on persistance has been greater on target groups.

The increase in the persistence of girls was greater than for boys in each of the four years after new schools opened. Also, more children from economically disadvantaged groups stayed in school longer after the new schools opened.

The following factors influence persistence and therefore affect project impacts:

- School-related problems: More than half of all dropouts and almost three-quarters of male dropouts give failed exams, physical punishment, and other school-related problems as the reasons for dropping out.
- Grade repetition: Children who repeat grades are more likely to drop out, especially if they repeat the early grades.
- Gender-related reasons: Custom or traditions and marriage are exclusively female dropout reasons, accounting for 16 percent of girl dropouts in the community sample.
- Economic reasons: The economic level of the household, costs of schooling and the need for child labor account for one-fifth of all dropouts.

III. EDUCATIONAL EFFICIENCY

Educational wastage is high among those who have just completed basic education age (the 15- to 25-year-olds) in our sample.

Half either did not enroll or dropped out before achieving functional literacy. Those who enrolled wasted about 6 percent of total school years by repetition and another 10 percent because of early dropout before the attainment of functional literacy skills.

Educational efficiency is higher among the new five governorates sample of current school-age children 6-15 years old .

At current dropout and repetition rates, seven out of ten children will complete grade six within the normal six-year period. Two of the remaining three will drop out prior to completing grade six. The remaining one will repeat grades. Although low, this wastage is economically significant. If these rates are nationally representative, and were halved, the resulting productively used classroom spaces would increase school efficiency by the equivalent of 428 grade 1-6 schools operating at current levels of efficiency.

IV. EFFECTIVENESS

New school construction is expected to increase Literacy and numeracy as a result of more children entering and persisting longer in school.

There were no significant differences between the achievement of students in new and comparison schools as measured by sixth grade exam scores. No changes were made in the academic programs of new schools .

The following factors influence academic achievement:

- Headmaster: A headmaster with lengthy teaching experience who comes from the local area, exerts strong leadership in running a well-organized school, and assumes responsibility for providing quality educational programs has a strong positive influence on student achievement.
- Local Staff: Staff who come from the local area are more likely to assume responsibility for providing quality instruction.
- Homework: The amount of homework given in science, Arabic and mathematics is positively correlated with student achievement.

Factors which do not appear to relate to student achievement are school size, urban or rural location, age of the facility, single or double shift, class size, or whether the school is directed by male or female headmasters.

USAID-funded equipment has had mixed impact on practical skill achievement in the industry course.

Overall, students in primary schools of the second five governorates and preparatory schools of all ten governorates performed poorly on practical carpentry and electricity tests. In only five of 14 primary schools and three of 17 preparatory schools in the new five did more than half the students pass. In no preparatory school of the ten did more than 50 percent pass the electricity tests. In a few schools, however, children performed well, showing that the potential for high achievement exists.

Factors which limited the impact of project financed equipment were:

- The lack of importance given to practical courses in comparison to academic courses.
- Inadequate raw materials budgets for wood, wire, etc.
- The lack of teacher training in the use of equipment.
- The tendency to teach theory instead of practice.
- An uneven distribution of equipment.
- The lack of equipment maintenance and repair funds.
- Inadequate work and storage places.

V. TECHNICAL ASSISTANCE ACTIVITIES

By May 1986 project financed technical assistance had had no noticeable effect on the procedures, policies, programs or operations of the MOE, its governorate offices or schools.

Though some of the work orders have great potential to influence change, it is too early to see these effects. Successful implementation of the results of the nine separate T/A work orders will depend on the development of a mechanism for implementating changes in the MOE and on the development and operation of a formative evaluation unit in the MOE to monitor the effectiveness of implementation efforts.

RECOMMENDATIONS

1. The MOE and USAID should continue to improve educational access through new school construction in underserved areas and consider adding excess capacity in high-density areas to prevent crowding from constraining enrollment.

2. The team recommends that the MOE move toward, and USAID support, the development of activities leading to an outcome-based educational system which objectively identifies problems and routinely modifies the educational program until it produces the results Egyptian educators desire. The development of such a system should start at the primary level. In an outcome-based system, the limited number of elements that can be manipulated to improve the quality of educational programs are aligned to achieve specified measurable learning goals. To drive such a system, the MOE would need an evaluation unit that routinely assessed and suggested modifications to continuously improve the program. Adoption of an outcome-based system can take place gradually and systematically and provide an objective basis for resolving problems inherent in the current education program.

3. The MOE needs to re-examine practical courses to assess whether they are achieving the desired outcome. Policy makers may want to consider reorienting preparatory level programs to place a heavier emphasis on practical skills achievement. Prior to provision of new equipment for the practical courses, the MOE and USAID should agree on specific actions to improve teacher training, equipment use, maintenance, and repair and to provide adequate amounts of raw materials.

4. Future technical assistance activities should be tied to the development of comprehensive improvements in the educational program, as in the development of an outcome-based system. Addressing problems individually is ineffective because of the interrelatedness of all the elements of an educational system. Teacher training or textbook production cannot be effective without quality instructional content, nor can technical assistance recommendations make a positive impact without mechanisms for implementation, review and feedback.

ACKNOWLEDGEMENTS

We wish to express our gratitude to His Excellency, Dr. A. F. Sourour, Minister of Education; to His Excellency, Hamid Mohammed Suliman, First Undersecretary of Education for Governorate Offices and for Management; to Mr. Hassan Harras, former Undersecretary of Education and Consultant to the Minister of Education; to Mr. Al-Sawi Abdel Sami Ahmed, and Mr. Azem Al-Saidi, of the General Administration of Planning and Follow up, Ministry of Education; and to the education officials of the governorates of Kafr al Shaikh, Bahira, Assiut, Sohag, Qena, Minya, Bani Suaf, Fayyum, Sharqiya and Giza, whose assistance made this study possible.

In particular we wish to acknowledge the contributions made to the project by Dr. Wells Hiveley, who served as Project Director for the first two years of the project, and was responsible for many of the technical aspects of the research design, in particular the Extensive Study of New Schools, and the general design and technical supervision of data reduction, analyses, interpretation, and reporting.

We gratefully acknowledge the help of our hard working researchers, Said Ali Mohammed al-Dib, and Madiha Mustafa Mohammed Suliman, and the field researchers who accompanied us in the data collection. We also want to acknowledge the helpful assistance of the Computer Center of the Faculty of Economics and Political Science at Cairo University. Finally, we thank Danuta Lockett from the Creative Associates, International, Inc. Washington office for valuable back-up support.

Our thanks go also to the USAID Mission staff whose thoughful comments helped to improve earlier drafts of reports.

DISCLAIMER

TABLE OF CONTENTS

LIST OF TABLES
VOLUME I

VOLUME II

VOLUME II
(Continued)

APPENDIX A

APPENDIX A
(Continued)

APPENDIX A
(Continued)

APPENDIX B

APPENDIX B
(Continued)

APPENDIX C

APPENDIX C
(Continued)

APPENDIX D

APPENDIX H

LIST OF FIGURES I

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX H

TERMINOLOGY

Terms that describe educational behavior are sometimes ambiguous, or when used in different contexts by different researchers, may have different connotations. We have tried to use terminology generally understood by American and Egyptian audiences. However, occasionally English usages employed in Egypt differ from American usages. To avoid misunderstandings, words used extensively in the study have been defined below:

Registration:	The act of applying for grade one enrollment.
Initial enrollment:	Registration and acceptance into grade one.
Enrollment:	The number of students listed on the school membership rolls.
Attendance:	Actual presence in school.
Persistence:	Continuation in school from the perspective of individual student motivation to continue.
Holding power:	Continuation in school as a function of the capacity of the school to attract student participation.
Educational participation:	The acts of enrolling and persisting.
Repetition:	The act of repeating a school year.
Dropping out:	The act of leaving school permanently prior to reaching the official school-leaving age, or prior to having completed the stage of education mandated by law (age 15 or grade nine completion), whether student records continue through the system or not.
Younger generation:	Present school-age children in the family interviewed and all their siblings.
Older generation:	Parents of the younger generation and all other members of the household who are not members of the younger generation.
Urban villages:	Villages with hypothesized positive factors encouraging educational participation (see Appendix H, pp. H-6, H-7).
Rural villages:	Villages with hypothesized negative factors constraining educational participation (see Appendix H, pp. H-6, H-7).

Productivity:	A measure of school efficiency obtained for primary schools by dividing the number of successes in the sixth grade examination by the actual number of students taking the exam who entered the school six years earlier.
Gross Productivity:	An approximate measure of productivity obtained for primary schools by dividing the number of success in the sixth grade examination by the number of sixth grade students. The results are proximal because not all those who take the sixth grade exam entered the school six year earlier. Some have repeated one or more grades; some have transferred in from other schools; some who were part of the first grade cohort have transferred out; some have died; and occasionally an examinee will have been a home-study student. The success of these examinees, herefore, does not fully reflect the schools instructional- program over the six-year period.
Efficiency:	As used in this report, efficiency refers to the "internal" efficiency of the school, or the degree to which the school produces successful graduates in the time normally allotted for that purpose. That is, in a primary school operating with 100 percent efficiency, all students would complete the first through sixth grade cycle satisfactorily in exactly six years.
Effectiveness:	Refers to the "quality" of the school's educational program, and the degree to which the instructional objectives of the school are obtained. When effectiveness is linked to resources used to accomplish the school's goals, we are referring to "cost effectiveness."
Criterion-referenced Tests:	Tests designed to measure learning of skills, knowledge, or behavior using a pre-determined standard against which to make judgments of the amount learned or known. This method contrasts with tests that measure performance using a reference group as the standard of judgment (a "normative" standard). For example, in arithmetic, the criterion could be the number of addition problems worked correctly rather than how well a "normally distributed" group of peers have performed on the test.

Results-oriented or Outcome-based Education

A flexible and pupil achievement-oriented educational system in which pupils' attainment of the intended learning objectives is the basis upon which all instructional, curricular, and pupil advancement decisions are based. It focuses constant attention on the attainment of the intended results through the alignment of:

- detailed, specific, measurable learning objectives for each grade, subject, and educational level with appropriately detailed instructional materials, and highly detailed teacher guides;
- criterion-referenced testing on a regular basis to assess pupil progress, frequent diagnoses of learning problems, and the adjustment of instruction to the learning needs of pupils;
- highly specific teacher training in how to achieve these measurable learning objectives using curricular and other instructional materials; and
- support, encouragement, constant monitoring, and supervision of classroom instruction. (See Appendix F. to Vol. II.)

INTRODUCTION

In 1981 USAID approved a grant of $45 million to the Government of Egypt to support basic education in Egypt. Funding was provided for the construction of classrooms at the primary and preparatory level of basic education, for purchase of instructional materials and equipment, and for technical assistance to the Ministry of Education. The grant's purpose was to expand school enrollment and increase the relevance, efficiency, and effectiveness of basic education. The project was based on the assumption that "formal primary education is an effective source of literacy training" that "impacts favorably on the physical quality of life." The specific contributions assume that "enrollment is constrained by shortages of classroom space" and "that practical learning will be enhanced by the provision of instructional equipment." (See Log Frame, at the end of Vol I, p. 27)

By 1987 the grant had been increased to $190 million with $140 million for construction, $30 million for equipment and $20 million in support of other educational activities, including technical assistance, teacher education, curricula printing, special education, and evaluation. By 1987 over 400 schools had been completed out of an end-of-project goal of approximately 1300 schools.

The study of USAID contributions to the Egyptian Basic Education Program evaluates the impact of project financed construction, commodities and technical assistance on the access to, efficiency, and effectiveness of basic education in Egypt. Specifically, the study tests hypotheses that project-financed contributions:

- increased the enrollment and persistence of children in basic education, and particularly of target groups of educationally disadvantaged rural, poor, and female children;
- increased student achievement and the acquisition of practical skills; and
- established an empirical base for decision making, and helped to develop programs that increase the efficiency and effectiveness of basic education. (See Appendix H., Vol. II.)

The responsibilities of the project team were threefold:

- to evaluate the impact of project contributions;
- to identify the factors affecting the desired outcomes of increased enrollment, persistence, and achievement and the extent to which these factors heightened or lessened the impact of project interventions; and
- to provide basic information and recommendations useful in policy decisions and future project design.

The five-part study utilized quantitative data from new schools and control sites to chart trends (the "extensive study"). It then compared these results with the more detailed qualitative and analytical examination of factors affecting the educational participation of 6904 rural villagers and over 29,000 school children (the "intensive community study" and the "intensive school study"). Separate studies were conducted of AID-funded instructional equipment and of technical assistance.

In the first three years of the study, information was collected in the governorates of Bahira, Kafr al Shaikh, Assiut, Sohag and Qena. In the final year information was collected in Minya, Bani Suaf, Qena, Sharqiya, and Fayyum.

In order to provide useful information to the MOE and USAID/Cairo as quickly as possible, tentative recommendations have been made each year as soon as enough evidence was available to support conclusions with reasonable confidence. The first three annual reports contained detailed reporting of interim findings, conclusions and recommendations. Subsequent field study has continued to support and expand earlier recommendations.

The separate annual reports had the following emphases:

- The First Annual Report (October 1984) summarizes the research methodology, tests the basic assumptions of the extensive and intensive studies, and reports preliminary baseline and available impact data in the first five governorates.

- The Second Annual Report (September 1985) summarizes two years of the equipment study, provides gross impact trends on enrollment and persistence for the first year after new school openings, and reports complete data for half the communities in the first five governorates.

- The Third Annual Report (October 1986) completes the data summary and analysis for the ten communities, gives subsequent year impacts on enrollment and persistence, and the first year results of a school efficiency study in the first five governorates.

This report is the fourth and final of a series of annual reports (September 1987). It summarizes the significant findings of the entire study. It adds a third and fourth year of impact results for the new school sites in the original five governorates, reports first year impact, and, where appropriate, second year impact in five new governorates. It completes the study of dropouts and practical skills achievement. A special section in Volume II reports the findings of the fourth year school efficiency and practical skills studies. Recommendations are integrated into a comprehensive plan for improving the effectiveness of basic education.

Even in the short space of time since the study began, the team finds important changes in the way parents view education as shown in the school-going behavior of their children. Because of the rapidity of change, communities and schools vary considerably with respect to significant indicators of educational participation and achievement. The general trend, however, is for more children to go to school and to persist longer.

Rates of educational participation have increased so rapidly in recent years that it is inevitable in the next few years for them to moderate as communities with accessible facilities begin to approach universal levels of enrollment in grade one. The school construction project has allowed previously disadvantaged communities to catch up with the prevailing trends. There are still numbers of disadvantaged communities, however, where educational programs suffer due to the lack of accessible facilities. The high rates of educational participation in the villages with new facilities should not conceal the needs that still exist in some areas of the countryside.

Overall, the team finds that:

- project construction has had a significant and greater than expected impact on increasing the educational participation of rural children, especially girls and other economically disadvantaged children;

- project financed equipment has had less than the anticipated effect on the achievement of practical skill learning because of limitations in the way it is utilized; and

- technical assistance has yet to make an impact on the effectiveness of educational programs, partly because there has not been enough time for results to materialize, but also largely because of the lack of a mechanism to implement results or link them in any systematic way to a process of routine evaluation, continous reassessment, and modification of the educational program.

In addition, there were a number of incidental findings that should prove important in future project design and policy planning:

- Schooling costs to parents are significant, and in 1984, exceeded the government's per pupil expenditure for operating costs at both primary and preparatory levels. (See Table 5, Vol. I).

- Building maintenance in new AID-funded schools is either sadly deficient or totally absent, leading to rapid disrepair unless corrective measures are taken.

- Pertinent school and governorate records are often difficult to access, unreliable because of reporting errors, and may require field verification unless wide error tolerances are acceptable.

The team recommends that the MOE and USAID:

- continue efforts to provide access to education by constructing schools in areas where children at present do not have a school within two kilometers; and

- work towards a more effective primary education by aligning the elements of the program in an outcome-based system with clear, detailed objectives that can show measureable results. An important element in such a system must be continuous feedback in which aspects of the program are routinely evaluated and improved according to objective criteria. (See Appendix A, pps. A-53, A-54, A-55, A-57 and Appendix F)

SIGNIFICANT FINDINGS AND CONCLUSIONS

1. ENROLLMENT

Project construction has had a statistically significant impact on increasing enrollment in grade one.

- In the first year after new schools opened, regression analysis shows that, on the average, grade one enrollment, increased by 41 students per extensive site.[1] This amounts to an 18 percent increase over expected enrollment. Table 1 shows the impact on grade one enrollment in successive years after new schools opened.

Table 1

Successive Year Impact on Grade One Enrollment After New Schools Opened (Extensive Sample)

Students Added to Grade One Enrollment Per Site	First Year	Second Year [2]	Third Year [3]	Fourth Year [3]
Number	41	30	29	22
Percent	(18)	(12)	(11)	(8)

- The comparable figures in the control sites show no significant increase.

Comment

Project impact on enrollment was considerably higher in the first year alone than the 9 percent increase projected as a result of project construction. Recent increases in enrollment rates in the control sites

---

[1]An extensive site contains the village in which a new AID-funded school is located and the related schools in neighboring villages that the new-school village children had attended before the new school opened. The control sites were selected on a random basis to contain a village as similar as possible to the new-school village in all respects (except that it does not yet have a new school) and neighboring villages with their related schools.

[2]Results refer to the five governorates of the first phase together with Fayyum, the only area in the second phase that had new schools open for two years.

[3]Results refer to the five governorates of the first phase only.

independent of the project attest to the general eagerness of parents to educate their children. Between 1982/83 and 1986/87, grade one enrollment increased 17 percent in the control sites compared with 34 percent in the new-school sites. This difference represents children who would not have enrolled without the new schools. Most are from the new-school village itself but some are now enrolled in related schools because of vacancies created by children going to new schools. The new five governorates showed less impact than the first five governorates, primarily because of the presence in several of the sites of a number of new MOE schools which blunted the impact of the USAID schools.

The first year impact on grade one enrollment is necessarily greater than subsequent year impact for several reasons. In the first year of opening, schools often accept large backlogs of seven-year-olds, all six-year-olds who register and sometimes five-year-olds to fill up classrooms. By the second year, the pool of eligible children is considerably reduced. In addition, since most of the eligible cohort enrolls as soon as a new school opens, it is impossible to find a similar increase in the percentage of children entering in subsequent years. Increases in subsequent years instead reflect population increases and the enrollment of the final few resisters.

Impact of project construction on enrollment in grade one was greatest for target disadvantaged groups.

- Extensive study data show that in the first year after new schools opened, in all sites there was more impact on enrollment in the most rural sites than in the less rural--an increase of 23 percent (over expected) in the most rural compared with a 16 percent increase in tne less rural.

- Grade one percentages of enrollment increase (over expected) were greater for girls than for boys in each of the four years after the new schools opened. (See Table 2)

Table 2

Successive Year Impact on Grade One Enrollment of Boys and Girls After New Schools Opened (Extensive Sample)

Students Added to Grade One Enrollment Per Site		First Year(*)	Second Year(*)	Third Year(*)	Fourth Year(*)
Boys	No.	22	12	13	12
	%	(15)	(8)	(8)	(7)
Girls	No.	19	18	16	10
	%	(23)	(19)	(15)	(9)

*See footnotes on page 5.

- Since the opening of new schools in the community sample sites, the enrollment of eligible-age children in all target groups has increased and usually to a greater degree than the appropriate comparable group. (See Table 3).

Table 3

Target Group Enrollment in Grade One Before and After Construction in Original Five Governorates, (Intensive Community Sample)

Types of Students	Before New School Opened			After New School Opened		
	Total 6 Yr. Olds	No. Enr.	% Enr.	Total 6 Yr. Olds	No. Enr.	% Enr.
Total Children	162	123	(76)	142	123	(87)
Males	85	80	(94)	68	68	(100)
Females	77	43	(56)	74	55	(74)
Economically disadvantages	63	38	(60)	54	42	(78)
Urban villages	91	78	(86)	77	72	(94)
Rural villages	71	45	(63)	65	50	(77)

Note: Figures from two and three years prior to construction were used to avoid the possibility that anticipation of a new school's opening would affect enrollment. It is likely that some of the difference between ratios in the two time periods reflects a trend independent of new school construction.

- The remaining non-enrolled girls (19) in the intensive sample after the opening of new schools come from families with a history of marked resistence to educating girls.

Comment

Additional school construction in the original sites, other than to keep pace with population increases, will do little to affect the enrollment of the remaining female children out of school.

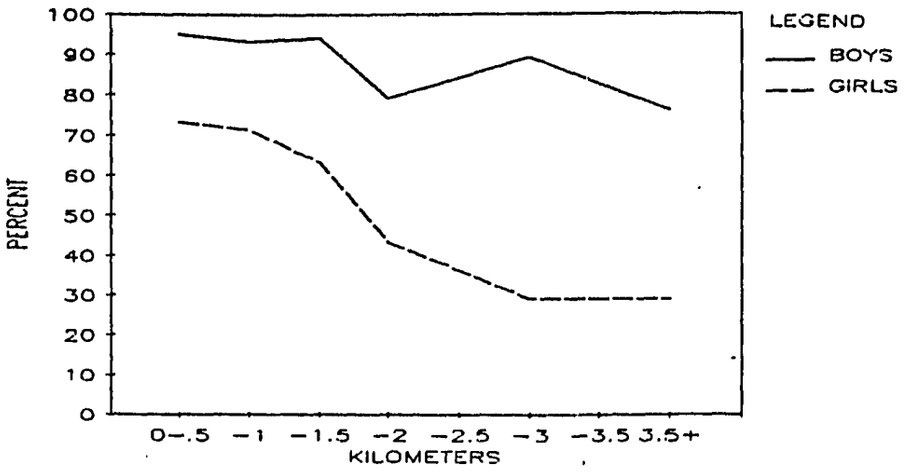
Before the opening of new schools a number of factors in the first five governorates was found to have affected the enrollment of children in grade one. The most important of these were:

- Distance
  Locating schools close to children's homes results in high ratios of grade one enrollment. In the younger generation of the intensive sample, schools located within one kilometer of the children's homes showed a 94 percent enrollment for males and 72 percent for females. Rates of

enrollment begin to drop off rapidly for girls when schools are more than one and a half kilometers from a child's home. (See Figure 1)

Figure 1

Rate of Grade One Enrollment at Discrete Distances
(Intensive Community Sample)

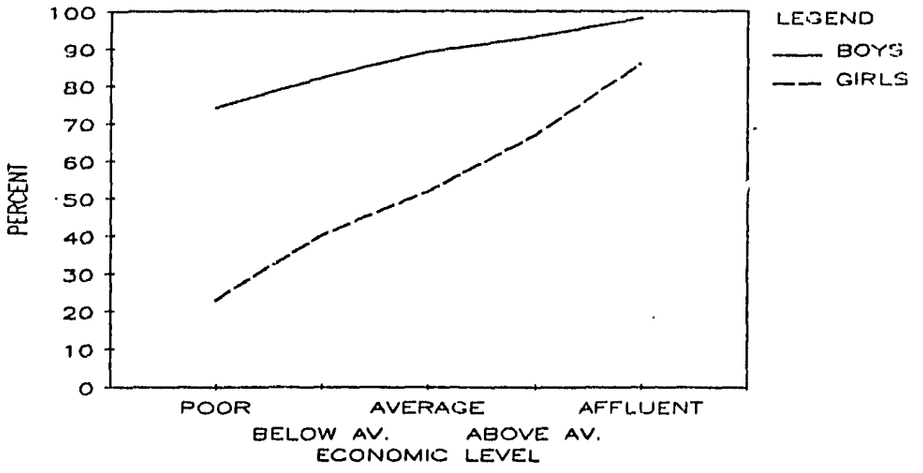


- Crowding
  Evidence suggests that crowding in grade one classrooms effectively prevents some children, especially girls from entering school. In the extensive sample of new schools, half of grade one classes showed crowding (45 or more pupils per class) in the first year, and two-thirds in the second year. The new schools that showed crowding in the first year showed less impact on enrollment growth in the second year than schools which were not crowded in the first year.

- Economic Level of Household
  The economic level of a household bears a strong relationship to the rate of child enrollment for that household. The strongest impact is on girls' enrollment. Rates of enrollment increase dramatically as economic levels of households rise. (See Figure 2).

Figure 2

Rate of Grade One Enrollment by Economic Level
(Intensive Community Sample)

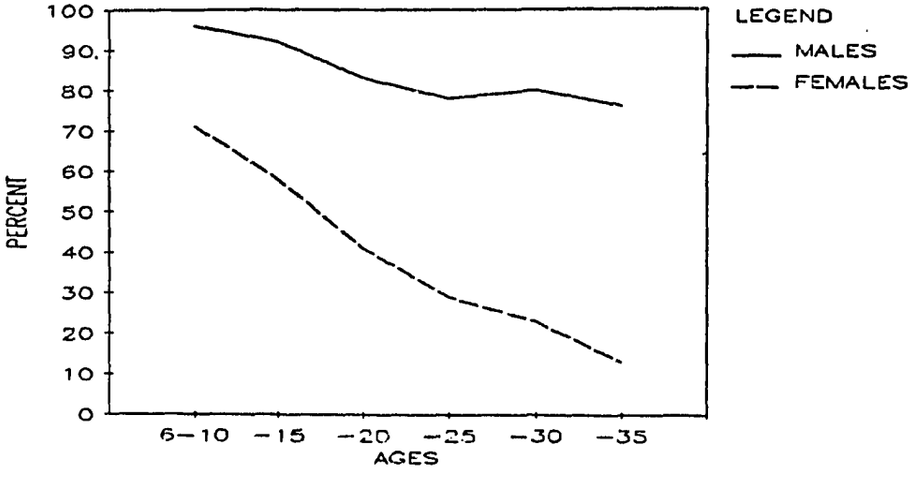


- Gender-Related Issues

Historically the differences between girls' and boys' rates of educational participation show the importance of gender-related issues. After new schools opened, the only children of the intensive sample who were not enrolled were a few girls (19). Two-thirds of these come from economically disadvantaged families who felt either that school was not relevant to their female children; or that they could not afford the costs of schooling for all their children; or could not send their girls to school for some other reason, such as crowding or distance to the school. (See Figure 3).

Figure 3

Grade One Enrollment Gender Gap
(Intensive Community Sample)



- School's lack of relevance
  In the community sample, 27 percent of non-enrolled boys and 21 percent of non-enrolled girls in the younger generation as a whole remained home from school because parents did not feel that education was important enough to exert the effort involved to enroll them. Note, however, that once schools were locally available all boys and most girls of appropriate age entered school.

Table 4

Reasons Given by Parents for the Non-Enrollment of Children in First Five Governorates (Intensive Community Sample)

Reason[1]	Older Generation				Younger Generation[2]			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	no.	%
No school available [2]	126	(40)	181	(31)	8	(14)	64	(16)
Costs of schooling or poverty	74	(23)	75	(13)	32	(25)	95	(19)
Education not relevant	74	(23)	140	(25)	34	(27)	104	(21)
Need for child's labor	31	(10)	14	(2)	23	(18)	54	(11)
Custom	-		148	(26)	-		133	(27)
Child's refusal to go	-		-		3	(2)	11	(2)
No birth certificate	-		-		7	(5)	10	(2)
School refused child	-		-		2	(2)	4	(1)
Child was ill	-		-		8	(6)	12	(2)

- Need for Child Labor
  In the community sample 18 percent of non-enrolled boys and 11 percent of non-enrolled girls remained home because parents needed them to work in household or other production.

---

[1]Reasons comprising less than two percent omitted.

[2]Many children in the younger generation were eligible to enter grade one at a time before new schools opened.

- Costs of Schooling
  In the intensive sample, the average annual cost per child at the primary level was 72 LE and at the preparatory level 102 LE. In the sample the average number of children per family was 5.7 with many families as yet not complete. Two-thirds of the sample families spend over 100 LE annually on all currently enrolled children. The major expenses are for pocket money, school supplies, and special tutoring. (See Table 5).

Table 5

Annual Costs to Families for All Children
Currently Enrolled in Basic Education
(Intensive Community Sample)

Families	Costs Per Annum In LE										
	0-100	200	300	400	500	600	700	800	900	+900	Total
Number	135	118	54	34	14	11	7	1	1	7	382
Percent	(35)	(31)	(14)	(9)	(4)	(3)	(2)	(0)	(0)	(1)	(100)

New School Construction has had a significant impact on reducing crowding in the related schools.

- Of the average enrollment of 227 students, grades one through six, in new schools, 41 of the students represent a net increase in grade one enrollment and 87 a net increase in persistence in grades two through six. The remaining 99 students (44 percent of the student population of the new school) are students who previously attended a related school before the new school opened. Thus, the average per site impact on reducing crowdedness in the related schools is 99 students per site.

Comment

Project-financed construction has relieved the problems of non-enrollment directly related to distance and crowding. Other problems require changes in educational programs and policies or changes in parents' attitudes about the relevance of education and perceptions that the long term benefits of education will offset such immediate family needs as child labor.

2. PERSISTENCE IN GRADES TWO THROUGH SIX

Project construction has significantly increased the persistence of children in grades two through six (using net increases in numbers of students at these grade levels as proxy measures).

Table 6

Successive Year Impact on Grades 2-6 Persistence After New Schools Opened
(Extensive Sample)

Additional Students Persisting Per Site	First Year (*)	Second Year (*)	Third Year (*)	Fourth Year (*)
Number	87	127	104	122
Percent	(9)	(12)	(9)	(11)

(*) See relevant footnotes page 5.

- In the sampled areas of the ten governorates in the first year after new schools opened, on the average, grades 2-6 enrollment increased by 87 students per site. This amounts to an increase of 9 percent over the enrollment expected in these grades. In other words, on the average, in its first year of operation the new school keeps an extra 87 students in the educational system or equivalently, increases persistence by 9 percent, thereby decreasing dropouts. The corresponding figures for successive years are found in Table 6 above.

- The comparable figures in the control sites are small and not significantly different from zero.

Comment

Project construction in the ten governorates increased persistence rates in grades two through six over and above what was expected. The number of children persisting in grades two through six rose in the second year as students added to grade one enrollment after new schools opened moved to the second grade. Impact was greater in the first five governorates compared with the second five for the reason noted above--that the new schools built by the MOE in the second five near the new AID-funded schools before the opening of the AID-funded schools blunted their impact.

Project construction has had an impact on the persistence of target disadvantaged groups.

- The percentage of enrollment increase over the expected in grades two through six was greater for girls than for boys in each of the four years after the new school opened, as shown in Table 7.

Table 7

Successive Year Impact on Grades 2-6 Persistence by Sex
After the New Schools Opened
(Extensive Sample)

Additional Students Persisting Per Site		First Year(*)	Second Year(*)	Third Year(*)	Fourth Year(*)
Boys	No.	53	61	33	34
	%	(8)	(9)	(5)	(5)
Girls	No.	34	66	71	88
	%	(11)	(19)	(18)	(22)

*See footnotes on page 7.

- Persistence rates of 9- to 12-year-olds have also increased since the opening of new schools in the community sample. Almost all of the target groups showed improved ratios of persistence over those of the same groups two years before new schools opened. (See Table 8)

Table 8

Target Group Persistence at the Primary Level Before and After
Construction in Original Five Governorates
(Intensive Community Sample)

Groups of Students	Before New Schools Opened			After New Schools Opened		
	Total 9-12 Yr. Olds	No. In School	Percent	Total 9-12 Yr. Olds	No. In School	Percent
Total Children	470	419	(89)	618	579	(94)
Males	311	284	(91)	392	379	(97)
Females	159	133	(84)	226	200	(88)
Economically disadvantaged	119	97	(82)	180	155	(86)
Urban villages	303	267	(88)	365	344	(94)
Rural villages	167	152	(91)	253	215	(85)

Note: The age cohort 9-12 was selected because these children are in the critical last years of primary school where persistence may make the difference in whether literacy skills are attained. The figures for two and three years before new schools opened were used to avoid the possibility that anticipation of new school opening would affect persistence. Differences in ratios in these different time periods may partially reflect trends independent of new school construction.

Comment

Project construction has increased persistence of all the target disadvantaged groups significantly above the trend.

In the intensive community study, all categories of 9- to 12-year-olds remained in school longer after new schools opened except in the rural village sites, probably because these communities are more conservative about girls' continued participation at this particular age level.

In all ten governorates a number of factors were found to affect the dropout of children at the primary level and therefore affect the extent of project impact. (See Table 9) According to parents, the most important of these are:

- School-related problems
  The problem of failed exams, teacher use of physical punishment as a means of discipline, child discouragement, and other factors related to the school environment accounted for over half of all dropouts and almost three-quarters of male dropouts.

- Grade repetition
  Children who repeat grades are more likely to drop out, particularly if they repeat the early grades.

- Economic reasons
  The economic level of the household, costs of schooling, and the need for child labor accounted for about one-fifth of all dropouts and was cited almost twice as often for girls as for boys as the main reason for dropping out.

- Gender-related reasons
  Custom or traditions and marriage are exclusively female dropout reasons, accounting for 16 percent of girl dropouts.

Table 9

Reasons Given by Parents for Dropout in Ten Governorates
(Intensive Community Sample)

Reason for Dropout	Male		Female		Total	
	No.	%	No.	%	No.	%
Problems in School	192	(74)	76	(42)	268	(61)
Economic Reasons	40	(15)	51	(28)	91	(21)
Gender-related	-	(0)	28	(16)	28	(6)
Illness & mental retardation	15	(6)	6	(3)	21	(5)
Accessibility of School	4	(2)	8	(4)	12	(3)
Ed. not considered important	7	(3)	7	(4)	14	(3)
Other	1	(0)	3	(2)	4	(1)
Total	259	(100)	179	(99)	438	(100)

Note: Reasons for dropout identified by teachers and peers in schools put more emphasis on home-related versus school-related problems.

Comment

Project construction has reduced the distances children in new school communities have to travel to school with a consequent positive effect on children's persistence in school. If the school-related factors of failure and repetition are to be addressed, it is necessary to improve the quality of educational programs in the early primary years.

3. EFFICIENCY

Project construction has had a significant impact on decreasing wastage, particularly for target disadvantaged groups. (See Appendix A: The School Efficiency Study)

- Status before new school construction. Of the 15- to 25-year-olds in the community sample (an age old enough to have completed grade nine), 38 percent never enrolled and are illiterate (323); 14 percent are preliterate, having dropped out of school before completion of grade five* (116); and 49 percent are functionally literate, having completed grade five or higher (420). Out of 4,291 years of schooling purchased for this group, 6 percent (244) were wasted by repetition; and 10 percent (432) were wasted by children dropping out before achieving functional literacy.

*Assumed level by which functional literacy is acquired.

- Status after new school construction. Of the cohort entering grade one in 1985/86 in the school sample of the first five governorates, 75 percent will complete grade six in six years, assuming the current dropout and repetition rates. Of the cohort entering grade one in 1986/87 in the new five governorates the comparable figure is 64 percent. Thus the productivity rates in the second set of governorates is considerably lower.

- The cumulative dropout rate. For the six grades of the primary level the cumulative dropout rate was 11.1 percent in the school sample of the first five governorates and 17.3 percent in the second five governorates.

- Years wasted by dropout and repetition in primary schools. In the second five governorates 2.0 percent of the total primary school years purchased for the sample schools was wasted annually by dropout before completion of grade five, 1.4 percent by dropout in grade six, and 1 percent by grade repetition in grades one through six, for a total of 4.4 percent of the school years purchased. (See Table 10). In addition, in some schools children who had dropped out previously were continued on the school rolls as though active members of the school student body. These "paper" children who are erreonously reported as enrolled on the annual school census, represent 2.3 percent of the total grade 1-9 enrollment but 3 percent of the sixth grade enrollment.

Table 10

Primary School Years Used Annually by Dropout and Grade Repetition
Second Five Governorates
(Intensive School Sample)

Year Used	Second Five Governorates	
	No. of Years	Percent of total Years Purchased
Years used by dropouts in grades 1-5	587	(2.0)
Years used by grade repetition in 1-6	291	(1.0)
Years used by dropouts in grade 6	390	(1.4)
Years used for completion grade 6	27,451	(95.6)
Total school years purchased, grades 1-6	28,719	(100.0)

Comment

Wastage represents a loss of resources for the Government of Egypt. Though at first glance these percentages seem low, the effect is large when generalized to the 12,669 primary schools that existed in Egypt in 1984/85. If our figures reflect the overall situation in Egypt and if remedial programs could reduce the inefficiencies by 50 percent, the increase in efficiency would be equivalent to adding the student capacity of 428 six-classroom schools operating at current efficiency levels.

4. EFFECTIVENESS OF EDUCATIONAL PROGRAMS

Factors in the school environment affect student learning and therefore affect the extent of project impact on achievement.

The team's examination of pass rates on academic examinations in the sixth and ninth grades, along with classroom observations, and interviews with teachers, headmasters, supervisors, and other relevant MOE officials show a positive relationship between a school's success rate and the following factors:

- The Headmaster. The headmaster is an important influence on student achievement. Those headmasters from the local community who exert strong leadership, have had lengthy teaching experience, run a well-organized school, and have implemented concrete ideas to improve learning have the greatest positive impact on student achievement.

- Local Staff. When staff, particularly the headmaster, are from the local area they are less likely to be absent; they communicate better with the children, and they assume greater responsibility for providing quality instruction.

- Homework. The amount of homework given in science, Arabic and mathematics is positively correlated with student achievement.

- Factors which do not show a consistent pattern of relationship to student academic achievement are: school size, location (urban or rural), age of the school, type of shifts (single or double), sex of the headmaster, and class size.

USAID-funded equipment has shown differential impact on student practical skills achievement in the industry course.

- In the majority of primary schools in the first five governorates where practical skills tests were administered in the electricity and carpentry portions of the industry course, 50 percent or more of the tested students passed.

- In the second five governorate sample, 50 percent or more of the children passed electrical skills tests in only 21 percent of the primary schools. Fifty percent or more passed carpentry tests in only 14 percent of the primary schools.

- In none of the sample preparatory schools of the ten governorates did 50 percent of the children pass electrical skills tests. Fifty percent or more passed the carpentry tests in only 18 percent of the preparatory schools.

Comment

Although children in the sample schools of the second five and in the preparatory schools generally gave a poor showing on practical skills tests, in some schools that care about results and in which the headmaster stresses the importance of the practical courses, excellent use is made of equipment and high student achievement in practical skills is demonstrated. Clearly, the potential exists for far greater impact from the provision of equipment than is evident in the results from the sample schools of the study.

A number of factors in the school environment affect the acquisition of practical skills and therefore affect the extent of project impact.

The most significant factors limiting the acquisition of practical skills are:

- lack of importance given to practical courses;
- inadequate raw materials budgets (wood, cloth, wire, etc.);
- lack of teacher training in the use of equipment;
- uneven distribution of equipment;
- a tendency to teach theory rather than practice;
- lack of equipment maintenance and repair funds;
- inadequate work and storage areas for equipment;
- inappropriateness of text books.

Comment

Because practical course work and its results have no connection in the schools with decisions about the direction and extent of future schooling, students, teachers, and parents consider the practical courses of virtually no importance in comparison with academic courses. This probably accounts for the especially poor test results in the preparatory schools where attention and importance are directed almost totally towards academic preparation.

5. TECHNICAL ASSISTANCE

Technical assistance has made no measurable impact on the procedures, policies, programs or operations of the MOE, its governorate offices or in schools (as of May 1986).

- Four of ten technical assistance work orders were completed and six begun but not completed as of May 31, 1986, the end of the original TA contract. The contract was extended for an additional year. All of the TA work completed during this contract extension year, June 1, 1986/May 31, 1987, was accomplished after the end of the TA evaluation component of this project. Therefore this report contains no information about the work completed after May 1986 nor any judgments about its quality.

Comment

The benefits of a number of the unfinished work orders are potentially high but not yet measurable.

A number of structural factors in the design and operation of the TA project and in the MOE appear to affect the utilization of technical assistance and therefore affect the extent of project impact. The most significant factors limiting the use of TA are:

- lack of any constraints or established, useful criteria which would limit the number of work efforts to a realizable few in areas of high importance to improving educational quality; nor is there concern given to varying their mix (ie, low vs. high MOE involvement; capacity building vs. simple advice; simple technology transfer, vs. development; short-term vs. long-term; simple vs. complex; etc.);

- lack of any provision or funding for the implementation of results;

- absence of routine mechanisms to implement the results, and monitor and assess their effectiveness;

- lack of any systematic attention paid to means of decreasing resistance to change in the MOE;

- lack of any mechanism in the TA system or the MOE for the formative evaluation of the feasibility, the cost-effectiveness, and the socio-political factors that will operate to constrain, limit, or substantially modify the impact of TA produced and recommended changes; and

- lack of any formally established mechanism to disseminate the knowledge of the results of TA to the appropriate levels within the operating divisions of the MOE and its governorate offices.

RECOMMENDATIONS

This section summarizes the most important recommendations of the four-year study of USAID contributions to basic education and integrates the major recommendations into a comprehensive program that the team urges the MOE to adopt and USAID to support.

1. COMPREHENSIVE PROGRAM TO INCREASE ACCESS TO AND IMPROVE THE EFFECTIVENESS OF BASIC EDUCATION

Project construction has had a strong effect on access to education in the areas where new schools have been located. The team commends the MOE for the efforts it has made to pursue a vigorous program for distributing educational opportunities as equitably as possible across Egypt.

Recommendation:

Consistent with its goal of increasing access, USAID should continue to support new school construction in areas where facilities are distant or not available, using the same distance criteria and the same requirement that local communities donate land.

Evidence from the study supports the need for the MOE to continue to pursue a construction program that has broader aims than only increasing access, i.e., to reduce crowding, eliminate triple shifts and replace dangerous or unsuitable facilities.

--•--

The team is concerned that not enough attention is being directed at improving quality in the educational program. USAID contributions of instructional equipment and technical assistance, intended to improve the quality of the educational program, have had limited impact largely because the educational system as it operates presently is not designed to extract maximum benefit from them.

A major operational problem in the existing educational system is the lack of a regular mechanism for continuous evaluation and improvement based on objectively verifiable indicators of progress. There are three components to such a self-correcting system:

- development of detailed, measurable, learning objectives for each grade, subject and educational level;
- regular systematic assessment of these objectives; and
- feedback of results into a system that takes action to remedy the deficiencies in the instructional system and measures the attainment of results in a continuous cycle.

Recommendation:

The MOE should adopt and USAID should support activities that lead to a tightly managed primary educational system that continuously and objectively assesses how well it is achieving its intended learning results--the outcomes of instruction--and modifies its component elements, systems, and procedures in a constant process of self-improvement.

In such a result-oriented or outcome-based system, the limited number of elements that can be manipulated to improve the quality of educational programs (learning objectives, testing, textbooks and teacher guides, teacher training, supervision and management) should be aligned to produce the specified, measurable learning objectives sought. The activities that support an outcome-based system include:

- development of detailed, measurable, teaching objectives;
- criterion-referenced tests linked to the objectives;
- production and testing of instructional materials and teachers' guides linked to learning objectives;
- in-service training for teachers in how to teach the objectives;
- training for supervisors and headmasters in how to supervise and manage an outcome-based system; and
- testing and modifying each element of the system until the desired results in student learning are produced.

The activities leading to an outcome-based system can be pursued in a phased and incremental way starting with a few schools and a limited number of grades and subject matters. As a start we suggest development and trial use of such a system for math and science in grades 1-4 of experimental or demonstration schools. For a complete trial in this setting the entire set of activities should be carried out to produce a fully functioning system. (See Appendix F for a fuller discussion)

--●--

At present the MOE lacks a research arm connected closely to implementation and policy-making units of the Ministry. Whether newly organized or added to appropriate departments already in existence, the unit should link feedback of results to a continuous program improvement cycle.

Recommendation:

The MOE should established a research, development, and evaluation unit for school improvement within the Ministry to carry out solution-oriented research, policy-related studies, and formative evaluation. The activities of the unit would include the three kinds of research and assessments described below:

- In order to remove bottlenecks in the present educational system, practical studies should be conducted to identify solutions that will make the present system operate more efficiently. For example, such studies might examine how the textbook distribution system could be improved so as to provide texts to students in a more timely manner, or suggest ways of improving school pupil accounting systems to provide a better basis for planning.

- Macro-level research should be conducted to support various policy options so that policy can be made on the basis of concrete, scientifically established results. The unit should be responsible for examining the determinants of effective schools and effective teaching. It should conduct research on the effectiveness of curricula, teacher guides, and textbooks, and put particular emphasis on validating newly developed curricula in a cycle of extensive field testing, revision, and re-development before large-scale adoption takes place.

- The MOE, assisted by USAID, should develop the formative evaluation capacity to drive the outcome-based system by providing a continuous assessment of the various elements of the educational system. Such a unit would monitor program interventions, assess the impact of corrective measures to improve the system, feed this information back to program developers for further modification, and conduct assessments of the innovations. The unit would be responsible for continuous evaluation and improvement of school programs based on clear, concrete evidence of results.

Together, these four recommendations would build on the strengths already existing in the MOE and begin to resolve the problems inherent in the present educational system that hinder improvement of instructional programs.

The outcome-based system the team recommends does not exist in fully developed form in the present system. It would involve the development of a regular operating system for defining in detail, measurable, instructional objectives and measuring their attainment. It would provide a routine mechanism within the MOE to continuously assess and improve the quality of educational programs.

2. PROGRAM-SPECIFIC RECOMMENDATIONS

The following recommendations are concerned primarily with the detailed aspects of how USAID contributions to basic education in Egypt can be more effectively used in the future. They are reported here, grouped by desired outcome.

A. Access to educational programs

- Because of rapidly growing populations of primary school children, new school size should be adjusted to local need. Overbuild where necessary.

- Where it is anticipated that preparatory schools will not be available to children of a local community, build basic education schools large enough to expand to grade nine.

- Attention should be paid to insuring the long-term maintenance of USAID-funded schools.

- Experimentation with new school designs should be initiated to see if more appropriate or cost-effective schools can be constructed.

- To achieve universal enrollment in grade one, the MOE should encourage recruitment of the few remaining non-enrolled resisters.

B. Increased effectiveness of educational programs

- The MOE should use diagnostic tests created within an outcome-based system to develop remedial programs for children who do not master desired skills in grades one through four.

- The MOE should identify and provide special help for schools where children's academic performance is low. These schools should be easily identifiable through analyzing the results of criterion-referenced tests of an outcome-based system.

- The MOE should continue present efforts to recruit headmasters and teachers from local areas, who are more responsive to community needs.

- The MOE should review the outcomes in student learning of practical skills and consider whether basic education courses as currently designed and taught meet the goals intended for them. If not, practical skills courses need to be redesigned to produce the desired results through a process similar to the recommended outcome-based system.

- USAID should provide technical assistance to support the above activities under the comprehensive umbrella of developing an outcome-based system.

C. Increased cost-effectiveness of educational programs

- The MOE can further decrease the levels of repetition and dropout by instituting an outcome-based system and remedial programs that would effectively reduce the costs of education.

- The MOE should focus its resources on the early grades of the primary system to ensure that children develop functional literacy and numeracy skills.

- The MOE may want to consider relaxing compulsory attendance rules after the primary level, so that children who do not benefit from continuing in the regular system can find suitable alternatives. This would provide more resources for improving the primary program.

D. Increased effectiveness of USAID-funded equipment

Though a number of the problems associated with equipment use are now being addressed by the MOE and USAID, we reiterate the needs uncovered by the study:

- a review of the basic learning objectives of the industry and agriculture courses to evaluate whether they address the general aims for which they were designed;

- a re-orientation of the practical learning courses so as to enhance their importance in the eyes of students, parents, and school authorities, especially at the preparatory level;

- the development of specific, measurable, learning objectives for those courses, and a formal assessment system to measure the attainment of the specific learning objectives in each;

- in-service teacher training emphasizing the hands-on use of equipment;

- the provision of adequate raw materials budgets;

- a review of equipment lists to ensure that they fit the curriculum;

- the consideration of other subject areas where equipment might be used;

- improvements in the systems of distribution, repair, maintenance, and storage, and budgets to support these changes; and

- the consideration of how low-cost alternative equipment could be produced in Egypt.

E. Improving the effectiveness of technical assistance

For the future, technical assistance should be designed with the following changes in process and procedure:

- Work orders should concentrate on fewer areas of high priority for school improvement and should contain

provisions for the institutionalization of agreed-upon changes.

- Regular communication channels between the MOE and USAID should be institutionalized so that both sides can voice their needs, concerns, and issues as part of the normal operation of the technical assistance effort.

- A system should be developed for regular, formal, internal review and progress checks, with technical assistance provided by the next TA contractor in designing and training a formative evaluation component in the MOE. This component could be part of the unit described above in the outcome-based system, that provides feedback to all interested parties: the MOE, USAID and the contractor.

- A system for establishing work-order priorities should be formally established. It should be used to make decisions about which of the current phase I work orders should be continued into the next phase; in what order; which should be terminated; and what new work should be undertaken. It would be of importance for USAID to participate fully in this process.

- An external evaluation effort should be funded that uses formative evaluation data as well as its own independently gathered data to monitor and evaluate mid-course and end-of-contract impact.

The team would like to emphasize again that modification of the current educational sytem to make it more explicitly outcome-based and self-correcting through the provision of linked cycles of evaluation and improvement would do much to resolve the problems described above. Such a system can be established gradually on a grade-by-grade, subject-by-subject, or school-by-school basis. Funding support for such a system fits within the categories proposed for new phases of the USAID project. It requires only the establishment of a system of coordination to link the elements in a mutually interdependent whole.

LOGICAL FRAME WORK

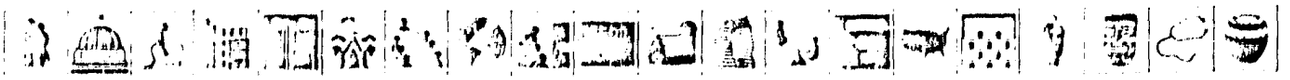
PROJECT DESIGN SUMMARY
LOGICAL FRAME WORK

Project Title & Number Basic Education (761-0139)

Life of Project:
Total U.S. Funding: $45.0 Million
Date Prepared: 5/31/81

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
A. Program Sector Goal	Measures of Goal Attainment		Assumptions for Achieving Goal Targets.
Enhance government efforts to improve physical quality of life (PQLI).	Literacy among rural youth increased.	Census data. External project evaluations.	Literacy is a factor favorably impacting on PQLI. Formal primary education effective source of literacy training.
B. Project Purpose	Conditions that will indicate purposes have been achieved. End of project status:		Assumptions for achieving purpose.
Expand enrollments and enhance efficacy of primary/basic educatior	Enrollment among six-year olds in target areas increased 9%. In-service teacher education program developed. Educational planning and cost analysis studies. Community-based curriculum development studies.	Education zone enrollment reports. Baseline and progress data collected through external evaluations. Contractor studies/reports.	Shortages of classroom spaces constrain enrollments. MOEd will staff, furnish and equip project financed classrooms. Relevant, practical educational materials and equipment enhance learning.
C. Project Output	Magnitude of output.		Assumptions for achieving output.
1. Construction	1. 6,595 new classrooms ($71.3 million)	Education zones and MOEd status reports.	Adequate administrative capacity in NIB, Housing depts, Education Zones and
2. Technical Assistance	2. 140 person-months plus sub-activities ($2.0 million).	NIB Financial Reports Contractor Reports.	MOEd. Adequate supplies and timely construction materials.
3. Educational Commodities	3. Instructional materials and equipment for approximately 1,000 schools ($10 million).		
D. Project Inputs	Implementation Targets (Type and quantity).		Assumptions for Providing Inputs.
USAID Grant	$ 5.0 million	USAID Financial Records GOE, MOEd and NIB Reports.	Government investment in basic education sufficient to keep pace with population growth. Acceptable list of instructional materials. Community donated building sites.
GOE Contribution	$ 8.3 million		
	$ 83.3 million		

CREATIVE ASSOCIATES INC



FOURTH ANNUAL REPORT
OF THE
STUDY OF USAID CONTRIBUTIONS TO THE
EGYPTIAN BASIC EDUCATION PROGRAM

(Contract No. 263-0139-C-00-3009-00)

VOLUME II

Submitted to: USAID/CAIRO

October 1987

Wade M. Robinson, Ed.D., Team Leader
Nadia Makary, Ph.D., Project Coordinator
Andrea Rugh, Ph.D., Senior Associate

CREATIVE ASSOCIATES INTERNATIONAL, INC.
WASHINGTON, D.C.

HEADQUARTERS
3201 NEW MEXICO AVENUE, N.W., SUITE 270, WASHINGTON, D.C. 20016
(202) 966-5804 TELEX: 440523 CREA

FOURTH YEAR ACTIVITIES

Fourth year activities involved expanding the 1985/86 studies of dropouts and practical skills achievement carried out in the old governorates, to include the new five governorates. In addition further enrollment data were collected in the five original governorates (Bahira, Kafr al Shaikh, Qena, Assiut and Sohag). This data, along with similar data collected from the five new governorates (Minya, Bani-Suaf, Fayyum, Giza and Sharqiya) served to answer a number of specific questions determined by USAID/Cairo.

This section reports the fourth year findings, grouped according to the outcomes the USAID contributions were designed to produce: impact on enrollment, persistence and the economic effects of wastage, and student achievement. These findings are new information not found in previous reports.

1. IMPACT ON ENROLLMENT IN GRADE ONE

First year impact in the new five governorates

FINDING: USAID-funded school construction in the sample sites of the new five governorates added an average net increase of 27 students per site (19 boys and 8 girls) representing a 13 percent increase over expected enrollment (a 14 percent increase for boys and an 11 percent increase for girls).

Fourth year impact on grade one enrollment in the old five governorates

FINDING: In the fourth year after new schools opened, USAID-funded school construction in the sample sites of the original five governorates added an average net increase of 22 students per site (12 boys and 10 girls), representing an 8 percent increase over expected enrollment (a 7 percent increase for boys and a 9 percent increase for girls).

Comparison of first year impact on grade one enrollment in the two sets of governorates

FINDING: First year impact after new schools opened was considerably higher in the original five than in the second five governorates. In the former, the net increase added an average of 46 students (21 boys and 25 girls) per site, compared with an average of 29 students (21 boys and 8 girls) in the new governorates. The difference is accentuated in the case of the impact on girls' enrollment.

Comment:

The differences in impact in the two sets of governorates (in addition to the fact that only 20 extensive sites were studied in the new governorates compared with 40 sites in the old governorate), may be due to the fact that in five of the new governorates' sites, the MOE had constructed and opened new schools before the USAID-funded schools opened, thus modifying the intensity of the impact of the subsequent opening of the new AID-funded schools. No such new MOE schools were opened in the old governorate sites before the new USAID-funded schools opened.

2. IMPACT ON PERSISTENCE

Enrollment in Grades Two Through Six

First year impact on enrollment in grades two through six in the new governorates

FINDING: On the average, USAID-funded school construction in the sample sites of the new governorates increased the total enrollment of children in grades two through six by a net amount of 80 students per site (62 boys and 18 girls), representing a 10 percent increase over expected enrollment (a 12 percent increase for boys and an 8 percent increase for girls).

Fourth year impact on enrollment in grades two through six in the old governorates

FINDING: On the average, in the fourth year after opening, USAID-funded school construction in the sample sites of the original five governorates increased the total enrollment of children in grades two through six by a net amount of 122 students per site (34 boys and 88 girls), representing an 11 percent increase over expected enrollment (a 5 percent increase for boys and a 22 percent increase for girls).

Comparison of first year impact on enrollment in grades two through six in the two sets of governorates

FINDING: First year impact was higher in the original governorates than in the new governorates. In the former, the net increase added an average 98 students (51 boys and 47 girls) per site to enrollment in grades two through six compared with an average 80 students (62 boys and 18 girls) in the new governorates. The difference in the impact on girls' persistence is striking. The lower impact in the new five governorates may be due to the same factors noted for grade one enrollment.

Repetition

Primary level repetition in the old and new governorates

FINDING: Grade repetition at the primary level can occur in grades two, four, and six as a result of exam failure. Overall in 1986/87, 6.4 percent of the students (7.7 percent of males and 6.1 percent of females) repeated a year in the primary school sample of the new governorates. The highest rate of repetition occured in grade four (10.2 percent for males and 7.6 for girls).

In the first five governorates in 1985/86, the repetition rate was lower, 5.1 percent for all students, (4.5 for males and 3.6 percent for females) and the highest rate of repetition occurred at grade six (12.8 percent for males and 7.2 percent for females).

Table II-1

Repetition Rates as a
Percentage of Grade Enrollment by Sex
(Intensive Primary School Sample)

Grades	Male %		Female %		Total* %	
	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates
2	3.1	6.1	2.6	2.8	2.9	4.8
4	3.2	10.2	1.4	7.6	2.4	9.2
6	12.8	6.7	7.2	2.4	10.5	5.2
Total	6.1	7.7	3.6	4.5	5.1	6.4

*Total enrollment, grades 2, 4, 6 : First Five (1985/86) 6,315
: Second Five (1986/87) 4,513
: Grand total 10,828

Comment:

Part of the difference in repetition rates in the two sets of governorates may be accounted for by a policy change that seeks to encourage more children to continue on to the preparatory level. Thus the rates in the new five governorates collected a year later may reflect a gradual relaxation of standards for sixth grade exams.

Preparatory level repetition in the old and new governorates

FINDING: Grade repetition can occur in each year of the preparatory level. The overall repetition rate in the first five governorates (12 percent) was not significantly different from the rate (11 percent) in the second five governorates. However, in the second five governorates a much larger ratio of students repeated grade nine (29 percent compared with 18 percent) and much lower ratios of students were repeating grades seven and eight.

This finding is consistent with the comment noted above that policy changes may account for some of the difference. In this case, the repetition rates may reflect a decision to relax standards within the nine years of basic education while toughening the ninth grade graduation requirements.

At all preparatory grades, girls repetition rates are lower than those of boys. (See Table II-2)

Table II-2

Repetition Rates as a
Percentage of Grade Enrollment by Sex
(Intensive Preparatory Schools Sample)

Grades	Male %		Female %		Total *%	
	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates
7	10.1	4.1	5.9	1.6	8.7	3.3
8	9.5	5.6	6.8	1.1	8.7	4.6
9	21.1	31.0	8.3	21.8	17.5	28.7
Total	13.7	12.2	6.9	6.7	11.6	10.7

*Total enrollment, grades 7-9: First Five (1985/86) 3,695
: Second Five (1986/87) 4,773
: Grand total 7,468
: Grand total 18,296

Dropout

Primary level dropout rates in old and new governorates:

FINDING: The annual dropout rate was higher in the primary school sample of the new five governorates (2.9 percent) than in the original five governorates (2.0 percent) and almost as high as the estimated dropout rate in 1983 for all Egypt (3.2 percent). Individual schools of the sample showed considerable variation in dropout rates.

Female annual dropout rates in all ten governorates are higher at the primary level than male dropout rates. (See Table II-3).

Table II-3

Dropout Rates as a Percentage of Grade Enrollment by Sex (Intensive Primary School Sample)

Grades	Male %		Female %		Total %	
	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates
1	1.7	.4	2.3	1.3	1.9	.8
2	2.8	2.5	1.1	4.7	2.1	3.4
3	.9	1.2	1.0	2.4	.9	1.7
4	1.9	2.7	2.2	6.2	2.0	4.1
5	1.2	2.4	2.9	1.6	1.9	2.1
6	3.2	6.5	2.9	2.7	3.1	5.2
Total	1.9	2.6	2.0	3.3	2.0	2.9

Preparatory level dropout rates in old and new governorates

FINDING: The annual dropout rate in the preparatory sample of the first five governorates (2.1 percent) did not differ significantly from the rate (1.6 percent) in the second five nor was there much difference in the male and female rates from year to year. By contrast with the primary level, male dropout rates remained consistently higher than female rates in both samples of the preparatory level. (See Table II-4)

Table II-4

Dropout Rates as a Percentage of Grade Enrollment by Sex (Intensive Preparatory School Sample)

Grades	Males %		Females %		Totals	
	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates
7	1.9	1.5	1.3	1.0	1.7	1.4
8	2.0	.9	.9	0	1.7	.8
9	3.1	3.0	2.0	1.5	2.8	2.6
Total	2.3	1.8	1.4	1.0	2.1	1.6

Primary and preparatory levels cumulative dropout rates:

FINDING: The overall cumulative dropout rate in the sample of new governorates (22 percent) was slightly higher than in the original governorates (18 percent). Though at the primary level female dropout rates were higher than those of males and lower at the preparatory level. Overall they totalled about the same. (See Table II-5)

Table II-5

Cumulative Dropout Rates as a Percentage of Grade Enrollment by Sex (Intensive Sample Schools)

Grades	Males %		Females %		Totals	
	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates	First Five Governorates	Second Five Governorates
1-6	11.7	15.7	12.4	18.9	11.9	17.3
7-9	7.0	5.4	4.2	2.5	6.2	4.8
1-9	18.7	21.1	16.6	21.4	18.1	22.1

Comment:

The difference in dropout rates in the two samples is probably due to the fact that the new governorates contain more "urban village" schools. The dropout rate in urban village schools tends to be higher than the rate in remotely rural schools or in city schools.

Dropout rates between grades six and seven in the new five governorates

FINDING: The overall dropout rate between grades six and seven is 1.5 percent. Male (1.4 percent) and female rates (1.7 percent) are virtually the same.

"Paper" children

FINDING: Paper children are those who have dropped out of school but whose names continue on the roll and are therefore erroneously reported as enrolled in the annual school census. In the sample schools of the new five governorates, 2 percent of "enrolled" primary students are actually paper children (3 percent females and 2 percent males). At the preparatory level, 2 percent of "enrolled" children are paper children (3 percent of males and 1 percent females). Though some of these names will be dropped from the

rolls at the beginning of the new school year, at current rates 71 percent of primary paper children will remain on the roll and 68 percent will remain on the roll at the preparatory level.

Comment:

Though 2 percent is not high, comparison between the enrollment lists of May 1986 and April 1987 shows that about a third of all dropouts still on the rolls had left school two or more years before May 1986.

Part of the problem could be solved if the MOE issued clear directives distinguishing between "active" and "inactive" students on the roll with only the former reported in school census data.

Reasons for dropout given in home and school in new five governorates

FINDING: Reasons reported for why children drop out of school vary depending on where, school or home, the question is asked. Parents stress school-related factors more heavily than teachers and the dropouts' peers in school, while the latter are more likely to give greater weight to economic or home-related problems. Overall, at both primary and preparatory levels, in both school and home, the major reasons for dropout of males and females in the new five governorates were school-related problems, e.g. exam failure, excessive discipline, difficult curriculum, etc. (See Table II-6, below)

Table II-6

Reasons Given for Primary School Dropout in Home and School
(Second Five Governorates, Intensive School Sample)

Reasons For Dropout	Home Reported				School Reported			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
School related	55	(73)	39	(60)	42	(56)	28	(43)
Economic	13	(17)	16	(25)	27	(36)	25	(38)
Illness	6	(08)	4	(6)	4	(05)	3	(05)
Lack of motivation	1	(01)	2	(03)	2	(03)	6	(09)
Female specific	--		2	(03)	--		3	(05)
Other	--		2	(03)	--		--	
Total	75	(100)	65	(100)	75	(100)	65	(100)

Table II-7

Reasons Given for Preparatory School Dropout in Home and School
(Second Five Governorates, Intensive School Sample)

Reasons For Dropout	Home Reported				School Reported			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
School related	30	(81)	2	(29)	24	(65)	2	(29)
Economic	4	(11)	1	(14)	10	(37)	--	
Illness	1	(3)	--		1	(3)	--	
Female specific reason	--		4	(59)	--		5	(71)
Lack of motivation	1	(3)	--		2	(3)	--	
Other	1	(3)	--		1	(3)	--	
Total	37	(100)	7	(100)	37	(100)	7	(100)

Note: Numbers are so small that percentages cannot be relied upon.

Reasons for dropout between grades six and seven in the new five governorates

FINDING: Only four children who were visited in both home and school dropped out between grades six and seven. All were males. Two had failed grade six twice (which gave them an automatic pass to seventh grade special classes). One no longer wished to continue, and a fourth was needed to work at home.

Productivity

Impact of new construction on grade seven enrollment (productivity rates)

FINDING: Given no change in dropout or grade repetition rates, new-school construction would add 8 percent to seventh grade enrollment seven years after the opening of new schools. That is, for every first grade enrollment cohort of 1,000 in new schools, 708 will enroll in grade seven in seven years; whereas, in existing comparison schools 656 will enroll in grade seven, seven years later. (See Table II-8)

Table II-8

Impact of New Construction on Seventh Grade Enrollment
(Second Five Governorates Intensive School Sample)

Indicators	New Schools	Comparison Schools
First grade cohort	1000	1000
Graduates of 6th grade in 6 years	730	667
Dropout before enrolling in grade 7	22	11
Grade 7 enrollment	708	656
The relative impact of new school:	$\frac{708-656}{656} = 0.079 = 8\%$	

3. ECONOMIC EFFECTS OF WASTAGE

Economic effects of dropout and repetition in the new five governments

FINDING: If the wastage created by dropout and repetition is assumed to apply to all the primary schools of Egypt, an increase in efficiency of 50 percent over the rates found in the sample primary schools of the five new governorates would have the effect of adding the capacity of 428 new six-room schools operating at current levels of efficiency. Using a similar formula in the first five governorates, the increase in capacity would equal that of 242 six-room schools operating at their current rates of efficiency. (See Appendix A for more detail)

4. IMPACT ON SKILL ACHIEVEMENT

Practical Skills

Practical skill achievement in Industry in the preparatory schools of all sample governorates

FINDING: Of the 12 preparatory schools in the sample in which electricity was taught in the industry course, in none did more than half of the students receive a passing score of 50 percent in the electricity examination. In only three out of 15 schools in the sample in which carpentry was taught, did more than half of the tested students pass the carpentry exam. Score averages were lower in both industry sub-fields for females in every grade except for grade nine carpentry, where females scored slightly higher than males. Overall, the preparatory school students scored lower than primary students even though in

most cases the preparatory students had experienced several more years of practical skill training. (See Table II-9 and Appendix B)

Table II-9

Average Scores, Work-Sample Tests of Practical Skills and Knowledge in Carpentry and Electricity (Intensive Preparatory Schools Sample)

Industry Course	GRADE LEVEL						
	7		8		9		T
	M	F	M	F	M	F	
Carpentry	40	35	43	40	39	43	40
Electricity	40	34	33	28	49	39	38

Relationship between practical skill achievement and other factors

FINDING: A relationship exists between practical skill achievement, the amount of equipment existing in the industry course, and other aspects of school effectiveness. The schools with the most equipment were also the most effective academically, as measured by their pass rates. It was not possible to show a clear and consistent relationship between practical skills achievement, the amount of teacher training in equipment use, the presence or absence of workshops, or of electrical service to the school. We know from classroom observations and teacher questionnaires that a pattern exists between pupil learning in practical skills and teacher training, and between the amounts of raw materials and practical skills teaching. In the schools, student practical skills achievement was so uniformly low that there was not enough variation to show a clear relationship.

Comment

The relationship between these last four factors taken independently (teacher training, workshops, electricity in the schools, and raw materials) and practical skills learning is difficult to uncover in our small sample because of sample size and because of the students' generally low test scores overall.

An important factor contributing to these low practical skills achievement scores in the preparatory schools is the lack of attention and support given to them in comparison with that expended on academic courses. In addition, materials budgets for carpentry are virtually absent except in the larger, well-established, and effective city schools, and therefore it is difficult to

determine whether adequate budget levels alone would improve practical learning without additional teacher training, which our classroom observations and teacher questionnaire data tell us is very weak. (See also Appendix B)

Academic and Practical Skills

Relationship between academic and practical skills achievement in primary and preparatory schools of the sample

FINDING: There appears to be a positive relationship between academic pass rates and practical skills average achievement scores in the most and the least effective schools and a mixed relationship between academic achievement rates and practical skills in the middle-range schools. Overall, schools with the lowest academic pass rates also did not offer electrical courses, which may be evidence of a generally less effective overall educational program.

Comment:

Three types of schools can be distinguished from study evidence: those that achieve the highest results in both academic and practical courses; those that do the poorest in both, and those in the middle academic score range that sacrifice practical skills training to achieve academic success.

APPENDIX A

SCHOOL EFFICIENCY STUDY

INTRODUCTION

A school efficiency study was conducted in years three and four of the evaluation to assess the extent of the wastage problem and its probable causes. Increasing the access of children to educational opportunities only produces the desired outcomes of literacy and numeracy if the school program is effective, and if children remain in the system long enough to benefit from instruction. Wastage of human resources, whether caused by failure to enter school or by inadequate school programs reflected in grade repetition and dropout costs the society resources that might be better spent in expanding or improving the existing educational system.

Our primary concern was to identify and understand those aspects of the educational system that act as hurdles or impediments to the smooth flow of students into and through the basic education system. Enrollment and promotion policies and procedures govern this flow of students. In the first year of the study, we concentrated on how these policies and procedures were applied and on their consequences, using data from sample schools and families in the governorates of Bahira, Kafr al Shaikh, Assuit, Sohag, and Qena.

The objectives of the first year study were to:

- examine the effects of policies and procedures that govern initial enrollment;
- assess the extent and nature of the dropout problem in the schools;
- identify the causes of dropout as perceived in the home and the school;
- identify the school-related factors that affect children's persistence in school; and
- assess school productivity rates for the sample and the economic consequences of dropout and grade repetition.

The second year of the school efficiency study was carried out in the five governorates of the project's second phase, Minya, Bani-Suef, Fayyum, Sharqiya and Giza. Though there was no comprehensive community survey in the second year of the study, we were able to compare a set of households of recent dropouts with a set of control households. In the two-year study we were able to gather relevant information on initial enrollment, on the dropout problem and some of its reasons, and on grade repetition, thereby throwing light on those aspects of the system that could be improved. Through the study of the problems of the dropout child, it is possible to understand more clearly those aspects of the program that can be improved so that learning will be more effective. The second year of the study had the following objectives:

- to determine the productivity rates of a sample of schools;
- to establish whether different patterns of educational participation exist in dropout households and a matched comparison group of control households;

- to develop a profile of relevant dropout characteristics; and

- to compare data from the sample schools and households of the five governorates in the first year study with those in the second five in order to assess the extent of variation between the two sets.

THE SCHOOL SAMPLE

Sample Selection

Sites in the first year study were selected in the governorates of Bahira, Kafr al Shaikh, Assiut, Qena, and Sohag to reflect the range of new-school communities, varying from remote rural villages to "urban" villages (those near to and heavily influenced by urban centers). In 1986/87 the study was extended to include sites in a set of governorates from the project's second phase--Minya, Bani Suaf, Fayyum, Sharqiya, and Giza. Because construction of AID-funded schools was more recent in these "new" governorates, site choice was restricted but still permitted the team to select two rural-village sites, two urban-village sites, and one "mixed" site.

In the first year of the study, each site contained a three-school cluster, consisting of a new AID-funded primary school (in all but two sites), an already established comparision primary school in a nearby village similar in most respects to the new school community, (the "related" school) and a nearby capital city primary school which served as the standard against which comparisons could be drawn. The two exceptions were preparatory school sites, one chosen as a related school to a new AID-funded girls' school, and the other chosen erronously from ministry records as a primary school site. The team only learned it had been changed to a coeducational preparatory school upon arrival at the site. By then it was too late to change sites, so it was kept in the sample as a comparison site to the girls' preparatory school.

In the second year of the study the same site selection was made in the new five governorates, with the addition to each site of the preparatory school which the majority of the new primary school graduates would attend. This allowed us to fill out the preparatory school sample for practical skills testing and to gather additional data at this level for the efficiency study.

Sample Characteristics

For a summary of the salient characteristics of the sample schools, see Table A-1. Additional data on the sample may be found in the tables at the end of this appendix.

Table A-1

Schools of Efficiency Study
(Sample in All Ten Governorates)

Types of Schools	Student Enrollment			Schools								(Both) Grand Totals
				Rural Village		Urban Village		City		Total		
	First Five	Second Five	Total	First Five	Second Five	First Five	Second Five	First Five	Second Five	First Five	Second Five	
Primary												
New				3	3	4	2	-	-	7	5	12
Comparison				2	3	5	3	7	5	14	11	27
Sub Total	12,666	8,606	21,272	5	6	9	5	7	5	21	16	37
Preparatory												
New				1	-	2	-	-	-	3	-	3
Comparison				2	3	2	3	2	1	6	7	13
Sub Total	3,695	4,773	8,468	3	3	4	3	2	1	9	7	16
Grand Totals	16,361	13,379	29,740	8	9	13	8	9	6	30	23	53

A special study was made of the dropout students in the total sample enrollment of 29,740 students, grades one through nine. In the first five governorates, dropouts were identified by visiting schools, and checking current class rolls against the previous year's class rolls to determine which children were no longer present. We noted each absence and solicited reasons for absences from the teacher and the absentees' classmates, who were usually better informed and more reliable as informants.

In this way we identified a pool of absentees, with a a sub-set identified as dropouts, and recorded the reasons articulated for why they droppped out. The new school community study team then visited recent dropouts' households and gathered a second set of reasons for dropout from parents.

In March of that same school year, 1985/86, the schools were visited again to identify fall absentees who had not been dropouts but had been absent for reasons of illness, temporary work, because their families had moved, or death. In addition we recorded those who had dropped out of school since the fall visit.

In the second five governorates, (school year 1986/87), the team made only one visit to the schools in late spring 1987 but used the same procedure of visiting classrooms to identify dropouts, soliciting dropout reasons, and visiting homes to verify dropout status and reasons for dropout from parents.

Altogether the team discovered 326 dropouts from the 30 schools in the 1985/86 sample and a total of 467 from the 23 schools in the 1986/87 sample.

Table A-2

Dropouts from Sample Schools in the Ten Governorates

Type of School	Dropouts			
	First Five 1985 - 1986		Second Five 1986 - 1987	
	No.	%	No.	%
Primary	250	(2.0)	249	(2.9)
Preparatory	76	(2.1)	76	(1.6)
Totals	326	(2.0)	325	(2.4)

Note: This table only includes those who dropped out in the period from May of the previous school year to late March of the year visited. The students who dropped out in the 1986/87 year, did so between May 30, 1986 and late March 1987. The majority (65 percent) of the students who drop out do so during the summer, after successfully completing a school year.

Obtaining accurate numbers of dropouts is complicated by the phenomenon of "paper children." The team found that schools varied in the way they kept records about pupils. Before the annual school census in November, some of the schools purged their records of those who had not returned to school in the fall. Others kept the dropout children's names on the school rolls for several years. These children are called "paper" children, because their records, their "papers," continue from grade to grade. They fail exams because of absence, repeat grades two, four, and six and are promoted according to the rules of the promotion policy. This phenomenon is shown in Tables A-4 and A-5 reporting 1986-87 data from the new five governorates.

Table A-3

All Dropouts Discovered in the Sample School of the New Five Governorates

Time of Dropout	Dropouts		
	Male	Female	Total
From May 86 - March 87	200	125	325
Prior to May 1986	93	49	142
Total Dropouts	293	174	467

Table A-4

Type of Dropout

Type of Dropout	No. of Dropouts
"Paper" students (still on the roll)	310
Students removed from the roll	157
Total Dropouts	467

Table A-5 shows the variation in school record keeping. In the 23 schools of the sample, 310 children who dropped out are still on the rolls as active students. The table also reports the number and total enrollment of those schools who do and do not purge their records of dropouts.

Table A-5

School Record-keeping Practices Concerning Dropouts

Type of Record Keeping	Prim. Schools	Enrollment Size		Prep. Schools	Enrollment Size		Total	
	No.	No.	%	No.	No.	%	No.	%
Purge records of dropouts	4	2489	(29)	2	1524	(32)	4013	(30)
Retain dropouts on records	10	5730	(67)	4	2810	(59)	8540	(64)
No dropouts	2	387	(4)	1	439	(9)	826	(6)
Totals	16	8606	(100)	7	4773	(100)	13379	(100)

THE HOUSEHOLD SAMPLE

The household sample for the home-visit dropout study consisted of two types of households, called, for convenience, "dropout" households and "control" households. The dropout households were determined by identifying children who had dropped out of new and related schools and searching out their homes. In the time alotted for the field trip, it was possible to visit 180 households containing 186 of a total dropout population in the sample schools of 467 individuals. In the small rural communities, the team was able to visit a large proportion of dropout families, but in the large urban villages time only permitted visits to a sample of randomly selected dropout households. None of the dropouts of city schools were visited because of the difficulty of locating children in densely populated areas.

The control sample was composed of neighboring households matched as closely as possible to the dropout family with regard to economic level and the existence of a child enrolled at the same educational level. There were 175 control households matched in this way, with only five of the dropout households lacking a matched control. Because the matched household was the nearest possible neighboring one possessing these characteristics, distance to the relevant school was also kept constant in the two types of households. Previous field study in the ten-sample communities of the first five governorates (summarized in the Third Annual Report) established the relationship of distance and economic level to persistence in schools. That study found that dropout rates rise as distances between home and school increase above 1.5 kilometers. As economic level of the household rises, boy dropout rates in the sample decline and girl dropout rates rise.*

By controlling for the factors of economic level and distance to the school in the present dropout and control samples, it is possible, therefore, to look more carefully at other factors that may affect the phenomenon of dropout.

In all dropout and control families, an educational profile was completed for each member of the family and additional information was collected on each school-identified current dropout. Overall, information was collected on 2937 individuals, including 1536 males and 1401 females. Table A-6 shows the breakdown by sex of the most relevant group of the younger generation who are school age or over.

Table A-6

Sample Size of Households and Younger Generation of School Age or Over

Governorate	Sample	No. of Households	No. of Individuals age 6 and over		
			M	F	T
Minya	Dropout	15	39	27	66
	Control	15	28	14	42
Bani Suaf	Dropout	31	61	61	122
	Control	31	76	55	131
Fayyum	Dropout	40	101	77	178
	Control	38	83	68	151
Sharqiya	Dropout	21	53	50	103
	Control	21	43	34	77
Giza	Dropout	73	200	152	352
	Control	70	159	131	290
Total	Dropout	180	454	367	821
	Control	175	389	302	691
	Total	355	843	669	1512

*The contrasting dropout pattern of males and females is explained in more detail in the Third Annual Report, Vol. II, A-75, A-85.

As stated earlier, we were concerned in this study with understanding aspects of the educational system that act as impediments to the smooth flow of students into and through basic education. Hence we start with a description of the elements in the system that determine the rate of student flow.

STUDENT FLOW

INTRODUCTION

The Basic Education Law of 1981 raised mandatory schooling from age 12 (or grade six) to age 15 (or grade nine). Student flow through the system is governed by initial enrollment policies and promotion policies which are examination driven in all but three of the nine years of basic education. Children are automatically promoted from grades one, three, and five. In all the other years promotion to the next grade is contingent upon passing examinations, unless the child has repeated a year.

In grades two and four, the exams are locally created, usually by a senior teacher in the school or one or more supervisors in the local district. Grade six and grade nine exams are written at the governorate level. All exams are administered and graded under strict control. Students who fail the exams in any of these grades at the close of the school year may repeat the failed portion at the end of the same summer. Success in this second try is rewarded by promotion, except at grade nine.

In all other cases the child is required to repeat the grade. At the primary level failure at the end of the repetition year exacts no further penalty. The child is automatically promoted. In the preparatory school, however, this exam failure after the repetition year diverts the child to an alternate stream called "special classes," in which he/she is supposed to receive instruction in Arabic and mathematics, augmented by increased instruction in the practical skills courses. By adjusting the rate of those who pass the ninth grade exams, government officals determine the proportion of those who enter secondary academic or technical streams and also those who are eliminated from further schooling.

A child who succeeds in passing the grade nine final examinations with high scores becomes eligible to go on to a general academic preparatory high school or to a teacher training school. Those with the next highest scores may enter technical schools providing specialized training in agriculture, commerce, or industry.

By law a child may drop out of school legally only upon completing grade nine or after reaching age fifteen. After age eighteen a boy becomes eligible for the military draft and can only continue at the preparatory level with special permission.

There are strict rules preventing school dropout. After a child is absent from school without excuse for fifteen days, administrators must notify the parents to find out why. If there is no satisfactory excuse, the police are informed and the parents fined 10 LE. Thereafter, for every fifteen-day period the child is missing from school without a satisfactory excuse, an automatic fine is leveled. In practice, these penalties are used as a threat

but are rarely enforced. A parent may be notified of a child's absence but school principals in rural areas often do not notify police for fear of jeopardizing their relations with local villagers, especially in a case where there are obvious mitigating circumstances, such as poverty or poor performance in school. The existence of such rules, however, often results in school records being falsified to prevent higher authorities becoming aware that the rules are being breached.

ENROLLMENT

Normally the term "school efficiency" refers to how well the school operates internally to produce its desired ends, i.e., graduates. It does not, therefore, include external concerns such as those affecting initial enrollment. Since this study is concerned with the issue of "wastage", however, we do include a discussion of initial enrollment procedures and policies.

Hurdles in the Enrollment Process

Enrollment in grade one is the first major hurdle a child has to overcome in the educational process. The non-enrolled child obviously can not obtain the benefits basic education is expected to bring, whether those be fundamental literacy and numeracy, an enhanced capability to deal with family responsibilities, a pre-vocational grounding or preparation for higher education.

From the point of view of the national goals of Egypt, an illiterate individual represents a failure in the development of the country's human resources, a wasted opportunity to develop a productive citizen capable of participating fully in the country's social and economic development.

The Decision to Send the Child to School

A number of steps must occur before successful school admission takes place. For the middle-class urban parent they may be simple routine procedures but a rural parent sometimes finds one or more of them difficult if not impossible to comply with. The first step involves deciding they want to educate their children. This decision is not always a matter of their own motivations and desires but may include solving complex problems involving distance to and from the school, the need for someone in the family to accompany the young child as a protector, the economic conditions of the household, school costs, and local customs or norms of behavior.

Official Papers

Second, after parents decide to send a child to school they must familiarize themselves with registration procedures and gather the requisite papers. In rural Egypt where birth registration is sometimes still a casual affair, a child without a birth certificate whose parents are not willing to seek alternative means of verifying age can be refused admission.

School Entry Age

There must also be sufficient space in grade one classrooms for the child

to be admitted. If a place is not available in this year's class, then the child must wait an additional year or seek a school farther from home.

Thus, the age of school entry may reflect either a casual or an overly eager parental attitude about schooling. Or, it may reflect a conscious decision by education officials either to delay or put forward the acceptable entry age. In either instance, these decisions may have the effect of dampening the parents' motivation to send their children to school, or they may exacerbate other problems. If the entry age is delayed by a year, the rural parent may be reluctant to relinquish the work abilities of the then older child. If for some reason these problems cause the child to wait until after his/her eighth birthday, then the chance for a public-school education is irretrievably lost.

The majority of children, about 88 percent in our five governorate sample, enter grade one at age six. The remainder are split between those who enter at age five, and those who enter at age seven. However, because parents tend to be vague about their children's ages, we aren't certain we have the true picture of actual entry ages. Observation in grade one classrooms in some rural schools suggests a much greater range in entry age than is reported.

Entry age is an important indicator of whether a school has reached capacity or not. In theory, schools take all six- to seven-year-old children who apply, but in practice headmasters either alone or as directed by district officials adjust the age of entry to the schools' capacity. If space is available, children less than six are accepted. If schools are crowded the minimum age of entry may be set at a few months over age six. There is no overall standard for class size. The number of students admitted to a classroom can vary from 40 to 60. Administrators usually begin to adjust age limits when grade one classrooms reach a threshold of between 50 and 55 students.

A wide variation in entry ages to grade one can, of course, have consequences for the educational program if the curriculum and teaching style are not flexible enough to adjust to different maturity levels. One consequence of age differences parents noted, is the embarrassment caused to children near the end of primary school when some become physically mature much sooner than others and as a result, drop out.

Reasons for Entering School at Other than Age Six

Parents in the original five governorates reported that of children who entered school at an age other than six, 58 percent entered early because extra space had become available, while 13 percent found no school available nearby and therefore waited until a new school opened, 12 percent registered at a later age because the parents had been "neglectful" and had forgotten to enroll them in the appropriate year, and 4 percent said there had been no space available in the nearest school when the child was six years old.

Our data suggest that crowding may have a real and serious inhibitory affect on initial enrollment. If crowding delays enrollment, we are told that some parents who cannot enter their children at age six become discouraged and do not try to enter them the next year. Others who try to get a jump on the system may try to enter children at age five in the Azhar religious system

which usually does not fill up as quickly if there are competing secular schools.

Enrollment in Grade One in the First Five Governorates:

In the household sample from the first five governorates after schools became available, almost all 6-year-old boys and 74 percent of 6-year-old girls enrolled in grade one. Some variation occurred in the ratio of age-eligible children enrolling in rural and urban areas. However, the high levels of initial enrollment in all contexts should not conceal the fact that where schools are not readily accessible, the rates of initial enrollment may be much lower.

DROPOUT

In the two-year efficiency study, student flow was examined in a sample of schools in 10 governorates (See sample selection section). The findings were as follows:

Primary Schools

Annual dropout rates for primary school females are somewhat higher than for males (See Table A-7, below) and rates for both males and females are higher in the second-five governorates than the first. (See cummulative rates for each sex by governorate in Table A-7).

Table A-7

Grade Level Dropout Rates, Ranked Highest to Lowest

First Five Governorates				Second Five Governorates			
Grade	Males %	Grade	Females %	Grade	Males %	Grade	Females %
6	(3.2)	6	(2.9)	6	(6.5)	4	(6.2)
2	(2.8)	5	(2.9)	4	(2.7)	2	(4.7)
4	(1.9)	1	(2.3)	2	(2.5)	6	(2.7)
1	(1.7)	4	(2.2)	5	(2.4)	3	(2.4)
5	(1.2)	2	(1.1)	3	(1.2)	5	(1.6)
3	(0.9)	3	(1.0)	1	(0.4)	1	(1.3)
T.	(1.9)	T.	(2.0)	T.	(2.6)	T.	(3.3)
Cumulative Rate 1-6	(11.7)		(12.4)		(15.7)		(18.9)

50

There are important differences in the grade level dropout rates for boys and girls in the two sets of governorates. In the first five governorates, female rates were highest for grades one, five, and six while in the second five, they are highest in grade two, four, and six. The grade level rate for both males and females in the second five governorates was sometimes as much as double or triple the rate in the first five.

These differences become more apparent when the data are aggregated by sex for the early and later grades of the primary level (significant for their implications in the acquisition of literacy skills). (See Table A-8)

Table A-8

Dropouts by Age and Grade, Sample Primary Schools,
First and Second Five Governorates

Males

Ages	Grades	First Five Governorates		Second Five Governorates	
		No.	% Total this Gender	No.	% Total this Gender
10 to 12	5,6	39	(26)	72	(53)
6 to 10	1,2,3,4	110	(74)	65	(47)
Totals		149	(100)	137	(100)

Females

Ages	Grades	First Five Governorates		Second Five Governorates	
		No.	% Total this Gender	No.	% Total this Gender
10 to 12	5,6	43	(43)	18	(16)
6 to 10	1,2,3,4	58	(57)	94	(84)
Totals		101	(100)	112	(100)

Both males and females dropped out in the second five governorates at a higher rate than in the first but boys tended to drop out at higher grade levels and girls at lower grade levels. In the first five governorates, 57 percent of the female dropouts left school in the first four years of schooling. However, in the second set of governorates, 84 percent of those who dropped out did so in the first four years.

In fact, grades two and four account for the majority (64 percent) of total female annual dropout at the primary level in the second five governorates compared with 39 percent in the first five governorates.

Variations Between Schools in Annual Dropout Rates

Primary school annual dropout rates in the sample schools of the first five governorates ranged from 0 to 5.2 percent which is a cumulative rate range of from 0 to 32 percent. In the second five governorates, annual rates ranged from 0 to 7.4--a cumulative rate range of 0 to 42 percent. Another way to illustrate the difference is to note that in the second five governorate sample, 31 percent of the primary schools had cumulative dropout rates of 30 percent or higher whereas the same was true for only 11 percent of the sample schools in the first five. The team believes the range was greater in the second five because there was a greater number of urban village schools with higher dropout rates.

In the first five governorates the rural village schools tended to have the highest annual dropout rates, while in the second five, none of the rural village schools had a dropout rate as high as the lowest rate in the urban village schools.

Employment opportunities for school-age children are usually plentiful in urban villages which are either predominantly agricultural communities using a constant supply of inexpensive, unskilled day workers to harvest truck crops for sale in cities, or with industries nearby where children fill inexperienced or unskilled jobs, replacing older persons who work in more demanding higher paying industrial jobs.

These urban village sites, with 50 percent of the enrollment in the sample schools of the second five governorates, account for 70 percent of the annual dropout in the sample. City school dropout rates are also higher in the second five than in the first five.

Paper Children

Even when not actively attending school, MOE regulations require that primary school children be allowed to retain membership in school for seven years from the time of their initial enrollment in grade one, unless they officially transfer to another school. Similarly, preparatory schools must allow their originally enrolled students to retain membership for five years from initial enrollment in grade seven.

As noted above some schools allow the names of these missing but still registered children whom we label "paper" children to proceed regularly through the grades as though they were active members. They fail exams and their names repeat grades as dictated by exam policies. They are also

reported on the annual school census each year even though in some instances they have left school one, two, three, or more years before.

Not all schools comply with these regulations, however. In the 1986/87 school sample (second set of governorates) twenty-five percent of the primary schools removed the names of students from the schools roll sometime in the period between the opening of the school year and the mid-November school census reporting date if the children had not reported to school by then. About a third of the sample preparatory schools did the same. The remaining primary and preparatory schools of the sample, containing 71 and 68 percent of the total enrollment of the sample respectively, kept the students' names on the rolls even though they failed to report to school.

The overall percentage of paper students is about the same at the primary and preparatory levels, though it differs by sex, reflecting the differential dropout between the sexes at the two levels of school.

Table A-9

Ratio of Paper Children by Sex and Educational Level
Sample Primary and Preparatory Schools in the
Second Five Governorates

Type of School	Paper Children					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Primary	105	(2)	90	(3)	195	(2)
Preparatory	103	(3)	12	(1)	115	(2)

Since the elasticity in pupil/teacher classroom ratios at both the primary and preparatory levels of schooling is so large, ranging from 25/40:1 to as much as 55/60:1, these 2 to 3 percent can be easily absorbed in existing classrooms and do not cause difficulty in resource use or planning within the individual school. They do, however, inflate repetition rates above the actual and decrease grade two, four, six, seven, eight, and nine pass rates, causing schools to look less effective and efficient than they are.

Between grade six and seven, however, the paper child problem does have resource use and planning implications. Since the preparatory schools draw their initial seventh grade enrollment from a set of three, four, five, or more primary schools, inaccuracies in pupil accounting in those primary schools, especially in grade six, has a direct impact on planning for the next years' crop of seventh grade students.

In our sample, the overall percentage of paper students in grade six was 3 percent (4 percent male, 1 percent female). This means that the entering seventh grade in a preparatory school drawing from those areas is smaller than would be predicted from the six grade enrollment in the feeder schools. When

coupled with the average six to seven grade dropout of 2 percent, this can represent a short fall of up to 6 percent. Since these paper children's records will have failed their first sixth grade exam, repeated the year, and failed again, they will be classified as students for whom "special classes" will have to be arranged. (See the section on Student Flow, earlier in this chapter)

As a general rule, "special classes" are not held in each preparatory school. Usually one or a few preparatory schools in each district are selected to house them. In one city in the study, the expected boys' preparatory school that had been designated the special-classes school for the area, 110 special class students were expected to enroll at the beginning of school year 1985/86. Ten actually did. The great majority of the remaining 100 no-show students had dropped out of school one, two, or more years before, yet the school had hired extra teachers and increased the class size of the regular seventh grade classes to free classroom space for these 110 expected "special" students.

Reasons for Dropout

Interviewers gathered information about the reasons a child dropped out of school from his former classmates, his teacher, the school secretary, or the headmaster. In the family the sources for this information were the dropout himself or herself (if present in the home), parents, older siblings, or other older relatives.

It is not always possible to attribute sole responsibility for dropout to one definite source. For many, dropout results from an interaction of school and home factors ("child does not like to go to school," "child has a serious problem in school; has been absent so much he is sent home by headmaster") or are personal and perhaps in part also attributable to the home ("child is ill"). Others are clearer ("child's work in family production is required," "teachers hit the student").

Table A-10

Reasons Given in Sample Schools for Why Students Dropped Out

- ● Distance to school
- ● Family moved
- ● Social custom (girls)
- ● Parents' feel education not necessary or useful
- ● To help mother with household work (girls)
- ● Family broken up by divorce or death
- ● Family is poor
- ● To work (at a paying job)
- * Child failing in school
- * School work too difficult for child
- * Child doesn't like to go to school
- +* Child mentally retarded
- * Teacher hits child
- +* Child has a serious problem in school (absent so much school will no longer accept the child; child is subject to bullying by other children; child is well over age of classmates)
- + Illness
- +● To marry or prepare for marriage

* No school available or no special class available
* School has no room for the child
• Didn't come to exam
• Child registered in grade one but didn't come to school
• Parent withdraws child for unknown reason
• Father abroad so child is needed at home
• Family not interested in girls' education
• Parental neglect

* School is probably the primary focus of the problem
• Family is probably the primary focus of the problem
+ Personal

Different respondents attribute the source of the problem to different origins. Respondents in the home tend to blame school-related problems more often than do those in the school, who from their perspective see the home as the predominant source of the problems that cause dropout.

In this section we report on these dropout reasons given in the schools. Despite the fact that school respondents are more likely to blame the home, school-related problems still account for 46 percent of the reasons given in the school (See Table A-11). The percentage attributed to school-related problems is even higher for preparatory level dropouts--60 percent overall, with males accounting for 90 percent.

Table A-11

Reasons Given by Schools (peers, teachers) in Sample Schools for Dropping Out All Ten Governorates Grades 1-9

Reasons	DROPOUTS					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Illness	17	(5)	7	(3)	24	(4)
Sex-role related	0		32	(14)	32	(5)
School-related problems (failure, child doesn't want to go, school too difficult, etc.).	187	(50)	91	(40)	278	(46)
Family-related (poverty, need to work, lack of motivation to send child, etc.)	60	(43)	98	(43)	258	(43)
Other	8	(2)	2	(1)	10	(2)
Totals	373	(100)	229	(100)	602	(100)

55

Table A-12 disaggregates the school-related reasons into their component elements. Not surprisingly, 80 percent of them are related to problems of failure or learning difficulties and the discouragement and low motivation children experience as a result. Note that another 15 percent say they dropped out because "teachers hit the child."

Table A-12

School Problems Given as Reasons for Dropping Out
All Ten Governorates Intensive School Sample, Grade 1-9

School-related Reason	DROPOUTS					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Child doesn't want to go	73	(39)	32	(35)	105	(38)
Exam failure	50	(27)	27	(30)	77	(28)
Teachers hit child	25	(13)	18	(20)	43	(15)
School too difficult	31	(17)	9	(10)	40	(14)
School too distant	5	(3)	3	(3)	8	(3)
Other problem at school	3	(2)	2	(2)	5	(2)
	187	(101)	91	(100)	278	(100)

It seems clear that many if not most of those for whom these school-related problems are cited as reasons for dropping out are marginal hard-to-educate children. As enrollment nears 100 percent, this hard-to-educate and hard-to-motivate portion of the school-going population naturally increases, presenting teachers and headmasters with difficult instructional, classroom management, and school management problems. Observation in schools showed clearly that crowded schools and classrooms make difficulties for teachers during classroom instruction, at recess breaks, and at both the beginning and end of the school day. Shift changes in buildings used by two schools became particularly trying times when as many as 300 to 500 students were trying to leave school during the 15-minute period when another 300 to 500 were trying to enter.

From classroom observations it was obvious that instructional delivery tended, therefore, to be adapted to crowded classrooms. It was preponderantly whole class teaching, with very little integration of theory and practice in the lessons. Teachers showed strict, authoritarian classroom management, with

56

frequent use of physical punishment. Rote memorization of lessons was the expected vehicle for student learning. Though this form of learning was not universally found in all schools, nor in all subjects at either the primary or preparatory school, it can be said to exist in the great majority of classes, and in all of the "theory" lessons. See the Second Annual Report, September 1985, pps III-28/32, for a more detailed account of classroom observations.

Since the way teachers manage their classroom and their students materially affects dropout rates, we asked teachers how they coped with their marginal pupils, those most likely to be dropout candidates--the "slow' or hard-to-educate child and the discipline problem child. We asked teachers how they helped students in their class "who are slow to learn," and how they handled those who were difficult to teach for other reasons--such as "not paying attention." Follow-up questions further refined the responses.

Table A-13 summarizes teachers' responses to the question of how they help the students who have difficulty learning.

Table A-13

Teachers' Responses to the Question
"What Do You Do to Help Slow Students in Your Class?"
School Sample All Ten Governorates, Grade 1-9

Actions Teachers Report Taking	First Five Governorates		Second Five Governorates	
	No.	%	No.	%
- I try to change the lessons or my teaching to fit the child	175	(47)	202	(85)
- I try to get extra help for the child from others	94	(25)	13	(5)
- I use disciplinary methods*	75	(20)	13	(5)
- None, I ignore them	27	(7)	11	(5)
- TOTAL	371	(99)	239	(100)

*This category includes the following responses: "I frighten them with low exam scores to get them to do better; I punish them physically; I send them to the headmaster or his deputy."

Given the higher dropout rate in the second five governorates and the fact that the majority of dropouts occur because of school-related problems--predominantly failure, we found it puzzling that 85 percent of the teachers' responses to the question of how they help the slow child in the recond five governorates fell in the category "I try to change the lessons or my

teaching to fit the child." In fact, when we look at the five schools in the second five governorates with the largest annual dropout rates we find 100 percent of the responses from the sample of teachers interviewed fell in this category.

This preponderance of "Sunday School answers" may be the result of two factors that differed in the interviews themselves between the two sets of schools, familiarization and trust in the confidentiality of the responses. The teacher interviews in the second five took place in the first visit by the Egyptian researchers to the school so teachers were unfamiliar with the process and may have been somewhat apprehensive. In the first five governorates, the same researchers had visited the school two, three, or four times, during which teachers were interviewed so they had become accustomed to the process by the time these interviews were held. Secondly, in the second five the interviews were conducted in the headmaster's office in the presence of an official of the Ministry, rather than privately in each teacher's classroom as had been the case in the first five governorate. These factors may have predisposed the teachers to protect themselves by giving "textbook" or "acceptable" answers.

Table A-14, below, summarizes teachers' responses to the question of how they cope with inattentive, behavior-problem children.

Table A-14

Teachers' Responses to "What Do You Do to Students Who Don't Pay Attention in Your Class?" (Intensive School Sample)

Action Taken By Teachers	First Five Governorates		Second Five Governorates	
	No.	%	No.	%
- Use negative sanctions (physical punishment, frighten with low grades, have child stand at atten- for 10 minutes, remove from class, etc.)	265	(66)	143	(58)
- Give extra attention, counseling, etc.	133	(33)	60	(24)
- Seek more information about them to understand their problem	4	(1)	14	(6)
- None, never have any	1	(0)	29	(12)
Totals	403	(100)	246	(100)

Note that contrary to Table A 13, these responses do not vary a great deal except that 12 percent of the teachers in the second five report never having any difficult children. Because all the other responses reflect standard practice, they would not have been biased by the presence of an MOE official in the interview session.

Grade Repetition

The interrelationship of dropout, failure and grade repetition in the first and second five governorates can be seen clearly in Tables A-15 and A-16 which show the number of grade repetitions of the dropouts who repeated.

Table A-15

Repetitions for All Dropouts*, Intensive School Sample, First Five Governorates

Times a Grade is Repeated	Males			Females			Total	
	No.	% of Males	% of Total	No.	% of Females	% of Total	No.	% of Total
1	71	(34)	(22)	18	(15)	(6)	89	(27)
2	27	(13)	(8)	9	(8)	(3)	36	(11)
3	2	(1)	(0.6)	3	(3)	(0.9)	5	(2)
T	100	(48)	(31)	30	(26)	(9)	130	(40)

*Total dropouts: 426; M: 209; F: 117

Table A-16

Repetition for all Dropouts*, Intensive School Sample, Second Five Governorates

Times a Grade is Repeated	Males			Females			Total	
	No.	% of Males	% of Total	No.	% of Females	% of Total	No.	% of Total
1	40	(20)	(13)	4	(14)	(5)	56	(18)
2	9	(5)	(3)	4	(3.5)	(1)	13	(4)
3	1	(1)	(0.3)	-	(0.0)	(0.0)	1	(0.3)
T	50	(25)	(16)	20	(17.5)	(6)	70	(22)

*Total dropouts: 325; M: 200; 7: 125

Of the 40 percent of the dropouts who repeated one or more grades in the first five governorates, 69 percent did so once, 28 percent twice, and only 3 percent repeated three times. In contrast, only 22 percent of the dropouts in the sample schools of the second five repeated one or more grades. Of those, 80 percent did so once, 17 percent twice, and less than one percent repeated three times. This phenomenon suggests that either school policies or external factors in the second set of governorates discourage children from making extraordinary efforts to stay in school when they have exhibited poor performance. Male dropouts account for the largest amount of grade repetition at both school levels, 77 percent and 71 percent respectively, probably in part a result of the much larger percentage of boys enrolled. Larger enrollment means that more marginal, hard-to-educate boys are enrolled--those most likely to fail and drop out for school-related reasons. This is particularly true if the schools use no diagnostic tools to identify problem youngsters early and have no remedial nor special help for them--despite the teachers' responses that they do make adjustments to accomodate the slower child.

By way of further contrast, we can see from Table A-17 below that while the grade repetition rates for the primary and preparatory years of schooling do not differ significantly between the two sets of sample schools, their distribution does.

Table A-17

Grade Repetition Rates, First and Second Five Governorates
Intensive School Sample, Grade 1-9

	2	4	6	Total 1-6	7	8	9	Total 7-9
First five governorates	2.9	2.4	10.5	5.1	8.7	8.7	17.5	11.6
Second five governorates	4.8	9.2	5.2	6.4	3.3	4.6	28.7	10.7

As noted earlier in this volume, the pattern of grade repetition in the second five governorates is different from the first five. The difference may reflect several policy decisions to tighten grades two and four exams to discourage marginal children early in their schooling, to relax the sixth grade exam to encourage the remainder to continue in the preparatory school, to relax grades seven and eight exams to encourage children to remain in school through grade nine, and to tighten the grade nine exam to discourage children from continuing on in the academic track.

From Table A-18, we can see that the repeater dropouts accounted for 176 years of grade repetition in the sample schools of the first five governorates, 110 years of which occured in the primary grades. Male dropouts most often repeated grades four, six and nine. Female dropouts, on the other hand, most often repeated grades two, four and six. Males accounted for 77 percent of all the repeater dropouts.

Table A-18

Dropouts' Grade Repetition, First Five Governorates

Grades	Males			Females			Total	
	No.	% of Years repeated by male dropouts	% of Years repeated by all dropouts	No.	% of Years repeated by female dropouts	% of Years repeated by all dropouts	No.	% of years repeated by all dropouts
2	18	(13)	(10)	14	(35)	(8)	32	(18)
4	29	(21)	(16)	12	(30)	(7)	41	(23)
6	31	(23)	(18)	6	(15)	(3)	37	(21)
7	17	(13)	(10)	4	(10)	(2)	21	(12)
8	15	(11)	(9)	0	(0)	(0)	15	(9)
9	26	(19)	(15)	4	(10)	(2)	30	(17)
T	136	(100)	(77)	40	(100)	(23)	176	(100)

In the second five governorates there were 79 years of grade repetition by dropouts with males accounting for 73 percent of the total. The pattern of dropout repetition is the same in the second five for females as in the first but there is a marked shift for males. In these sample schools grade four was the highest repetition year for males followed by grades six and two. Note that grade nine is a much lower repetition year in the second five than in the first five governorates.

Table A-19

Dropouts' Grade Repetition, Second Five Governorates

Grades	Males			Females			Total	
	No.	% of Years repeated by male dropouts	% of Years repeated by all dropouts	No.	% of Years repeated by female dropouts	% of Years repeated by all dropouts	No.	% of years repeated by all dropouts
2	11	(19)	(14)	9	(43)	(11)	20	(25)
4	19	(33)	(24)	7	(33)	(9)	26	(33)
6	16	(28)	(20)	4	(19)	(5)	20	(25)
7	1	(2)	(1)	-	(0)	(0)	1	(1)
8	8	(14)	(10)	1	(5)	(1)	9	(11)
9	3	(5)	(4)	-	(0)	(0)	3	(4)
T	58	(100)	(73)	21	(100)	(27)	79	(100)

Productivity

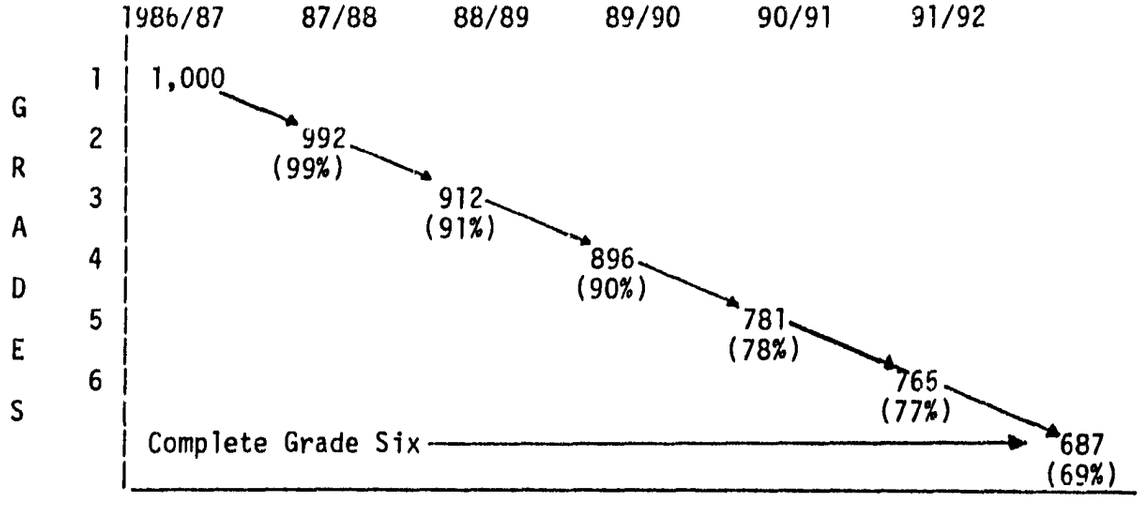
A frequently used measure of the general efficiency of schools is gross productivity. This is obtained by dividing the number of successes in the sixth grade examination by the number of students who took the exam. Gross productivity can only measure approximate school efficiency because of distortions due to grade repetition, transfers, deaths, and home study students. To achieve total accuracy it would be necessary to eliminate these distortions. We found it impossible to find enough existing records in the school to ensure even approximate accuracy--for example some schools kept no records of student transfers. We found that the re-shuffling of students among schools over the past few years as new schools have opened has so severely distorted some records that gross productivity figures are of dubious value. They ranged, for example, from 52 percent in one related, comparision primary school to 110 percent in another which had received a large number of transfer students in the later grades. Therefore, we do not report gross productivity rates from official records that we have been unable to verify personally.

We were able to secure accurate data in our own sample of schools for the school years in which we visited them. From these we prepared hypothetical projected productivity rates for the schools in the sample using the current average rates of dropout and grade repetition per grade. To obtain these rates we accounted for transfers in and out of the sample schools by grade, by sex, for home study students, for student deaths, for grade repetition, and for dropout by sex and grade. We then calculated the hypothetical rates,

based on these more accurate averages for the primary and preparatory schools separately. Figure A-1 below, tells us that of an hypothetical cohort of 1,000 students entering grade one in 1986/87, 687 or 69 percent will complete grade six at the end of school year 1991/92, six years later. Fifteen percent will have dropped out. Another 162 (16 percent will still be in school repeating a grade). Of these repeaters a goodly percentage will also dropout before completing grade six. These figures assume a constant 1986/87 rate of repetition and dropouts. (See Table A-20 for the details)

Figure A-1

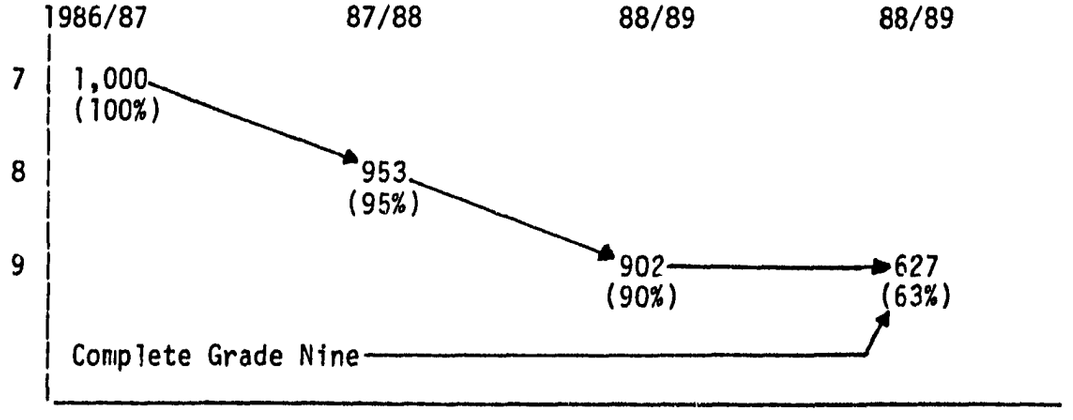
Projected Productivity in 1991/92
Intensive Primary School Sample, Second Five Governorates, if
Dropout and Repetition Rates Remain at 1986/87 Levels
School Years



The correspondig chart for the preparatory schools follows

Figure A-2

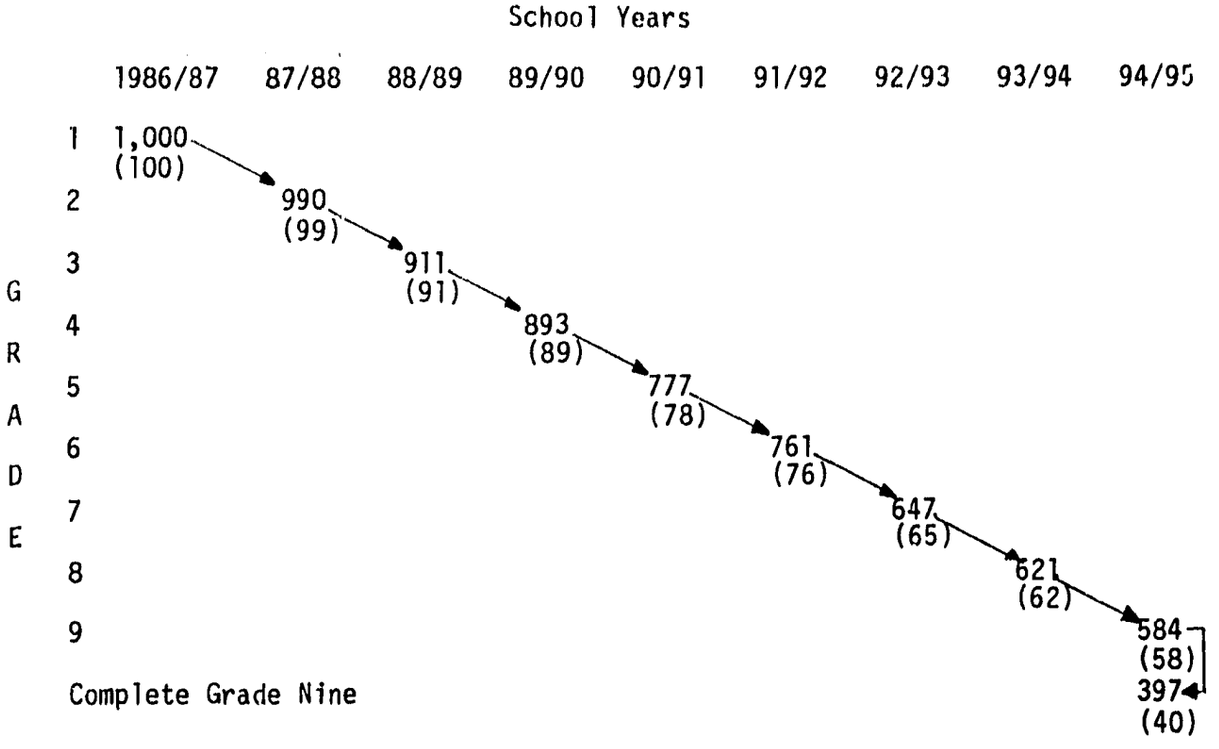
Projected Productivity in 1988/89
Intensive Preparatory School Sample, Second Five Governorates, if
Dropout and Repetition Rates Remain at 1986/87 Level
School Years



Taken separately the productivity rates are about the same for both levels even though the time span for the primary level is twice that of the preparatory level. When we track students from the initial first grade cohort through the preparatory school, the total productivity rate is of course lower. (See Figure A-3.)

Figure A-3

Projected Hypothetical Productivity in 1994/95
All Sample Schools Combined, Second Five Governorates,
if Dropout and Repetition Rates Remain at 1986/87 Levels



Of the 1,000 students who enter grade one, 17 percent will drop out and 19 percent will repeat one or more grades, leaving 685 who will successfully complete grade six. Of those only 94 percent or 647 successful grade six graduates will enter grade seven. That number will shrink to only 397 ninth-grade graduates three years later, largely because of a repetition rate of 37 percent, resulting in an overall grade 1-9 productivity rate of 40 percent. See Table A-21.

Since student flow is examination driven in all but three grades of the nine years of basic education, examination policy will influence what actually happens over this time period.

DROPOUT PROFILE

Introduction

This section reports the salient characteristics of the sample of dropouts who were identified in schools and visited in their homes. We start by reporting the characteristics of this smaller sample of dropouts for two reasons: first, there is more complete information from both the school and the home for these individuals and, second, the dropouts are identified as having left school in the past year so the information about them is as current as it is possible to obtain. The section which follows this one compares the families of these dropouts and a set of neighboring control families. Among these families are a larger pool of dropouts who have left school over a much longer span of time.

Reasons for Dropout

Table A-20 shows the reasons for dropout given by parents for both educational levels. As reported earlier from respondents in the schools, the major dropout reasons reported by parents for both boys and girls are school-related problems such as exam failure, teacher discipline, and the difficulty of the curriculum. The second set of major reasons related to economic factors--poverty, costs of schooling and the need for child labor. Both sets of reasons have increased in importance in recent years, particularly those related to the school, while other factors such as gender-related norms have declined.

Table A-20

Parental Reasons for Children's Dropout
During Primary and Preparatory School

	Reasons for Dropout													
	Accessibility		Economic		Motivation		School-related		Illness		Gender		Other		Total	
Dropout	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Primary																
Males	--	--	13	(17)	1	(2)	55	(73)	6	(9)	--	(0)	--	(0)	75	(101)
Females	--	--	14	(22)	2	(3)	39	(62)	4	(6)	2	(3)	2	(3)	63	(99)
Preparatory																
Males	--	--	5	(12)	1	(2)	33	(80)	1	(2)	--	(0)	1	(2)	41	(98)
Females	--	--	1		--		2		--		4		--		7*	
Total																
Males	--	--	18	(16)	2	(2)	88	(76)	7	(6)	--	(0)	1	(1)	116	(101)
Females	--	--	15	(21)	2	(3)	41	(59)	4	(6)	6	(9)	2	(3)	70	(101)
Total	--	--	33	(18)	4	(2)	129	(69)	11	(6)	6	(3)	3	(2)	186	(100)

*Note: The number of female dropouts at the preparatory level is too small to make percentages meaningful.

Age of Dropout

Figure A-4 shows the ages at which children of the home-visit sample dropped out. More than half the dropout children left school by the time they were eleven years old, with half the boys dropping out by age twelve and half the girls by age nine. Overall the girls dropped out most frequently in the early primary years, especially between the ages of nine and eleven and boys most frequently at age fourteen or higher.

Figure A-4

Age of Dropouts at Time of Dropout

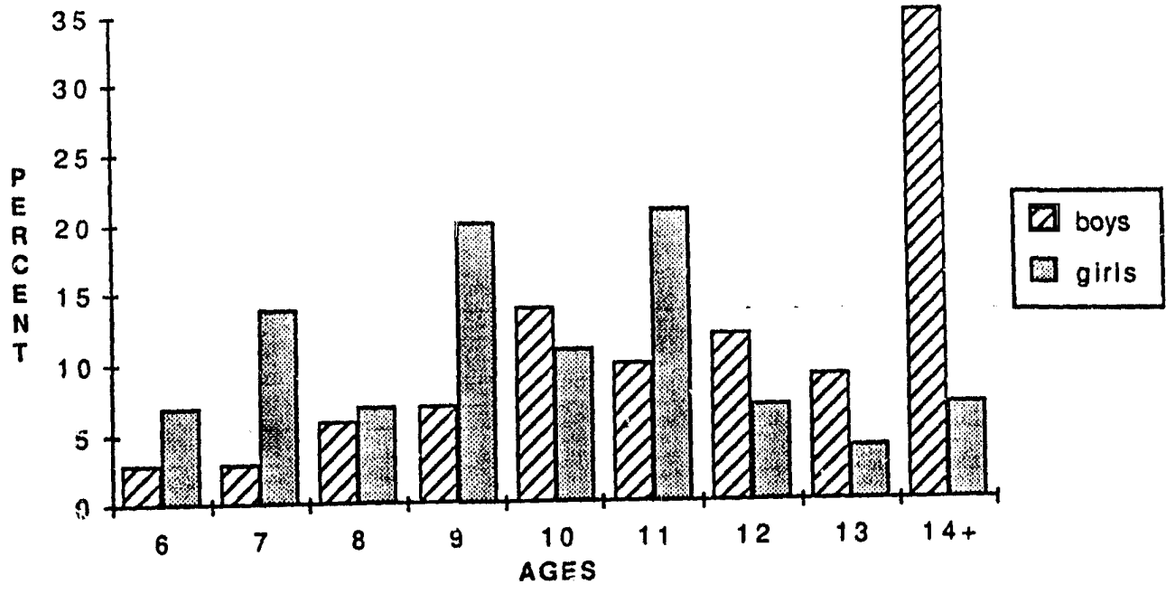
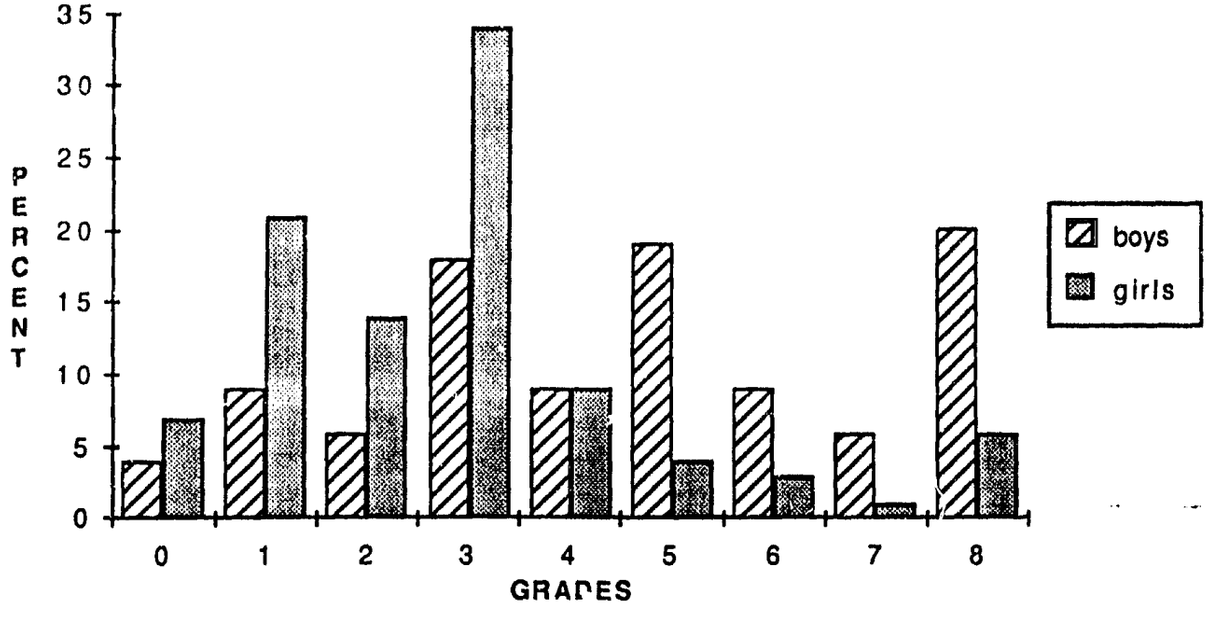


Figure A-5

Last Grade Completed



Last Grade Completed

Figure A-5 shows the last grade completed before dropout. A child who drops out after completing a specified grade may drop out any time during the summer or before successfully completing the following year. Note that boys' dropout rates peak regularly at major exam times (grades 4, 6 and 9). Overall, girls are more likely to drop out earlier (three-quarters of female dropouts left school before completing grade 4) than boys (only one-third of male dropouts left school by grade 4).

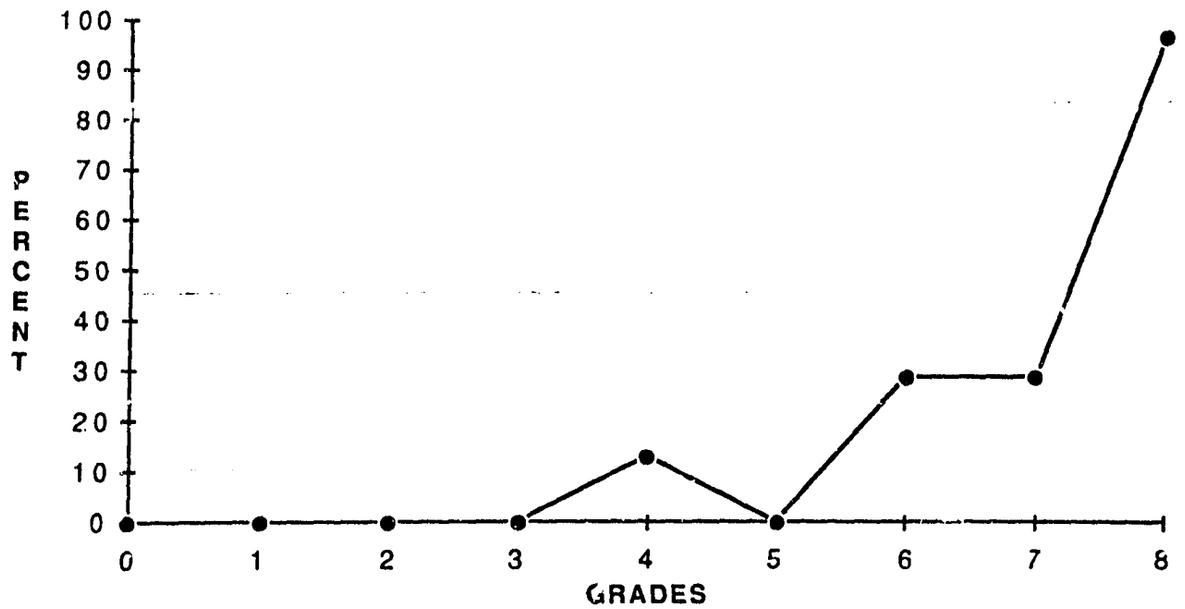
Grade Level for Functional Literacy

Hartley and Swanson[1] estimate that dropouts achieve a level of functional literacy in rural areas of Egypt by the time they have completed grade five. If this were true we could assume that those who had completed grade five were functionally literate, which would include 54 percent of the male and 14 percent of the female dropouts. Though we did not independently test for literacy acquisition, parents were requested to estimate the literacy of their dropout children.

Figure A-6 shows their responses. It is not until children have completed grade eight that parents feel the majority are literate. If these estimates are accurate, it appears that dropouts in the present study constitute a group of especially weak students whose difficulties in accomplishing academic work may contribute in large measure to their final departure from school.

Figure A-6

Percent of Dropouts at Each Grade Level
Estimated By Parents to be Functionally Literate



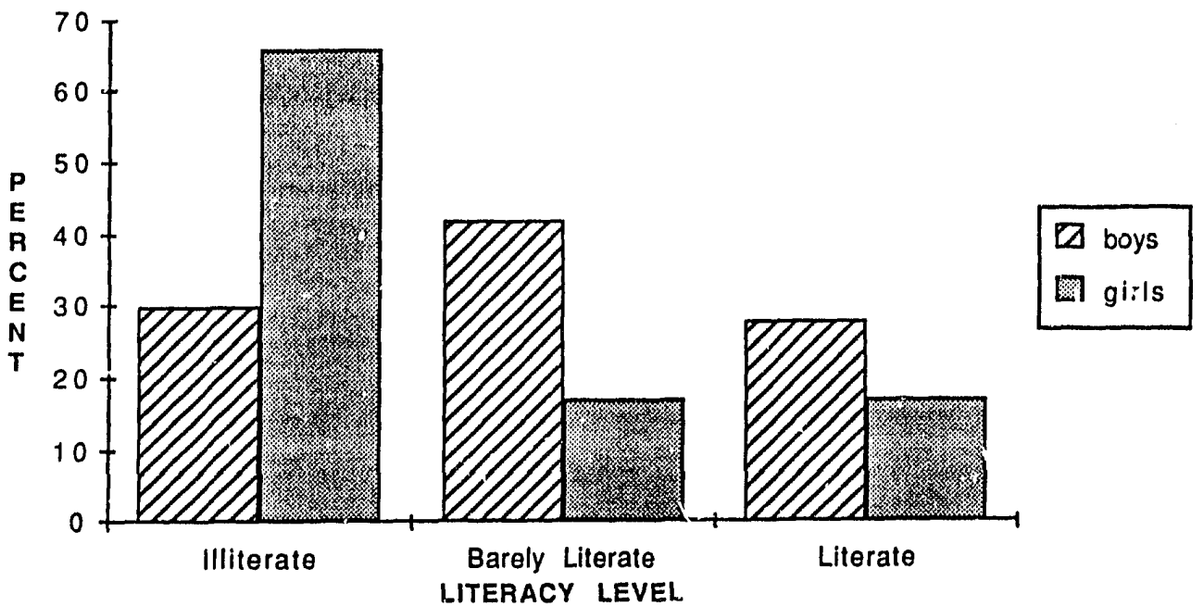
[1]Hartley, Michael and Swanson, Eric. Achievement and Attainment: An Analysis of the Retention of Basic Skills in Egyptian Education. World Bank, 1983.

Literacy Levels of Dropouts

Parents judged 28 percent (32) of the male dropouts and 17 percent (12) of the female dropouts literate and 30 percent (35) of male dropouts and 66 percents (46) of the female dropouts totally illiterate. The rest were barely literate. Thus, though the overall annual dropout rates for boys and girls are almost the same in grades 1-9 of the school sample, the fact that girls dropout earlier (see above) means that they carry away fewer literacy skills than do boys when they leave school. (See Figure A-7)

Figure A-7

Parental Estimates of Dropouts' Literacy by Sex



Repetition Required to Continue

As Table A-21 shows, males are somewhat more likely than females to drop out at a point when they are required to repeat a grade if they continue. Overall, almost half of the sample dropouts were required to repeat a grade to continue their education. Over a quarter had already repeated a grade at some time in their schooling.

Table A-21

Repetition Required to Continue

Dropouts	No. required to repeat grade		No. not required to repeat grade		Total Answers	
	No.	%	No.	%	No.	%
Males	50	(51)	48	(49)	98	100
Female	23	(44)	29	(56)	52	100
Total	73	(49)	77	(51)	150	100

Work Hours in Family Production

Table A-22 shows parents' estimates of the daily hours dropout children work in family production. Over three-quarters of the children work four or more hours a day. This constitutes a substantial contribution to family production.

Table A-22

Dropouts' Work in Family Production

Dropouts	Hours per day								Total Answers
	0 to 2		2+ to 4		4+ to 6		More than 6		
Males	11	(16)	28	(41)	14	(20)	16	(23)	69
Females	11	(08)	28	(47)	19	(32)	7	(12)	59
Total	16	(13)	56	(44)	33	(26)	23	(18)	128

Type of Work in Family Production

Table A-23 shows the type of work dropouts contribute to family production. Males are overwhelmingly involved in farming and girls in house work and caring for siblings.

Table A-23

Type of Dropouts' Work in Family Production

Dropouts	Farming	Housework	Peddling	Other	Total Answers
Males	61	---	5	3	69
Females	12	45	1	1	59
Total	73	45	6	4	128

Marital Status of Dropouts

Table A-24 shows the marital status of dropouts in the sample. As a whole, dropping out for marriage is not a significant phenomenon. However, when the small number of females who drop out at the preparatory level are considered as a separate category, marriage becomes more significant. Over half of the girls who dropped out at that level reported doing so because they were planning to marry in the near future.

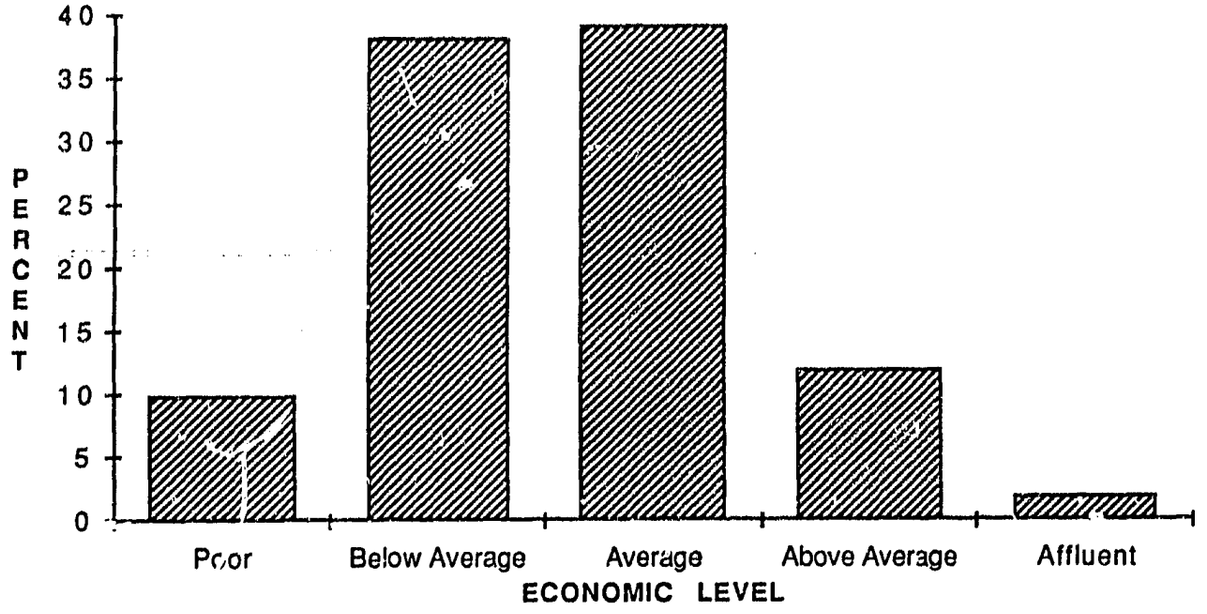
Table A-24

Marital Status of Dropouts

Dropouts	Marital Status			
	Single	Engaged	Married	Total
Males	116	---	---	116
Females	65	1	4	70
Total	181	1	4	186

Figure A-8

Economic Levels of Dropouts' Households



Economic Level of Dropouts

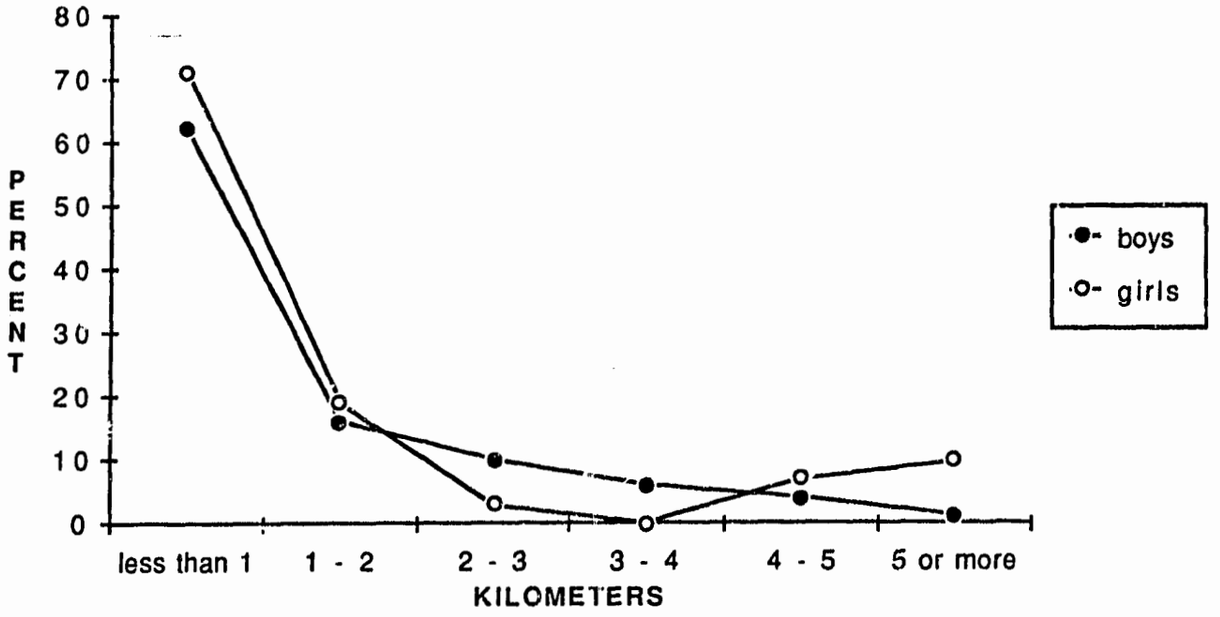
Figure A-8 shows the economic levels of dropout children's households. The majority live in families of average economic level or lower.

Distance to School at the Time of Dropout

Figure A-9 shows the distances of dropouts' homes from school at the time of dropout. These figures as displayed here reflect the size of the populations of children enrolling at these discrete distances rather than a relationship between distance and dropout.

Figure A-9

Distance Between Home and School When Children Dropped Out



Siblings

There was an average of six children in each dropout family. About one half of the dropouts had a sibling who had also dropped out.

Parents' Education

About half the dropouts had fathers with some education while only about a third had mothers with some education.

COMPARISON OF DROPOUT AND CONTROL FAMILIES

Introduction

This section compares the families of the school-identified recent dropouts with a set of comparison families chosen, as mentioned earlier, because of their proximity to the dropout household, their similar economic level (to control distance and economic status), and the existence of children enrolled at the same educational level as that which the school-identified dropout left. The purpose of this comparison is to determine whether there are significant differences between the dropout families and comparison families that lead to higher dropout rates in the former. Note that when we speak of dropouts in this section we speak of all the dropouts found in these two categories of families over the span of years their children have been going to school.

Comparisons

As noted above there were 180 dropout families and 175 control families (matched according to the criteria established above). In six of the dropout families, there were two dropouts, which makes the home-visit sample of dropouts total 186 (see the section above). As the table of educational statuses below shows, in addition to the school-identified dropouts, other dropouts who had left school earlier appeared in both the dropout and control families.

Educational Status

Tables A-25, A-26, and A-27 show the educational status of the younger generation in the two samples. Table A-35 shows that higher ratios of eligible-age children enrolled at one time in the control families compared with the dropout familes. Of those who enrolled (see Table A-27) in the control families there were more children currently enrolled in primary and preparatory levels, fewer children dropping out at all levels, and more children completing grade nine than in the dropout families. In other words, on all indicators of educational participation control families fared better than dropout families. In addition, overall, remotely rural families consistently did better in all measures of participation and effective learning than did urban village families.*

One can conclude, therefore, that dropout is not just the problem of an individual child in a family. Rather it appears to be one manifested in families which on many fronts show weaker levels of educational participation. The implication for the policy maker is that attention can be focused on families of school-identified dropouts to find the majority of the children who will not receive enough training to develop desired skills.

---

*These statistics are not shown in table form.

Table A-25

Educational Status of Younger Generation Children

Sample	Never Enrolled		Enrolled at one Time		Less than 6 Years		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
Dropout	47 (8)	152 (23)	406 (68)	215 (33)	147 (25)	283 (44)	600 (101)	650 (100)
Control	20 (4)	94 (16)	370 (70)	208 (36)	139 (26)	274 (48)	529 (100)	576 (100)

Table A-26

Educational Status of Younger Generation Age 6 and Above

Sample	Never Enrolled		Enrolled at one Time		Total	
	Male	Female	Male	Female	Male	Female
	No. %	No. %	No. %	No. %	No. %	No. %
Dropout	47 (10)	152 (41)	406 (90)	215 (59)	453 (100)	367 (100)
Control	20 (5)	94 (31)	376 (95)	208 (69)	396 (100)	302 (100)

Table A-27

Educational Status of Enrolled Younger Generation

Sample	Currently Enrolled				Dropouts Before Grade 9				Completed Grade 9		Total	
	Primary		Preparatory		Primary		Preparatory					
	Male		Female		Male		Female		Male	Female	Male	Female
	No.	%	No.	%	No.	%	No.	%	No. %	No. %	No. %	No. %
Dropout	101	(25)	57	(27)	31	(8)	14	(7)	150 (37)	119 (55)	60 (15)	14 (7)	64 (16)	11 (5)	406 (101)	215 (101)
Control	175	(47)	103	(50)	73	(20)	30	(14)	43 (12)	50 (24)	9 (2)	5 (2)	70 (19)	20 (10)	370 (100)	208 (100)

Age of Children and Parents

The argument above that dropout families overall are weaker than control families in educational participation would have less credence if it proved that the dropout sample consisted of more mature individuals than those of the control sample. If, for example, the children of the dropout sample, started school earlier when norms were different or had had a longer time to drop out of school simply because they had been in school longer, then one might expect to find that fact to account for the differences that appear between the families of the two groups. Two ways to test this possibility are to compare the ages of parents in the two sets of family and then to compare the ages of their children. These comparisons can be found in Tables A-28 and A-29.

Table A-28

Parents' Ages

Sample	-30 years		-40 years		-50 years		50+		Total Living	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
Dropout	8 (5)	37 (21)	61 (38)	85 (48)	55 (34)	44 (25)	37 (23)	11 (6)	16 (100)	177 (100)
Control	11 (7)	51 (29)	65 (40)	75 (43)	56 (35)	41 (24)	29 (18)	6 (3)	16 (100)	173 (99)

Parent ages in the two groups are not strikingly different. The parents of the control group are somewhat younger but probably not enough to explain the differences in educational participation found above.

76

Table A-29

Children's Ages (School Age and Over)

	6 - 12 years		13 - 16 years		Over 16		Total	
Sample	Male	Female	Male	Female	Male	Female	Male	Female
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
Dropout	176 (39)	155 (42)	111 (25)	88 (24)	166 (37)	124 (34)	453 (101)	367 (100)
Control	189 (49)	137 (45)	92 (24)	72 (24)	108 (28)	93 (31)	389 (101)	302 (100)

Table A-29 shows children's ages for the two samples. Female children of dropout and control families show a strikingly similar age structure, but there is a difference in the ratios of younger and older boys. Thus, though girls of the two samples are essentially in the same age ranges, boys in the dropout sample tend to be older (and thus to have had more time to dropout or complete grade nine) than boys in the control sample. This fact may have some bearing on the lower levels of currently enrolled primary males and on higher male dropout rates (as well as amplifying grade nine completion rates) in dropout families. However, disparities between dropout and control families still exist after correction factors are applied to indices of educational participation. Overall, dropout families still remain noticeably weaker in educational participation measures.

Table A-30

Family Size

Sample	No. of Households	No. of Children	Average children per household
Dropout	180	1250	6.94
Control	175	1105	6.31

Family Size

Table A-30 compares the number of children in dropout and control families and shows that there are slightly more children in the dropout families.

77

Educational Levels of Parents

Table A-31 shows the level of fathers' education in the two samples. Though a higher proportion of fathers in the control sample completed grade nine, there is virtually no other major difference in the educational status of fathers in the two samples.

Table A-31

Educational Level of Fathers

Sample	Never Enr.		Koranic School		Dropout in Grade 1-3		Dropout in Grade 4-6		Dropout in Grade 7-9		Completed 9 or higher		Total* Answers	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout	71	(45)	10	(6)	25	(16)	45	(28)	1	(1)	7	(4)	159	(99)
Control	69	(43)	3	(2)	20	(12)	48	(30)	3	(2)	18	(11)	161	(100)

*Twenty dropout family fathers and 14 control fathers have died with no information available. One dropout family gave no answer.

Table A-32 shows the level of mothers' education in the two samples. The mothers in the control families are more likely than those in the dropout families to have had some amount of education, however small. (This fact of more educated mothers may also be related to the smaller family size of control families).

Table A-32

Educational Level of Mothers

Sample	Never Enr.		Koranic School		Dropout in Grade 1-3		Dropout in Grade 4-6		Dropout in Grade 7-9		Completed 9 or higher		Total* Answers	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout	116	(66)	1	(1)	31	(18)	27	(15)	1	(1)	1	(1)	177	(102)
Control	88	(55)	1	(1)	41	(25)	27	(17)	2	(1)	2	(1)	161	(100)

*Three dropout and two control mothers died.

Reasons for Poor Educational Participation

Table A-33 shows the reasons parents give for not enrolling their children in grade one. The two samples show remarkable similarity in the extent to which they assign various reasons for non-enrollment. However, it is possible to discern a possible difference in what, for convenience, may be called a motivation factor. This is seen in the higher proportion of dropout families who keep female children home because they don't see much need for them to be educated. It is also discerned in the higher proportion (25 percent) of males in control families who do not go to school because of illness (an apparently uncontrollable factor that closes options). Overall, however, in both samples, for boys, economic reasons and for girls, gender-related norms are the most significant for non-enrollment reasons.

Table A-33

Reasons* Given for Non-Enrollment in Grade One

Sample	Reasons For Non-Enrollment													
	Accessibility		Economic		No Birth Certificate		Lack of Motivation		Illness		Gender		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout																
Male	--		24	(51)	5	(11)	8	(17)	5	(11)	--		5	(11)	47	(101)
Female	3	(2)	29	(19)	3	(2)	34	(22)	3	(2)	73	(48)	7	(5)	152	(100)
Control																
Male	--		9	(45)	--	(20)	4	(20)	5	(25)	--		2	(10)	20	(100)
Female	6	(6)	22	(23)	4	(4)	13	(14)	2	(2)	44	(47)	3	(3)	94	(99)

*Note economic and distance characteristics of the two samples were held constant.

Table A-34 shows the reasons parents give for why children dropped out of school at the primary level. Again the two samples show similarity in the proportionality with which they assign reasons for dropout.

Table A-34

Reasons* Given for Dropout at the Primary Level

Sampe	Reasons For Dropout in Primary															
	Assessibility		Economic		No Birth Certificate		Lack of Motivation		Illness		Gender		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout																
Male	3	(2)	32	(21)	5	(3)	99	(66)	10	(7)	--	--	--	--	15	(99)
Female	--		26	(22)	5	(4)	59	(50)	7	(6)	18	(15)	2	(2)	119	(99)
Control																
Male	--		8	(19)	3	(7)	28	(65)	3	(7)	--	--	1	(2)	43	(100)
Female	--		13	(26)	3	(6)	26	(52)	2	(4)	5	(10)	--	--	50	98)

*Note economic and distance characteristics of the two samples were held constant.

Table A-35 shows the reasons parents give for why children dropped out of school at the preparatory level. The striking difference in the two samples is in the much larger numbers of children from dropout families who leave school at this stage compared with control families. (Numbers of control dropout children are too small to calculate meaningful percentages). At both primary and preparatory levels the main reason for dropout for both sexes and both samples is school-related problems.

Table A-35

Reasons* Given for Dropout at the Preparatory Level

Sampe	Reasons For Dropout in Preparatory													
	Assessibility		Economic		No Birth Certificate		Lack of Motivation		Illness		Gender		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout																
Male	--		11	(18)	2	(3)	44	(73)	2	(3)	--	(0)	1	(2)	60	(99)
Female	1	(7)	2	(14)	--	(0)	6	(43)	--	(0)	5	(36)	--	(0)	14	(100)
Control**																
Male	--		1		1		4		2		--		2		9	
Female	--		1		2		1		--		1		-		5	

*Note economic and distance characteristics of the two samples were held constant.
**Absolute numbers are too small to draw meaningful percentages.

Grades When Dropout Left School

Figures A-10 and A-11 show the grades completed before dropouts left school. In general girls of both samples dropped out earlier than boys. Peak dropout for both boys and girls usually occurred during the school year when major exams occurred (grades two, four, and six or after completing grade one, three, or five).

Figure A-10

Last Grade Completed by Male Dropouts

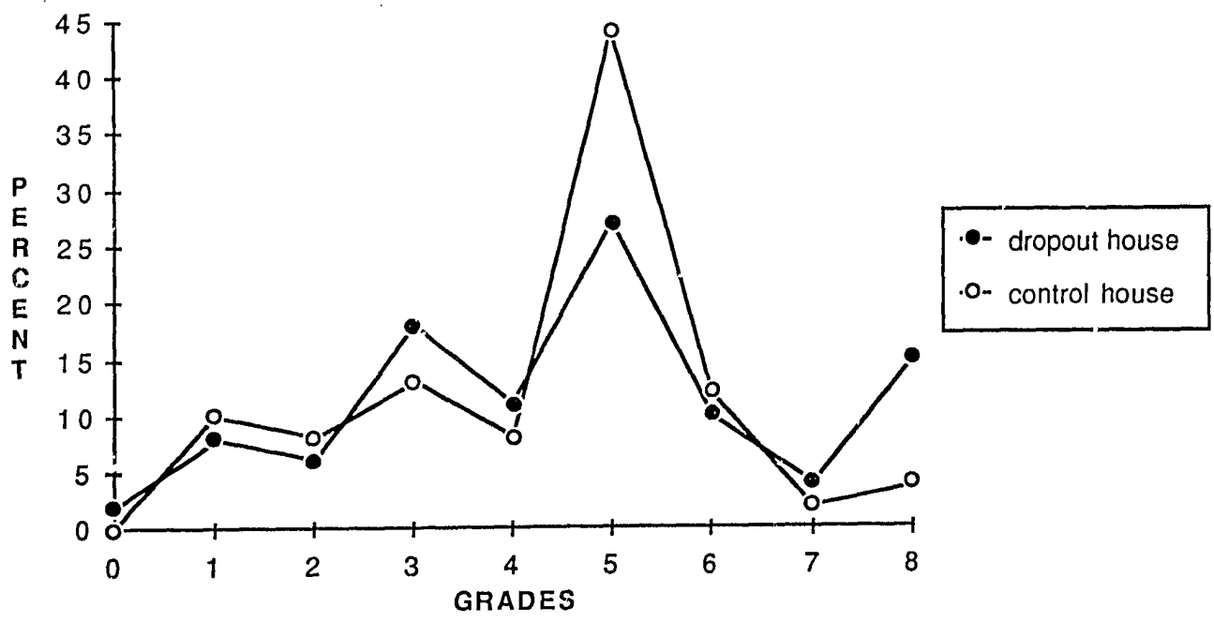
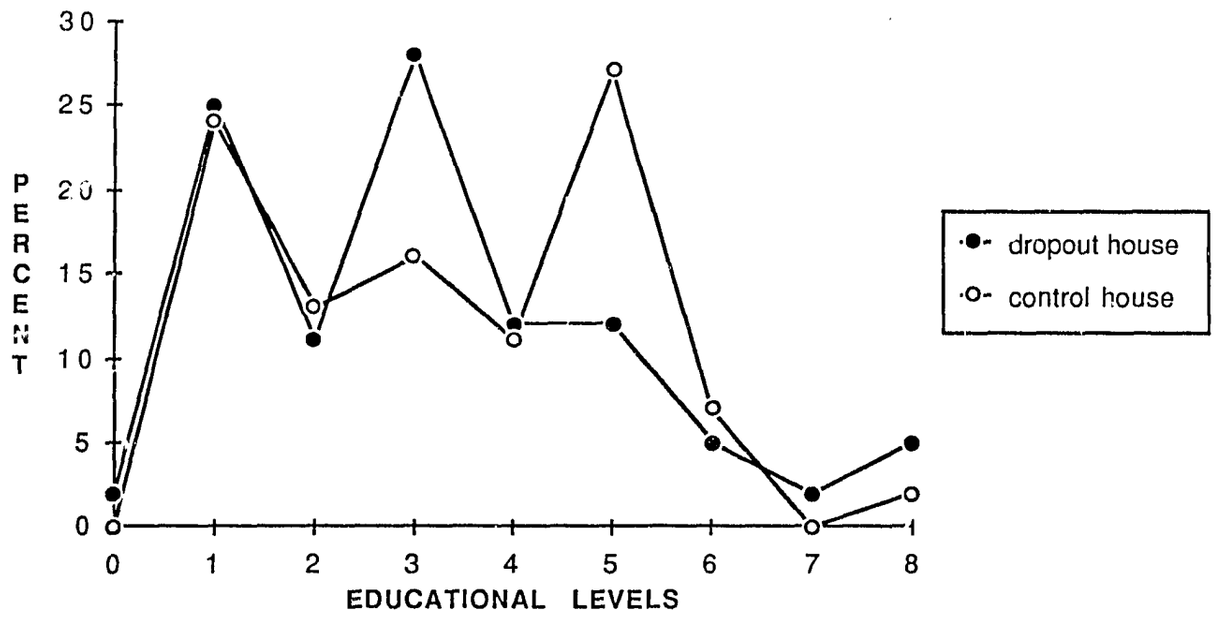


Figure A-11

Last Grade Completed by Female Dropouts



The major notable differences in the two samples occur after the completion of grade five when a lower percentage of dropout family males leaves school than control family males. Among females, more of the dropout family girls leave school after completing grade three while more of the control family girls drop out after completing grade five. Thus, a comparison of grades completed shows a greater difference overall between males and females than between the two samples themselves. The only exception is that dropout family females tend to leave school a little earlier than control family females.

Year of Repetition

Table A-36 shows the years of repetition by educational status in the two samples. In this case the differences between the two samples are more striking than those between the two sexes. The dropouts of the dropout

Table A-36

Years of Repetition by Educational Status

Sample	Repetition Years by Educational Status							
	Currently Enrolled		Dropouts		Completed 9		Total Years of Repetition	
	No.	%	No.	%	No.	%	No.	%
Dropout								
Males	12	(9)	76	(59)	41	(32)	129	(100)
Females	4	(11)	25	(68)	8	(22)	37	(101)
Control								
Males	35	(41)	17	(20)	33	(39)	85	(100)
Females	10	(34)	6	(21)	13	(45)	29	(100)

family sample were by far the greater users of repetition years than any other group among those families and were proportionately much higher users when compared with control family dropouts. Control family children showed themselves to be much heavier users of repetition years when they were successful (completed grade nine) or potentially successful (still currently enrolled) in their schooling. Perhaps this suggests a stronger motivation factor in successful children of control families. They are willing to persist even in the face of repetition. Dropouts in the dropout families, on the other hand, may show weaker motivation (they drop out instead of persisting when they have to repeat more than one year). They also may be weaker students (as noted earlier, half the home-visit dropouts left school at a point when they would have had to repeat the year).

Table A-37 shows the grade repetition years for both samples. In the control families repetition is most likely to occur for both sexes in the

school-level leaving exams of grades six and nine and much less likely to occur in interim years. In the dropout families, male repetition follows

Table A-37

Grades Repeated

Household Sample	Grades Repeated													
	2		4		6		7		8		9		T	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout														
Males	19	(17)	21	(19)	28	(25)	4	(4)	10	(9)	31	(27)	113	(101)
Females	14	(40)	11	(31)	3	(9)	1	(3)	2	(6)	4	(11)	35	(100)
Control														
Males	11	(15)	6	(8)	23	(32)	5	(7)	3	(4)	25	(34)	73	(100)
Females	2	(8)	4	(17)	8	(33)	-	(0)	1	(4)	9	(38)	24	(100)

this same pattern. Female rates do not. There is at least some pressure from parents to keep boys in school as long as possible. Females repeat heavily in grades two and four and hardly at all in later grades, when presumably the less motivated have left school. The picture that emerges from this and other data above is that less motivated, less academically successful children cluster in the dropout sample families and from the start, particularly in the case of females, experience difficulties with schooling. Whether the poor performance in school is responsible for the low motivation or the reverse or whether parents are simply less supportive of education in these families is not clear, but what is clear is that remedial activities in the lower grades with courses designed to encourage self-confidence and success might do much to reduce failure and dropout rates.

Occupations of Out-of-School Males

In general, the type of job out-of-school males are engaged in are related more to their educational status than their origin in one or the other sample. Females of all educational categories are overwhelmingly engaged in household activities. The occupation pattern for males is the following: non-enrolled and primary dropout males are mostly engaged in farming or have obtained informal training in a skill. Preparatory level dropouts are somewhat less likely to engage in farming, and more likely to engage in a range of occupations. Those who complete grade 9 rarely engage in farming or unskilled work, and whenever possible seek jobs in offices where educated skills are important. It appears that literacy skills first expand the range of jobs possible, while obtaining higher educational skills later narrows the range of jobs a male is willing to take. This is true for both dropout and control household. (See Table A-38)

Table A-38

Occupations of Out-of-School Younger Generation Males

Status and Samples	OCCUPATIONS																	
	Farming		Commerce		Unskilled		Skilled		Educated		Army*		Prof. Military		Other**		Total Answer	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Never Enroll.																		
Dropout	23	(59)	---	---	---	---	9	(23)	---	---	6	(15)	---	---	1	(3)	39	(100)
Control	9	(64)	---	---	---	---	4	(29)	---	---	1	(7)	---	---	---	---	14	(100)
Dropout 1-6																		
Dropout	69	(53)	10	(8)	7	(5)	35	(27)	---	---	5	(4)	---	---	5	(4)	131	(101)
Control	19	(49)	2	(5)	8	(21)	4	(10)	---	---	4	(10)	---	---	2	(5)	39	(100)
Dropout 7-9																		
Dropout	22	(37)	5	(8)	7	(12)	16	(27)	---		2	(3)	---		7	(12)	59	(99)
Control***	---		2		2		1		---		4		---		---		9	
Completed Grade 9																		
Dropout	2	(7)	1	(4)	---	(12)	2	(7)	6	(22)	8	(30)	1	(4)	7	(26)	27	(100)
Control	4	(11)	---	(0)	1	(3)	3	(8)	12	(32)	9	(24)	1	(3)	8	(21)	38	(102)

*Army usually involves compulsory service which is temporary and therefore not indicative of final occupation.
**Other primarily includes drivers, a category both educated and less educated feel has sufficient status.
***Numbers are too small to make meaningful percentages.

Occupations of Older Generation Males

Older males in the family provide the closest role models for children's occupational choices, as well as contributing along the way to decisions that affect the occupational options open to children. Table A-39 shows the occupations of these male models. Dropout family older generation males are much more involved in agriculture than males in control households. Twice as

Table A-39

Occupation of Older Generation Males

Samples	OCCUPATIONS															
	Farming		Commerce		Unskilled		Skilled		Educated		Army		Prof. Military		Other*		Total Answers**	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dropout	98	(54)	16	(9)	28	(15)	18	(10)	7	(4)	5	(3)	3	(2)	6	(3)	181	(100)
Control	35	(21)	13	(8)	51	(31)	33	(20)	15	(9)	4	(2)	3	(2)	12	(7)	166	(100)

*Other includes drivers mainly.
**There was no information for males who died, or who because of age did not work.

many control household males are working in unskilled, skilled or educated jobs as dropout males. It's possible that children of dropout households are needed more in agricultural production or that their parents recognize the extent to which they lose their children to these kinds of work when they become too educated to want to engage in manual labor. Education's lack of perceived relevance to the agricultural sector makes parents' decisions to keep children from prolonged education understandable. On the other hand, control parents are less tied to farming requirements and perhaps are more aware of the benefits of minimum levels of literacy. Because of their more varied job experience they may encourage greater participation and persistence in their children. It is also likely that they don't have land to farm, and thus can not offer an easy fall-back for children not happy in the school system.

FAMILY PATTERNS OF EDUCATIONAL PARTICIPATION

In Egypt, the meaningful unit of decision making about educational participation lies in the family rather than with the individual. Tables A-40, A-41, and A-42 show patterns of educational participation aggregated by family unit.

Table A-40

Family Patterns of Educational Participation

Household Sample	Educational Pattern					
	All Children Enr.		Some Children Enr.		Total Families	
	No.	%	No.	%	No.	%
Dropout	82	(46)	98	(54)	180	(100)
Control	117	(67)	58	(33)	175	(100)
Total	199	(56)	156	(44)	355	(100)

Note: All families had at least one child enrolled by sample selection definition.

Table A-40 shows that less than half of the dropout families enrolled all their children, compared with two-thirds of the control families.

Table A-41

Family Patterns of Boys' Educational Participation

Household Sample	Educational Pattern									
	No Boys Enrolled		All Boys Enrolled		Some Boys Enrolled		Other (no boys)	Total Families		
	No.	%	Enr.	%	No.	%	No.	No.	%	
Dropout	3	(2)	129	(78)	34	(20)	14	180	(100)	
Control	2	(1)	142	(90)	14	(9)	17	175	(100)	
Total	5	(2)	271	(84)	48	(15)	31	355	(100)	

Note: Percentages are taken for those families that have boys only.

Table A-41 shows that 90 percent of the control families enroll all boys compared to 78 percent of the dropout families. Table A-42 shows that over 60 percent of the control families enroll girls compared with less than half of the dropout families. Thus on all measures of educational access control families show greater participation than dropout families.

Table A-42

Family Patterns of Girls' Educational Participation

Household Sample	Educational Pattern: No Girls Enrolled No.	%	All Girls Enrolled Enr.	%	Some Girls Enrolled No.	%	Other (No Girls) No.	Total Families No.	%
Dropout	40	(26)	69	(45)	45	(29)	26	180	(100)
Control	23	(17)	85	(62)	30	(21)	37	175	(100)
Total	63	(22)	154	(53)	75	(26)	63	355	(101)

Note: Percentages are taken for those families which have girls only.

Table A-43 shows family patterns of skill attainment. We assume that little or no skill attainment occurs if a child does not enter school or drops out at the primary level.

Table A-43

Family Pattern of Skill Attainment

Household Sample	Skill Attainment Pattern: (1) No.	%	(2) No.	%	(3) No.	%	Total Families No.	%
Dropout	98	(54)	53	(29)	29	(16)	180	(99)
Control	27	(15)	131	(75)	17	(10)	175	(100)
Total	125	(35)	184	(52)	46	(13)	355	(100)

Patterns:

(1) More than half of children (age six and over) at pre-functional literacy levels (never enrolled or dropped out at the primary level).
(2) More than half of children (age six and over) at levels assumed to provide functional literacy (completed grade six or higher) or still have the opportunity to achieve these levels (currently enrolled in primary).
(3) Half of children (age six and over) at pre-functional and half at functional levels of literacy.

Three-quarters of the control families achieve the optimum pattern compared with less than one-third of the dropout families. Thus, on a measure of skill attainment the control families also do considerably better.

PREDICTING FUTURE EDUCATIONAL PARTICIPATION

Present family patterns of educational participation provide a rough basis for estimating future participation. One can make the reasonable assumption that if some* or all of the girls in a family enroll at one time, then all children in the future will enroll, barring some compellingly negative circumstance. By contrast, in the group of families where no girls enrolled in the past or there were no female children, it would be impossible to predict future behavior. Given these assumptions, out of 355 families in the sample, 229 (65 percent) would be expected to send all new school-age children; 63 (18 percent) have never sent girls before and therefore would be unlikely to send them in the future; and 63 (18 percent) do not have girls so have not been faced with this choice yet.

To encourage universal education in this sample, therefore, (which is biased by the poorly motivated dropout group) it would be possible to focus grade one recruitment efforts on the 63 families that are most resistant to enrolling girls. Forty of these families or about two-thirds are found among the dropout family sample.

The extent to which the families of the dropout sample are characterized by weaker motivation is even more striking when it comes to skill attainment. Thirty-six (20 percent) of the dropout families had no eligible-age children who had reached or had the potential to reach (that is still currently enrolled) a functional level of literacy. By contrast all of the control families had at least one child who had reached or who might still reach this level. It might be predicted, therefore, from this data that barring some special difficulty (like illness or mental retardation), all parents in the control group would encourage their children to continue to at least a level of literacy.

The policy implication of this finding is, once again, that locating the families of current dropouts leads also to the identification of other children who may never enroll unless special effort is made to reach them or who may leave the system before achieving desired literacy skills.

SUMMARY AND DISCUSSION

Differences in Productivity Rates

Overall, the schools of the new five governorates which were studied in the second year of the school efficiency study presented a less favorable picture of the productivity rates in Egyptian schools than did the sample in the first five governorates. Productivity rates for the sample primary schools

---

*Usually if some girls enroll they are the younger ones of the family, encouraging the assumption that parents liberalized their perceptions about girls' schooling or conditions changed enough to make a more favorable environment for girls' education.

in the old five governorates (data collected in the 1985/86 school year) totalled 75 percent for the six years of the primary level compared with 69 percent in the new five governorates (data collected in the 1986/87 school year).

It is not clear whether this represents a general trend of lower productivity one year later or whether it is simply a reflection of this year's sample, which contains a higher concentration of new schools near large urban centers, a category of schools found generally by the study to have lower efficiency rates. If the last is true, it does not bode well for educational participation in Egypt as a whole which increasingly will fall within this type of influence as the urban sprawl continues to grow and exert ever stronger influences on the economies of the countryside.

Parental Perceptions of the Benefits of Educational Participation

Not surprisingly, the dropout study and the earlier community study showed that rural parents on the whole make rational choices about the educational participation of their children. In fact these rural parents often appear to weigh the costs and benefits of educational training with more objectivity (in terms of their own resources and potential) than do urban middle class parents who are willing to suffer considerable hardship to move their children through the extended education they feel is a fundamental pre-requisite of their class.

Through interviews with rural parents it became clear that the educational process is perceived as having two qualitatively different stages with separate economic, occupational and social implications. The primary level is considered the stage which develops the fundamental literacy skills, while other levels culminating in university training lead to various higher status occupational opportunities. The preparatory level is seen by parents as necessary only if it is followed by higher education which leads to more esteemed occupational possibilities.

Most rural parents now believe that literacy is basic for their children, even for those who are expected to assume unskilled or low-skill jobs. For this reason, when schools are acessible, there is little resistance to sending children in early years. Parents may even permit children to continue on unless they prove unable to cope with the curriculum, the learning environment, or the family cannot meet the expenses of tutoring especially at the time of major exams.

By the preparatory level, however, parents may make decisions about children continuing in school on the basis of other criteria: children are physically mature enough to contribute significantly to family production and those who continue will be lost to family agricultural production. If parents do not plan for their children to go on to high school after preparatory school, they may see no reason to urge their children to go to preparatory school at all, for it has no significant benefit unless the child continues on to high school or higher.

Thus, in terms of parental perceptions of the benefits that accrue from different levels of education, the compulsory attendance rules that divide the education program into basic education (Grades 1-9) and higher education

Table A-44

Sample Schools, Equipment and School Efficiency Studies

Equipment, Phase I						Equipment Phase II and School Efficiency					
1983 / 84*			1984 / 85**			1985 / 86*			1986 / 87*		
Bahira	Prim.	Prep.	Bahira	Prim.	Prep.	Bahira	Prim.	Prep.	Sharqiya	Prim.	Prep.
Hush Isa	-	2	Hush Isa	1	-	Hush Isa	1	-	Kafr Shaikh Zikri	1	-
Mahmudiya	2	-	Manshiya	1	-	Manshiya	1	-	Suwa		
Damanhur	1	2	Abqain	1	-	Abqain	1	-	Gumhuriya	1	1
Kafr Duwar	1	1	Manshat al Awkaf	1	-	Manshat al Awkaf	1	-		1	-
Manshiya	1	-	King Othman	2	-	Kafr Nakla	1	-			
Kafr Nakla	1	1	Kafr Duwar	1	-	Mahmudiya	1	-			
			Mahmudiya	2	-	King Othman	1	-			
			Kafr Nakla	1	-	Kafr Duwar	1	-			
Assiut			Assiut			Assiut			Giza		
Assiut	2	3	Manfalut	-	1	Ghanayim	-	3	Shimbari	1	-
Bani Rafa	1	1	Azaiza	1	1	Bani Rafa	4	-	Mustamar Karaba (Awsim)	-	1
Ghanayim	1	1	Ghanayem	1	1	Manfalut	2	-	Kum al Ahmar (Awsim)	2	-
									Othman bin Affan	1	
Qena			Qena			Qena			Fayyum		
Qena	2	2	Nag Dahi	3	-	Nag Dahi	3	-	Muhamid Abdul Hamid	1	-
Luxor	1	1	Khutaba	1		Nag Tarif	4	-	Sayla	1	1
Nag Hamadi	1	1	Danfiq	1		Nag Khutaba	3	-	Dimu	-	1
			Kafr al Shaikh			Kafr Shaikh			Bani Suaf		
			Ruda	1	1	Ruda	-	1	Azbit Faisal	1	-
			Duweyda	1	-	Abu Draz	-	1	Bani Bi Khait	1	-
			Abu Draz	-	1	Mutubis	-	2	Bani Suaf	1	1
			Mutubis	-	2				Ahnasiya Khadra	-	1
			Kafr al Shaikh	2	2						
			Sohag			Sohag			Minya		
			Nag Harif	1	-	Nag Harif	1	-	Lamlun	1	-
			Nida	4	-	Nida	1	-	Safanaya	1	1
			Akhmim	2	-	Akmim	1	-	Adwa	1	-
			Sohag	2	3				Basqalun	-	1

Field visits to schools:

*Two visits to each school, one in the fall shortly after schools opened and one as late as possible in the spring before schools closed.
**One visit to each school, in the fall shortly after schools opened.
N.B. Represents a total of 464 separate school visits.

Table A-45

Sample Schools, School Efficiency Study

Governorate	School Name	Location	Second Five Type, Level, Gender	Governorates (1986/87) No. Class-rooms in Use	Governorates (1986/87) No. Shifts	Enrollment M	Enrollment F	Enrollment T	Percent Male Enrollment
Minya	Lamlun Abdul Rahman	Rural Village	New, Primary Mixed	6	1	104	30	134	(78)
	Sofanaya I	Rural Village	Comparison, Primary Mixed	12	2	357	160	517	(69)
	Adwa II	City	City, Primary Mixed	12	1	325	196	521	(62)
	Sofanaya	Rural Village	Comparison, Preparatory Mixed	12	1	357	82	439	(81)
	Basqalun	Rural Village	Comparison, Preparatory Mixed	8	1	212	49	261	(81)
Bani Suaf	Azbit Faisal	Rural Village	New, Primary Mixed	6	1	133	23	156	(85)
	Bani bi Kheit II	Rural Village	Comparison, Primary Mixed	11	2	284	187	471	(60)
	Nassar	City	City, Primary Mixed	12	1	404	175	579	(70)
	Shahid Muamin Ayad	Urban Village	Comparison, Preparatory Mixed	15	1	555	161	716	(78)
	Shahid Anwar Sadat	City	City, Preparatory	13	1	522	-	522	(100)
Fayyum	Muhamid Abdul Hamid	Urban Village	Boys New, Primary Mixed	7	1	174	56	230	(76)
	Sayla Massaiya	Urban Village	Comparison, Primary Mixed	12	2	341	119	460	(74)
	Muhi al Din Abu al	City	City, Primary Mixed	21	1	555	465	1020	(54)
	Dimu	Urban Village	Comparison, Preparatory Mixed	11	1	216	47	263	(82)
Sharqiya	Kafr Shaikh Zikri	Rural Village	New, Primary Mixed	6	1	145	108	253	(57)
	Suwa	Rural Village	Comparison, Primary Mixed	11	1	272	235	507	(54)
	Gumhuriya	City	City, Primary Mixed	14	1	405	383	788	(51)
	Suwa	Rural Village	Comparison, Preparatory Mixed	11	1	369	277	646	(57)
Giza	Aziz al Masri	Urban Village	New, Primary Mixed	8	2	200	137	337	(59)
	Yussif al Sabyai	Urban Village	Comparison, Primary Mixed	12	2	439	225	664	(66)
	Kum al Ahmar	Urban Village	Comparison, Primary Mixed	12	2	429	262	691	(62)
	Othman bin Affan	City	City, Primary Mixed	21	2	662	472	1134	(58)
	Kharaba Gharib al Qahira	Urban Village	Comparison, Preparatory Mixed	No. ans.	1	627	304	931	(67)

APPENDIX B

PRACTICAL SKILLS ACHIEVEMENT

PRACTICAL SKILLS ACHIEVEMENT

INTRODUCTION

The Practical Skills Achievement Study is the second phase of the Equipment Study. It was designed to explore the impact of AID-funded basic education instructional equipment on student learning in the "theoretical" and "practical," specifically in practical skills courses offered in grades five through nine.

The first phase of the Equipment Study was conducted in school years 1983/84 and 1984/85 as a descriptive study for gathering and analyzing data on:

- the selection, acquisition, and distribution of equipment and the efficacy of that process;
- the instructional use of equipment in schools, in particular with reference to the curriculum;
- the amount and nature of teacher and headmaster training;
- the suitability of the equipment for intended uses;
- constraints that might inhibit use;
- administrative or logistical problems with regard to use, storage, record-keeping, replacement, and repair; and
- school and school staff characteristics.

The second phase examined the relationship existing between the input and use patterns of equipment (the contributory variables examined in the first phase) and students' knowledge and skill in carpentry and electricity. These two major sub-fields of study in industry were newly offered in grades five through nine as a major part of the basic education curriculum. (See also Appendix D, The Equipment Study)

For purposes of obtaining an equitable, objective, direct, and valid measure of actual practical skills acquired, the team assessed student performance in structured work-sample tests. Industry was chosen for study because it was the only new basic education course introduced into the primary school curriculum that used AID-funded equipment and tools. Results of the schools' testing program were not usable because end-of-year examinations in the practical subjects, industry, home economics, and agriculture, if given, at all, were usually teacher or supervisor created. They featured two or three essay-type questions, and possibly a few true and false questions. Hence they varied widely from school to school and did not provide a stable measure for comparison. In all cases, student skills were not tested; rather evaluations were based on teachers' subjective judgments of student performance in making or repairing an object or a part of an object, or through observing how well they participated in a group project in which they played a small part.

Industry is taken by boys and girls for two 45-minute periods twice a week. The sub-topics of the course include carpentry, electricity, painting, weaving, metal work, and home maintenance (masonry, plastering, making minor structural repairs to buildings, walls, ceilings, etc., and plumbing).

Carpentry is the most widely taught, offered in 88 percent of our sample primary and preparatory schools. Though electricity is the second most widely taught sub-field of industry, we found it was offered in only half of the sample primary schools. The preparatory schools did better in that some 70 percent taught electricity in industry. Teachers reported they taught the "practical" aspects of electricity while colleagues in science covered the "theoretical" aspects of their subject.

The industry curriculum and syllabus make no distinctions about what to teach each sex and though both are full of teaching activities, neither contains any specific explicit learning objectives that the students should acquire.

In preparing tests to administer to students, the team asked the MOE consultants who prepared the curriculum to develop the content of the work-sample tests. In this way we hoped to ensure that the tests would validly test the curriculum and reduce the possibility that they might be considered "unfair" tests.

Each test took 30 minutes. The students tested were chosen at random and were given a written statement of a problem to be solved, (e.g., to make a shelf or find and fix a problem in an electrical circuit) a set of tools, and the necessary materials (wood, nails, wire, switches, flashlight batteries, etc.). If it became apparent the student could not read the problem and the directives, they were read to him or her. No further explanations or help were given.

Two experts observed the students at work and judged their product and the process of their work, assigning points for successful completion of each step in the process. Both judges were Egyptian--one an expert from the Ministry, one selected from the pool of industry supervisors or a superior industry teacher in the governorates. There were two such teams. An Egyptian expert selected by a Ministry official headed each team, which also included two Egyptian research assistants. One set up the workshop by laying out the required tools and materials. He then administered a brief questionnaire to each student, asking him or her to name each of a common set of tools and give a brief description of its uses. The other selected the students to be tested using a random number table. Sample size was set at 10 percent of each sex in each grade, with no fewer than three and no more than 15 students of each sex selected.

In order to reduce bias, each of the teams visited a new, comparison, and city school on successive days. The American researcher accompanied a different team each day. Prior to beginning the field visits, training sessions for the judges and research assistants were held in Cairo. Training sessions were also held in each governorate for the local governorate expert who participated as a judge.

A discussion of the testing program was held with top officials in each governorate education office, usually including the Undersecretary, at the beginning of our stay in each. At the conclusion, we also met again with top officials and reported the results of our testing, and made recommendations on matters we felt needed attention. Since there were only a few preparatory schools in the 1985/86 sample, those data were aggregated with the results of the 1986/87 preparatory school tests, which had been obtained with the same instruments in the same manner and by the same team (with the exception of the local experts in each of the new governorates).

Well before the school visits in the late spring of 1987, it had become apparent that school budgets for materials had been so reduced in the primary schools as to make work sampling unwise. The work products called for in the test would not represent the skills the students obtained from course participation. Rather, in most cases, it would serve as a test of untrained ability, since few teachers allowed students to waste materials by making things in class. The teacher usually restricted them to observing something being made, and perhaps allowed them to help with the activities that were not wasteful of materials.

We therefore eliminated the making of a product altogether from the primary schools in the second five governorates test, and tested them on what could be learned in the absence of materials. For example, we asked them to name a common set of tools used in carpentry and electricity, to explain their use, and to use each tool to demonstrate skill in tool handling and use.

The results of the 1985/86 primary school testing in the first five governorates are reported in the Third Annual Report, Vol. II, October 1986, pps. A-116 through A-130.

FINDINGS

SKILL TESTS

Primary Student Score Averages

Tables B-1 and B-2 report the average scores of primary school students in the sample.

Table B-1

Practical Skills Average Scores for Primary Grades

Industry Sub-field	Grade Levels 5	6
Carpentry	40	46
Electricity	41	50

a1

Table B-2

Practical Skills Average Scores
for Primary Grades by Sex

Industry Sub-field	Grade Levels			
	5		6	
	M	F	M	F
Carpentry	47	27	51	33
Electricity	48	28	41	23

Comment:

Given that the schools use a score of 50 percent as passing, these results are disappointing. When the data are disaggregated by sex (Table B-2) we see that in all cases the boys scored higher than the girls. The differences were much larger in the primary than in the preparatory schools, (see Tables B-3 and B-4) with boys receiving an average score in both subjects 20 percentage points higher than the girls' average scores in grade five. The score averages were 18 points higher in grade six.

These score differences may be at least partially accounted for by the teachers' attitudes about what is proper for girls to learn and how they ought to be taught. When asked whether carpentry should be taught to boys, to girls, or to both, the majority (87 percent) said it should be taught to boys. Only 13 percent thought it should be taught to both.

On the other hand, 80 percent of the teachers felt electricity should be taught to all students, yet the girls' electricity scores are substantially lower than boys' scores. The 1986/87 tests measure the recognition and recall of tool names, the understanding of their intended uses, and the acquisition of skills through actual hands-on use.

From classroom observations and teacher reports we found that industry teachers put girls into the role of passive learners in both carpentry and electricity. They were to learn by observation of others, not through direct handling of tools or by making things. Hence they were given no practice with actual tool use, even with such simple tools as screwdrivers, nor, in many of the schools, were they expected to learn the names of the tools.

Preparatory Students Score Averages

Tables B-3 and B-4 report the score averages for preparatory school students in the two sets of governorates.

Table B-3

Practical Skills Average Scores for Preparatory Grades

Industry / Sub-field	Grade Levels		
	7	8	9
Carpentry	38	42	40
Electricity	38	31	45

Comment:

The average scores for each sex in the preparatory school were virtually identical, with the exception of grade nine electricity, in which boys outscored the girls by 10 percentage points, on the average.

Table B-4

Practical Skills Average Scores for Preparatory Grades By Sex

Industry / Sub-field	Grade Levels					
	7		8		9	
	M	F	M	F	M	F
Carpentry	40	35	43	40	39	43
Electricity	40	34	33	28	49	39

Frequency Distribution of Student Scores

The frequency distributions of the carpentry and electricity scores for the primary and preparatory school students are shown in Figures B-5 and B-6 respectively.

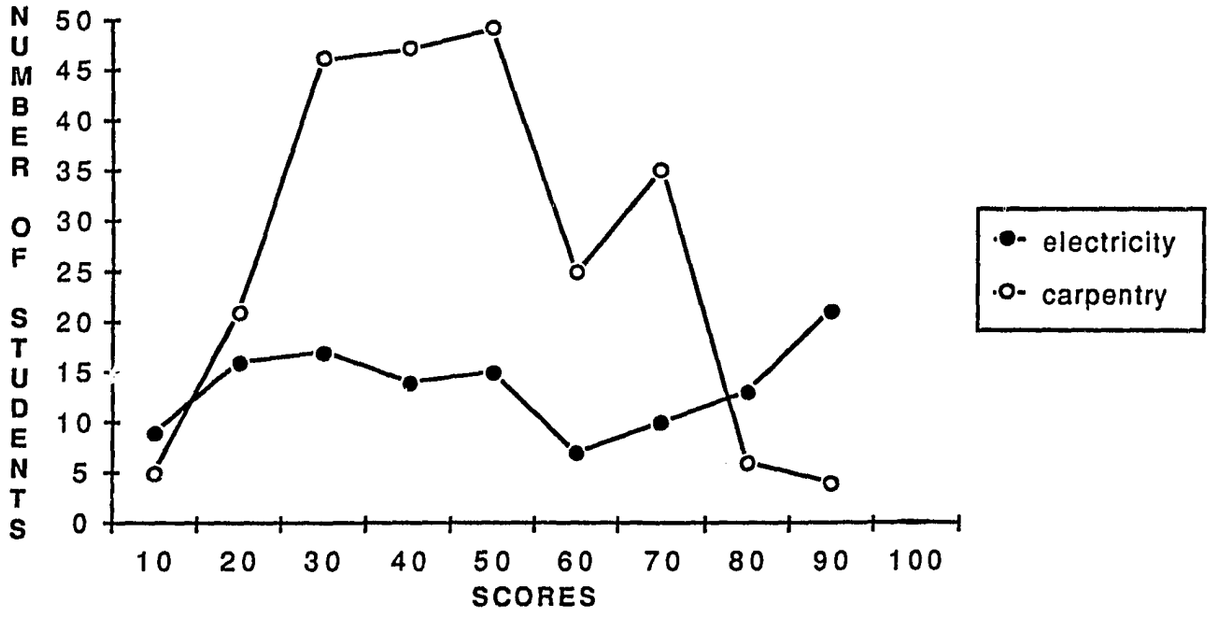
Comment:

Note the contrast in the two distributions for primary school students. The interquartile range (the spread of scores for the middle half of the distribution) for carpentry is from 30 to 56, while in electricity it is from 20 to 74. This means that half the student scores fell between 30 and 56 (a 26-point range) in carpentry but half of their scores fell between 20 and 74 in electricity, or a range of 54 points--slightly more than double the carpentry interquartile range.

The interquartile ranges for the two subjects are identical for the preparatory students, in contrast to the primary school results. The slopes of the distribution are similar, with the exception that there is slightly more bunching of carpentry scores in the middle of the distribution with nearly twice as many of the carpentry scores falling between 50 and 50.

Figure B-5

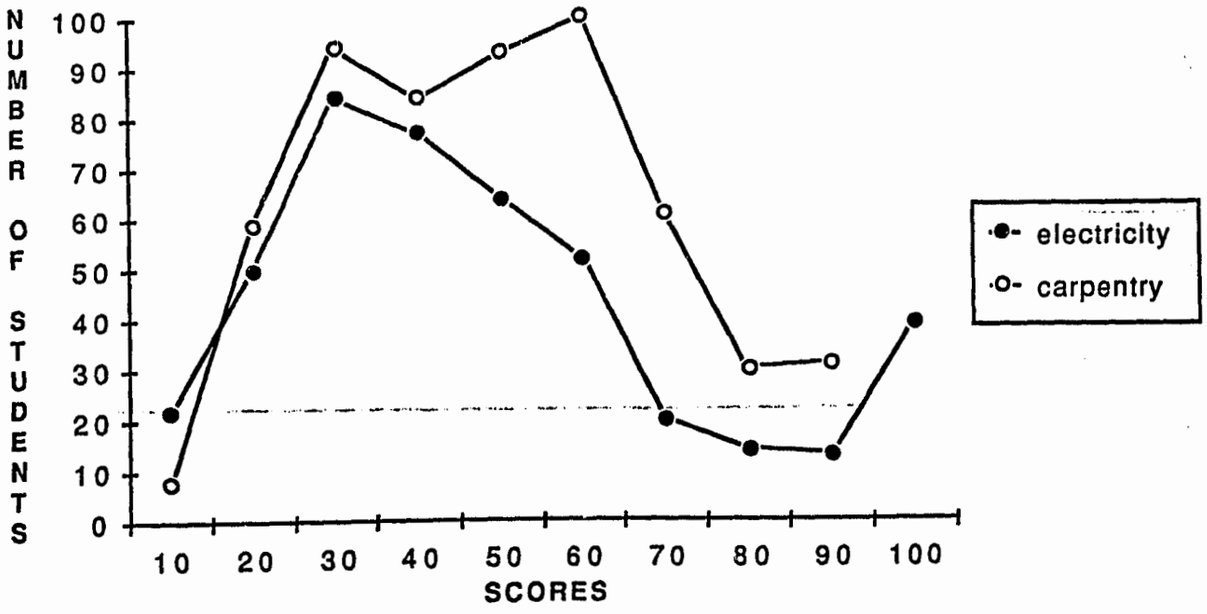
Frequency Distribution of Primary Grade Scores in Carpentry and Electricity



Carpentry:	Valid Cases:	238	Mean:	43.5	Median:	42	Mode:	30
	Missing:	0	Student Dev.:	17.5	Interquartile Range:			30 to 56
Electricity:	Valid Cases:	122	Mean:	45.4	Median:	41.5	Mode:	20
	Missing:	116	Student Dev.:	27.3	Interquartile Range:			20 to 74

Figure B-6

Frequency Distribution of Preparatory Grade Scores in Carpentry and Electricity



Carpentry:	Valid Cases:	560	Mean:	40.1	Median:	40	Mode:	50
	Missing:	96	Student Dev:	20.8	Interquartile Range:			20 to 50
Electricity:	Valid Cases:	436	Mean:	38.3	Median:	30	Mode:	20
	Missing:	220	Student Dev:	25.8	Interquartile Range:			20 to 50

COURSE OFFERINGS AND SCHOOL RESULTS

Primary Schools

To provide information of more direct usefulness to the Ministry in affecting school improvement, we have also analyzed the data by school unit.

Table B-7 shows the number of primary schools that actually offer the two sub-field courses. Table B-8 shows how many of those schools had at least 50 percent of students in the sample achieving a passing score.

Table B-7

Number of Primary Schools in First and Second Five Governorates that Taught Carpentry and Electricity

Courses Taught	Schools	
	First Five	Second Five
Carpentry	in 17 of 22 schools	in 14 of 14 schools
Electricity	in 14 of 22 schools	in 6 of 14 schools

Table B-8

Number of Primary Schools in Which at Least Fifty Percent of the Students in the Sample Passed

Fifty percent or more passed	Schools	
	First Five	Second Five
Carpentry	in 15 of 17 schools	in 3 of 14 schools
Electricity	in 11 of 14 schools	in 2 of 6 schools

Comment:

The primary skill tests used in the schools of the second five governorates were much simpler. We find it difficult to explain why the results are so poor in the second five, unless practical skills teaching was severely neglected, as we suspect is the case. Our testing team leader for the two years, a former Undersecretary of Education, felt that the "teachers need more training and more close, continuous and serious follow-up by supervisors."

Preparatory Schools

The picture is no brighter when we look at the preparatory school results combined for the two sets of governorates (see Tables B-9 and B-10).

Table B-9

Number of Preparatory Schools
that Taught Carpentry and Electricity
First and Second Five Governorates Combined
Intensive School Sample

Courses Taught	Schools
	First and Second Five Combined
Carpentry	in 15 of 17 schools
Electricity	in 12 of 17 schools

Table B-10

Number of Preparatory Schools in Which at Least Fifty
Percent of the Students Tested Passed

Fifty percent or more passed	Schools
	First and Second Five Combined
Carpentry	in 3 of 15 schools
Electricity	in 0 of 12 schools

Comment:

We had expected much higher results in the preparatory schools, since the students we tested should have had considerable experience in industry. Our testing was completed in 1986 and 1987, some five and six years after industry had been mandated as a part of the curriculum. Both our 1986 and 1987 ninth grade students, therefore, should have had industry for a total of five years and should have also learned electrical theory in their science classes. However, from interviews with the students we found that many had not taken industry before, or if they had, did not remember having used the set of tools common to the course.

Morever, classroom observations, interviews with teachers, headmasters, supervisors, and students revealed that little or no importance was placed on practical skills attainment.

There were two exceptions to this generalization. In home economics, great stress was placed on skill development in cooking and sewing in virtually all the schools, if the necessary equipment was available. The other exception was found in the few comprehensive city preparatory schools that pride themselves on developing practical skills to help youngsters get jobs or apprenticeships after they finish their preparatory school training.

Low scores could also have resulted from our tests not serving as valid measures. The preparatory school tests were composed of work-sample tests of practical skills in which the student used tools and materials to actually make an object or wire up a circuit. One could question the tests' validity as a measure except that it was designed by those who prepared the curriculum and felt the tests fairly sampled what they had intended to be learning outcomes. Moreover, the tests were closely examined by industry supervisors in each of the ten governorates. None of them felt the tests to be too difficult for the students, or invalid as a measure of what students should be able to do. What seems clear now is that, regardless of the curriculum validity of the tests, what they measured had not been taught or, at least, not taught well.

As teachers and headmasters were quick to point out to us, there were mitigating circumstances in many of the schools. Many had neither industry textbooks for the students nor copies of the syllabus for teachers to follow. Because of faulty equipment distribution, some had so few pieces of equipment that they couldn't give every student an opportunity to work with all the tools.

A major problem lay with the supply of raw materials. In all but a few city schools the materials budgets were so low that teachers felt they could not allow students to waste them in learning by making entire objects.

Equipment and Materials

Having enough of the right equipment is vital to skills attainment in practical courses such as industry. Those schools in our sample that had the highest percentage of their students pass the work-sample tests, low as they were in the preparatory schools, also had the greatest amount of equipment,

Having enough equipment, while essential, is not sufficient for developing real hands-on skills. Students must have the opportunity to work with the equipment to transform raw materials into finished objects, such as shelves, chalk boxes, or doorbell circuits. Failing this, the most the students will obtain is a knowledge of the process, the ability to name the tools and their uses and, perhaps from having observed them in use, an enhanced ability to use tools once given the chance.

Teacher Training

Not only is pre- and in-service teacher training in the use, maintenance, storage, and repair of equipment necessary, teachers must also have enough practice themselves with using tools to develop their own skills. Teachers of art who have been pressed into service as industry teachers in the primary schools seldom have the chance to develop any expertise in using the equipment.

In addition, teaching a practical skills course in which 25 or more students are simultaneously at work using tools that are dangerous if not handled properly is vastly different from standing in front of a class of passive listeners lecturing on literature or explaining a mathematical operation. The industry teachers we interviewed and whose students we tested needed instructional practice to develop the skills they needed to become effective as practical skills teachers.

Workshops and Electrical Service in the Schools

While nice and necessary for optimum student learning of advanced skills, particularly in the preparatory schools, workshops and electrical services are not of such great importance as to prevent effective instruction in their absence. We saw good teaching of carpentry that used the school corridor, a study area under a tree, or the school yard as a workshop. Much of the electrical curriculum can be taught using flashlight batteries as the power source if no electrical service is present in the school. In fact, from the stand point of safety, it is better to use dry cell batteries as the power source rather than the school's 220 Amp circuit, which can severely burn or kill students if used improperly.

The Pattern of Relationships

Each of the other five factors, equipment, materials, teacher training, the presence of workshops, and having electrical service in the school, is important but, except for equipment, none of them taken alone as a separate variable shows a consistent clear relationship with students' practical skills achievement.

A full classroom set of equipment is necessary if all the students are to develop practical skills in equipment use. Without that, generally, the best that can be expected is that all can learn the names and intended uses of the equipment the school has, and perhaps a few may learn how to use it. Having more items than are needed for a classroom set does not increase student learning. If the extra equipment is not needed, it is simply stored away.

However, if practical skills learning is to take place, the students must have materials with which to work. In addition teachers must be trained. In a classroom supplied with adequate equipment and materials, some learning will take place, but it will be random and mixed, reflecting more the students' native abilities, curiosity and industriousness than a program of planned instruction.

School yards, corridors, and other spaces can be used as workshops and though less than ideal places in which to teach, the absence of proper workshops need not prevent the acquisition of practical skills. We found adequate or better than adequate student performance in schools without workshops but with equipment, materials, and a trained teacher. Similarly, having electricity is extremely helpful. Without it power tools can't be used. Although in the primary schools, at least, none of the carpentry equipment requires electricity, nor does teaching electricity. In fact it is recommended that the students learn their practical skills using dry cell batteries as the power source rather than the school's 220 volt system.

We found three different general patterns. Many of the schools that tended to be the most effective academically also tended to have the largest supply of equipment and materials, and usually, but not always, had higher practical skills test results. Those schools that were least effective academically generally had lower practical skills scores, or they did not even offer one or both of the courses. A third group of schools tended to be in the upper middle to upper range of academic achievement and low middle to lowest in practical skills scores. These schools seemed to us to sacrifice practical skills attainment for academic achievement and even then were not always as successful as they might have wished.

In the schools we visited with consistently high academic achievement and consistently high practical skills attainment, there was almost always a strong, supportive headmaster who took pride in making sure that both outcomes were achieved without sacrificing one for the other. These schools tended to have better trained industry teachers, and an adequate supply of equipment and materials.

Skills Development in the Other Practical Subjects

As opposed to industry, which is a new basic education addition to the curriculum, agriculture and home economics are established with a history and tradition in Egyptian schools. Primary school agriculture and home economics teachers receive their pre-service training in teacher training institutes and preparatory school teachers in faculties of education. Supervisors conduct in-service courses annually.

Some of the best practical skills training the team observed took place in serving and cooking where real "hands-on" teaching of skills is the accepted teaching method. Student equipment use in learning is routine rather than the exception. The same holds for teaching the food products portion of the agriculture curriculum, in which students learn to preserve foods by pickling, to make various food products such as jams, jellies, cheese, and to practice beekeeping, etc., provided the schools have the equipment.

Our subjective observations that a great deal of quality teaching and skills learning takes place in these two subjects are supported by teaching and supervisor reports. We caution, however, that we did no direct testing ourselves in these two fields, as we did in industry. Hence, to round out its information about practical skills learning, the MOE may want to do some similar work-sample testing in a sample of schools in home economics and agriculture to ascertain strengths and weaknesses of the teaching and learning of practical skills in these two subjects.

RECOMMENDATIONS

We recommend that:

- the MOE review the general goals and aims of the practical skills courses, particularly agriculture and industry with a view to their external relevance and to whether they should continue to be directed toward the goal of modest skills development in preparation for general life skills or whether they should be pre-vocational in their aim;

- whatever set of general goals the MOE chooses be translated into basic, specific, and measurable learning objectives for each subject, appropriate to the subjects' general and specific aims;

- the MOE develop assessment instruments, including criterion-referenced tests, and a formal assessment system to measure the attainment of the specific learning objectives;

- the MOE establish ways to re-orient the practical learning courses so as to enhance their importance as courses in the eyes of the students, parents, and school authorities, especially at the preparatory level;

- the MOE expand and diversify its in-service teacher training programs to include:

  - learning the practical skills required of the students,
  - preparing tools and equipments for use,
  - maintaining tools and equipment,
  - learning to make some simple equipment repairs,
  - teaching the syllabus within their existing circumstances and using the resources available to them, and
  - learning how to overcome teaching problems due to the lack of tools or equipment;

- the MOE require better and more frequent follow-up by supervisors to help teachers solve their teaching problems, to make certain the syllabus is being followed, to ensure that student progress is being followed, and to ensure that students have the chance to perform the practical-skills learning exercises built into the curriculum;

- the MOE provide an adequate raw materials budget to the schools, either through their own resources or through AID funding;

- the MOE and USAID review the equipment lists to ensure they fit the curriculum;
- the MOE and USAID consider purchasing equipment for some of the other subject areas in which it would be useful;
- the MOE make immediate improvement in the systems of equipment distribution, maintenance, and repair, and establish budgets to support these changes;
- the MOE and USAID consider ways of producing low-cost alternative equipment in Egypt; and
- USAID supply technical assistance to the MOE for solving these problems and implementing those solutions for which USAID and the MOE believe such assistance is appropriate and necessary.

APPENDIX C

EXTENSIVE STUDY OF THE IMPACT OF NEW SCHOOLS

EXTENSIVE STUDY OF THE IMPACT OF NEW SCHOOLS

INTRODUCTION

The objective of the extensive study of the impact of new schools is to assess the overall impact of the new schools on enrollment, literacy and numeracy. The study consists of two phases:

Phase I

Phase I investigates the impact in the five governorates of Assuit, Bahira, Kafr al Shaikh, Qena, and Sohag, where new schools were constructed under the first phase of the USAID-funded project. This phase has three sub-studies:

(i) a study of a sample of sites where new schools opened in the fall of 1983 (Ext. 83);

(ii) a study of a sample of sites where new schools opened in the fall of 1984 (Ext. 84); and

(iii) a study of "control" sites which meet the criteria for construction of new schools but where new schools have not yet been scheduled for construction.

Phase II

Phase II investigates the impact in the five governorates of Giza, Fayyum, Minya, Bani Suaf, and Sharqiya, where new schools were constructed under the second phase of the USAID-funded project. This phase also has three sub-studies:

(i) a study of a sample of sites where new schools opened in the fall of 1985 (Ext. 85);*

(ii) a study of all the sites where new schools opened in the fall of 1986 (Ext. 86); and

(iii) a study of "control" sites which meet the criteria for construction of new schools but where new schools have not yet been scheduled for construction.

---

*This was not originally planned as a separate sub-study, but some of the new schools in the sites that were chosen as Ext. 83 or Ext. 84 did not open until the fall of 1985. In addition, all new schools in the governorate of Fayyum opened in 1985 except for one that opened in 1986.

Previous reports presented the main analysis of data related to phase I up to and including the school year 1985/86. The 1986/87 data, together with all the data related to phase II, was collected during the spring of 1987. The present report extends the analysis of the impact of the Phase I Ext. 83 and Ext. 84 studies, to include the third and fourth year impacts of the new schools, respectively. It also includes an analysis of the first and second year impacts of Ext. 85 and Ext. 86 studies and a final summary of the overall impact of new school construction.

REVIEW OF DESIGN AND METHODOLOGY

Selection of "Extensive" New School Sites and "Control" Sites

In phase I, four new school sites from each of the five governorates covered by the first phase of the USAID-funded project (Assuit, Bahira, Kafr al Shaikh, Qena, and Sohag) were randomly chosen from the lists of 1983 new school sites, by choosing every nth site in order from each governorate's list, starting with a site chosen at random from among the first n. The value of n was chosen so as to obtain four schools from each list, totaling 20 schools in the five governorates. Twenty 1984 sites were chosen in the same way. In addition the sites that were used for the Intensive Studies were also included in both Ext. 83 and Ext. 84 studies respectively.

choose the control sites, each governorate's site maps were examined and used for identifying four sites in each governorate that fulfilled MOE and USAID criteria for constructing new schools but where new schools were not likely to be opened before the fall of 1987. In this way a total of 20 control sites in the five governorates were selected. These formed a sample against which to compare the impacts of the new schools.

Phase II included sites in the five governorates covered by the second phase of the USAID-funded Project (Giza, Fayyum, Minya, Bani Suaf, and Sharqiya). In this phase all sites having new schools that opened in the fall of 1986 were included in the Ext. 86 study. The governorate of Fayyum had only one new school that opened in 1986. Therefore, a random sample of five of these sites with new schools that opened in the fall of 1985 were chosen and included in the Ext. 85 study, together with two other sites (one in the governorate of Kafr al Shaikh and the other in the governorate of Qena) that were originally choosen as Ext. 83 and Ext. 84 sites but whose new schools did not open till the fall of 1985.

An additional four sites in each governorate were identified as control sites, using the same procedure as in Phase I.

A list of all sites now included in the Extensive Study, in both phases is given in Table C-1. It should be noted here that there have been slight changes in the lists each year as sites were eliminated or added according to the availability of data.

Table C-1 / C-2
List of All Sites Included in The Extensive Study

PHASE I

Governorate	1983 New School Sites		1984 New School Sites		Control Sites +++	
	Markaz	Site	Markaz	Site	Markaz	Site
Assuit	Ghanayim	Ghanayim **,+	Sahil Salim	Shamiya **	Manfalut	Hawatka
	Bidari	Sarur *,++	Abu Tig	Hagar Dakran	Badari	Azbit Amir
	Abu Tig	Abu Kab	Kusiya	Rizkt al Dir	Abu Tig	Naglit Bakur
			Sahil Salim	Azbit Sabit Basta	Sidfa	Malaf al Sharki
			Dayrut	Kodfat al Islam **		
Sohag	Akhmin	Nag Hartf +	Akhmim	Nag Mahdy ++		
	Tahta	Nag Shanadi	Sohag	Nag Manna		
	Akhmin	Nag Ahmad Ismail	Tahta	Ibada	Akhmim	Nag al Sahil
	Sohag	Nag al Araya	Sohag	Nag Sarur ++	Sohag	Nag adfa
		Nag Matrud			Sohag	Nag al Arab
Qena	Naqada	Nag Khutaba +,++			Qena	Nag Abu Zaf
	Nag Hamadi	Nag al Kilh *	Abu Tisht	Daf al Nawahid	Kus	Nag Abu Humus
	Qena	Nag al Gabal ++	Isna	Sahal al Duk Kira ++	Nag Hamadi	Ziltin
	Abu Tisht	Muaisara	Farshut	Nag Kharka	Abu Tisht	Nag al Tud
	Armant	Nag al Bakala	Kus	Nag al Awari		
	Kus	Hamid Ahmid Ramadin				
Bahira	Mahmudiya	Kafr Nakla *,+	Hush Isa	Alf al Shaikh ++	Itay al Barud	Azbit Abu al Fadl
	Hush Isa	Menshiya +,++	Kafr Duwar	Matuk	Hush Isa	Azbit Yusef
	Edku	Azbit Sitta *,+	Kafr Duwar	Manshat al Awkaf *	Hush Isa	Azbit al Wani
	Shubra Khit	Sanadidi *			Mahmudiya	Azbit al Shaikh Ali
	Itay al Barud	Ibrahimiya	Abu Humus	Byrgal		
	Shubra Khit	Kumy				
Kafr al Shaikh	Hamul	Magaz al Sharki ++	Mutubis	Ruda **,+		
	Kafr al Shaikh	Mustafa Kamal ++	Disuq	Balada **	Kilim al Hamul	Munghas al Sugra
	Sidi Salim	Abd al Wahidtid	Kilim	Munsha al Kubra**		Kariyat Ashara
	Bajala	Binabul			Biyala	Azbit Ibrahim Mustafa
			Fiwa	Sulka ++	Disuq	Azbit Framund

* New school, has grades 1-9
** New school, has grades 7-9

• Included in the Intensive Study
++ Most rural site

+++ One of the control sites in Sohag (al Gazira al Murtaffa) was eliminated because it had two new MOE schools.

PHASE II

Governorate	1983 New School Sites		1984 New School Sites		Control Sites +++	
	Markaz	Site	Markaz	Site	Markaz	Site
Giza			Awsim	Shimbari **	Imbaba	Sulfman Azmi
					Imbaba	Muhamad Said
					Wahat	Qasaa
					Giza	Mishil Ayub
Fayyum	Ibshwai	Azbit al Sayim			Sannuris	Azbit al Hinnami
	Fayyum	Muhamad Abdal Hamid	Fayyum	Abu Ish	Itsa	Manshat Skran
	Sannuris	Manshat el Sadad			Tamiya	Abdal Hamid Al Qassi
	Itsa	Manshat Sabri			Fayyum	Abd al Agha
	Tamiya	Sad Rubi				
Bani Suaf			Simusta	Nasr Guma	Simusta	Abd al Muhsen
			Biba	Azbit al Iman	Biba	Azbit Musa Bik Wazir
			Bush	Azbit Mohamad Musa	Bush	Azbit Sultan Goma
			Ihnasya	Azbit Hussan Ghita	Ihnasiya	Hassan Mansur
			Bani Suaf	Azbit Faisal		
Minya			Minya	Bash Katib ++	Minya	Azbit Uman Sultan al
			Minya	Yunis Simida ++	Al Idwa	Bahariya
			Idwa	Sadia ++	Bani Mazar	Abdel Manim Lamlun
			Idwa	Lamlun Abdal Rahman ++	Maghagha.	Ahmad Abu Husni
						Azbit al Malak
Sharqiya	Zagazig	Tayiba**	Hihiya	Hud Nagih **,++	Abu Hamad	Azbit al Hisabat
			Bilbis	Harna **,++	Hahya	Azbit Abdul Rahman
			Hassainiya	Al Bradi ++	Zagazig	Said
			Abu Hamad	Kafr al Shaikh	Husainiya	Azbit Siyam
				Zikri ++		Azbit Samra al Sadi
Kafr al Shaikh	Bajala	Al Nasariya				
Qena	Luxor	Nag al Tarif •				

* New school, has grades 1-9
** New school, has grades 7-9

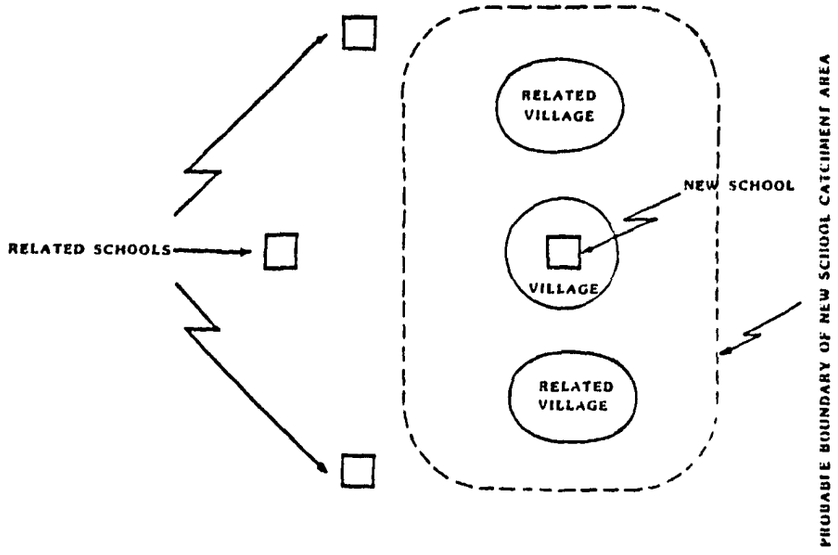
++ Most Rural Site

Elements of a New School Site

Figure C-1 shows a schematic diagram of a typical site, consisting of a village where the new school was located, related villages from which children might come to the new school, and related schools to which children from the new school site might have gone in the past. To understand the study design, it is essential to keep these elements of a typical site clearly in mind.

Figure C-1

Diagram of Typical New-School Site



Identification of Related Schools

As shown in Figure C-1, "related schools" were those schools near the new-school site which some youngsters might have been attending before the new school opened. In order to assess the net impact of a new school, one has to know how the enrollment in its related schools changed when the new school opened. Some children who were expecting to go to first grade in a related school might change their minds and attend the nearby new school. Therefore, their enrollment in the new school would be compensated for by a lower enrollment than anticipated in the related school. This would be more convenient for the students, but it would not result in a net increase in enrollment at the site. Similarly, students in later grades who would have attended a related school but who switched to the new school instead, would not contribute to a net increase. However, children who had decided to drop out because of the distance, but who stayed in because the new school was near, would represent a net increase.

Although children who stopped going to a related school and came instead to the new school would not contribute to a net increase in enrollment, their moving would, in fact, make a net increase possible if their places in the related schools were taken by others who might have dropped out because of crowding. All these are reasons why it was important to identify, as accurately as possible, all the related schools surrounding each new-school site.

The first step in identifying related schools was to determine the location of each selected new school on the map. The second step was to examine the map together with governorate officials and ask the officials to identify all possible schools to which children, who might later attend the new school, might presently be going. The research team depended on local governorate officials to identify the related schools for each site.

Research Strategy

In order to assess the impact of new schools, it is necessary to estimate what the total enrollment of the related schools would have been in the absence of the new school. It is then possible to compare the projected total enrollment with the observed total enrollment when the new school is included. The difference is the new school's net effect.

To estimate the expected enrollment in the absence of the new school, a time-series analysis was used. Records of enrollment in all the related schools for each site were examined for five years from 1978-79 to 1982-83 in phase I sites and for the seven years 1978/79 to 1984/85 in phase II sites. From the trends in these records, projections could be made of enrollment for 1983/84 and the following years in phase I and for the 1985/86 year in Phase II. Then the actual enrollment, including that in the new schools, could be compared with the projections.

One would expect the main impact of a new school to be on initial enrollment in grade one. A net increase in grade one enrollment represents entirely new children coming into the school system. In addition, a new school might have an impact on the numbers of children in grades two through six and in grades seven through nine. A net increase in these grades would represent an increase in the school's holding power, resulting in children remaining in school because the new school was close to their homes rather than dropping out because the related school was far away. These two situations reflect different policy concerns and may be influenced by different factors. Consequently, separate analyses were made of:

- Enrollment in grade one.
- Persistence in grades two through six.
- Persistence in grades seven through nine.

Table C-3 shows typical time-series data from the site of Manshiya, in the governorate of Bahira, which is one of the Ext. 83 sites. Figures in the table show the yearly total enrollment from all four related schools in that site since 1978/79. Starting in 1983/84, the figures include the enrollment of the new school as well. The first three columns show enrollment in grade

one for boys, girls, and total. The following three columns show enrollment in grades two through five (boys, girls, and total) because the new school had only the first five grades when it opened in 1983/84. In 1984/85 it expanded to include grade six as well. Therefore, the time series for enrollment in grades two through six (boys, girls, total) are given in the following three columns. If the new school included grades seven through nine, another three columns would have been added showing enrollment in these grades for boys, girls, and total.

Table C-3

Time Series Enrollment Data from the Site of Manshiya (Bahira)

YEAR	Enrollment in Grade One			Enrollment in Grades 2 - 5			Enrollment in Grades 2 - 6		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1978/79	117	37	154	214	34	248	259	41	300
1979/80	146	74	220	343	99	442	404	106	510
1980/81	139	63	202	416	164	580	461	169	630
1981/82	110	60	170	460	200	660	543	221	764
1982/83	142	99	241	560	263	823	584	258	842
1983/84	192	120	312	606	320	926	-	-	-
1984/85	218	97	315	-	-	-	722	397	1119
1985/86	126	99	235	-	-	-	831	430	1261
1986/87	204	99	313	-	-	-	803	451	1254

A similar table was made for each site. A straight line was then fitted to the data for every column based on the observed values in the first five* years before the new school opened.

Using boy's enrollment in the site of Manshiya for illustration, the fitted least squares regression line is given by: $y = 128 + 1.4\,x$, where x represents years and equals zero in 1978/79, and y represents projected enrollment of boys in year x in grade one if the historical general trend does not change. In addition to the general trend there are random factors

*In the sites of the Ext. 85 and Ext. 86 studies the fitted straight lines were based on the observed values of the first seven years, whenever the data were available.

affecting enrollment. The effect of these factors--i.e., the standard error, can be estimated since it is a function of the observed variability of enrollment around the estimated regression line.

In order to forecast enrollment in a given year, the estimated regression line (or trend line) was used to obtain the projected enrollment (if no new school opens). Then the expected effect of the random factors, at the required confidence level, was added to the calculated projected enrollment in order to obtain an upper confidence limit below which the observed enrollment in that given year should lie if there were no unusual factors causing it to increase. If the observed enrollment lay above the upper confidence limit, this indicated that there was something unusual--other than the trend and the usual random factors--causing enrollment to increase in that particular year. The difference between this observed enrollment and the corresponding projected enrollment was considered a real, or significant, positive difference.

Referring to the boys' enrollment in grade one in the site of Manshiya, the yearly projected enrollment and the upper 0.95 confidence limits in the years 1983/84 to 1986/87, together with the observed enrollment in the same years are given in Table C-4.

Table C-4

Observed and Expected Grade One Enrollment in the Site of Manshiya, 1983/84 - 1986/87

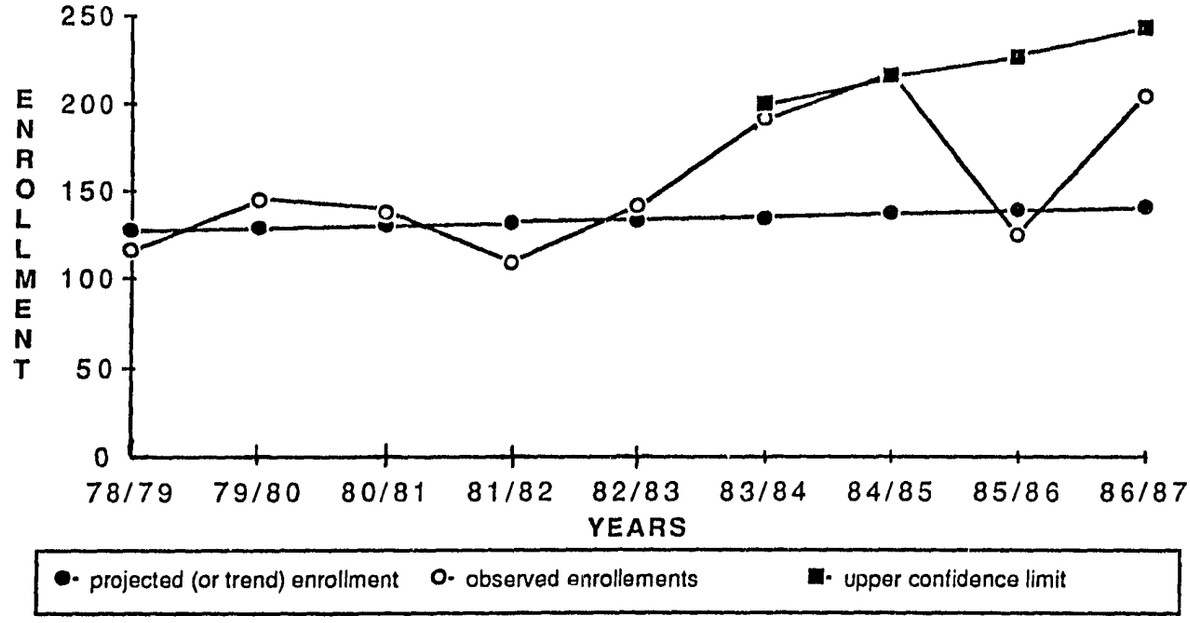
Year	1983/84	1984/85	1985/86	1986/87
Projected Enrollment	135.0	136.1	137.8	139.2
Observed Enrollment	192.0	218.0	126.0	204.0
Upper 0.95 Confidence limit	200.7	216.1	226.9	242.4

Comparison of the observed enrollment with these upper confidence levels shows that in 1983/84, although the enrollment was high, it was not significantly different from what the projected enrollment would have been without the new school. But in 1984/85, enrollment had increased above the upper confidence levels, indicating a significant effect of the new school in that year.

Figure C-2 shows the fitted regression line together with projected and observed enrollment.

Figure C-2

Boys Enrollments (Observed and Projected, or Trend Values) in Grade One in the Site of Manshiya (Bahira)



In addition to linear regression analysis, we calculated enrollment index numbers to detect unusual changes over time.

For analysis of exam data, categorical data analysis was used to search for any significant differences between sites, types of schools, and between boys and girls.

General Characteristics of the Data

Table C-5 shows the number of sites from which data were collected in each of the ten governorates. The total number of sites for all the Extensive Studies is 108.

Table C-5

Number of Sites Studied in Each Governorate

Governorate	Phase I			Phase II		
	Ext. 83	Ext. 84	Control	Ext. 85	Ext. 86	Control
Assuit	3	5	4			
Bahira	6	5	4			
Kafr al Shaikh	4	4	4	1		
Qena	6	4	4	1		
Sohag	5	4	3	-		
Giza	-	-	-	-	1	4
Fayyum	-		-	5	1	4
Sharqiya	-			-	5	4
Bani Suaf				1	4	4
Minya				-	4	4
Total	24	22	19	8	15	20

The numbers of related schools from which data have been collected in each of the ten governorates is shown in Table C-6, according to the educational level and the study type. There are a total of 293 related schools in the Extensive Studies.

Table C-6

The Number of Related Schools Covered in Each Governorate
(According to Educational Level and Type of Study)

Governorate	Educ. Level	Phase I			Phase II		
		Ext. 83	Ext. 84	Con-trol	Ext. 85	Ext. 86	Con-trol
Assuit	Primary	12	6	11			
	Preparatory	4	4	4			
Bahira	Primary	16	17	7			
	Preparatory	6	-	6			
Qena	Primary	17	6	9	2		
	Preparatory	-	-	-	-		
Sohag	Primary	16	8	9			
	Preparatory	-	-	-			
Kafr al Shaikh	Primary	13	5	7	4		
	Preparatory	-	5	3	-		
Giza	Primary					-	-
	Preparatory					3	4
Fayyum	Primary				12	3	9
	Preparatory				-	-	-
Sharqiya	Primary				-	3	13
	Preparatory				2	5	6
Bani Suaf	Primary					11	6
	Preparatory					-	-
Minya	Primary					12	7
	Preparatory					-	-
Total	Primary	74	42	43	18	29	35
	Preparatory	10	9	13	2	8	10
	Total	84	51	56	20	37	45

The related schools in the study include very old schools (one school in Qena governorate started in 1911/12 and one in Assuit governorate started in 1921/22) as well as very new schools (one new MOE built school in Bani Suaf governorate started in 1985/86).

FINDINGS

Findings are presented in four main sections. The first section reports the impact of new school construction on the initial entrance of children into the educational system, that is, grade one enrollment. The second and third findings sections discuss the impact of new school construction on the persistence of children at the primary and preparatory levels. The fourth section presents the analysis of the examination data.

I. IMPACT ON GRADE ONE ENROLLMENT

FINDING: New school construction has significantly increased total enrollment in grade one in the first year after new schools opened.

Discussion:

Linear regression analysis showed that the impact of new schools was to add, on the average, 41 students to the grade one population of each extensive site in the first year after the new school opened, over the linearly projected enrollment. This represented an 18 percent increase over the projected enrollment. This impact differed from one extensive sub-study to the other, as shown in Table C-7.

Table C-7

The Impact of New School Construction on Total Grade One Enrollment in the First Year After New Schools Opened

Study Type	Ext. 83	Ext. 84	Ext. 85	Ext. 86	All Ext. Sites
Number of sites having grade one	23	17	7	13	60
The "average" increase in students per site	46	52	24	29	41
The percentage increase over expected enrollment	(18)	(23)	(10)	(15)	(18)

121

Each of the "averages" presented in this table is obtained by adding* the differences between the observed and the linearly projected enrollment of all the sites of a given sub-study in the first year after the new schools opened and dividing this total by the number of sites in the sub-study. These differences were significant (at 0.05 significance level) in most sites of the four extensive sub-studies, while the corresponding differences in the year preceeding the opening of the new schools were not significant. Also, the differences calculated without including the new schools enrollment in the observed enrollment were not significant. Both these results indicate that the significant differences can be attributed to the new schools.

The percentage increases over projected enrollment are calculated by dividing the sum of differences of all sites in a given sub-study by the sum of the linearly projected enrollment at these sites.

The combined impact in the sites of the Ext. 85 and Ext. 86 studies (i.e., in the governorates of phase II) was an average increase of only 27 students per site, representing a 13 percent increase over projected enrollment, which is considerably smaller than the impact of Ext. 83 and Ext. 84 studies (i.e., in the governorates of phase I) whose average increase was 48 students per site, a 20 percent increase over projected enrollment. This difference is due, at least partially, to the fact that in five of the thirteen sites covered by the Ext. 86 study there had been other new schools constructed by the MOE before the USAID-funded new schools were built.

By contrast, the average increase over the linearly projected enrollment in control sites was negative (-2) and did not differ significantly from zero. In fact, the differences were insignificant in most of the control sites (at 0.05 significance level). The discrepancy noticed between phase I and phase II extensive sub-studies was also noticed between the corresponding control studies. The average increase per site was five students (3 percent increase over projected enrollment) in the phase I control study, compared to the average of negative 17 students (9 percent decrease below projected enrollment) in the phase II control study.

In general, the same type of results about the first year impact of new schools on grade one enrollment is obtained by looking at the annual rates of increase of enrollment in the different studies, which are given in Table C-8. These annual rates of increase are obtained by subtracting one from the ratio of enrollment in a given year to enrollment in the preceeding year. The table shows that the highest rate of increase, for the Ext 83 and Ext 84 studies, occurred in the year in which the new schools opened, while no corresponding high rates of increase occurred in the control study. This is not true for the Ext. 85 and Ext. 86 studies because, as mentioned before, there had been new MOE-funded schools opened in several sites in the years preceeding the opening of the new USAID-funded schools, that had absorbed the backlog of eligible children who had not been able to go to school previously.

---

*The time series data did not start in 1978/79 for all sites. Therefore, it was not possible to obtain the difference between observed and projected enrollment in all sites in a given study by using one regression line for each of the sub-studies.

Table C-8

Grade One Total Enrollments and the Annual Rates of Increase (%) in all Studies

School Year	Phase I						Phase II					
	Ext. 84		Ext. 84		Control		Ext. 85		Ext. 86		Control	
	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %
1978/79	4311	+	3110	+	2271	+	316	+	1231	+	1006	+
1979/80	4702	+	3223	+	2387	+	316	+	1219	+	1031	+
1980/81	4919	+	3540	+	2561	+	296	+	1174	+	1318	+
1981/82	4968	+	3447	+	2555	+	1165	+	1731	+	2179	+
1982/83	5560	14	3736	8	2839	11	1163	0	1750	1	2390	10
1983/84	6797	20	3788	1	3135	10	1383	19	2200	26	2511	5
1984/85	7030	3	4817	27	3082	-2	1697	23	2393	7	2715	8
1985/86	6874	-2	4494	-7	3211	4	1751	3	2553	7	2692	-1
1986/87	7061	3	4730	5	3311	3	1911	9	2825	11	2798	4

+The annual rate is not calculated because total enrollment in the corresponding years are not comparable due to the number of sites which did not have enrollment data for these years. The first year for which data was available in all sites in all the studies is 1981/82.

FINDING: The impact of increasing total enrollment in grade one continues in the successive years but decreases over time.

Discussion:

Linear regression analysis shows that the impact of the new school to increase total enrollment of grade one over projected enrollment decreases over time. On the average, grade one enrollment increased by 30 students in the second year, 29 students in the third year, and 22 students in the fourth year after the new schools opened. These averages amount to 12, 11, and 8 percentage point increases over the linearly projected enrollment in the second, third, and fourth year, respectively. The corresponding average and percentage increases in the different extensive sub-studies are given in Table C-9.

Table C-9

The Impact of New School Construction on Total Grade One Enrollment in the Successive Years Following the Opening of New Schools in Each Extensive Substudy

Study Type	First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase
Ext. 83	46	(18)	44	(17)	26	(9)	22	(8)
Ext. 84	52	(23)	25	(11)	32	(13)	+	+
Ext. 85	24	(10)	-3	(0)	+	+	+	+
Ext. 86	29	(15)	+	+	+	+	+	+
All Ext. Sites	41	(18)	30	(12)	29	(11)	22	(8)

+Not applicable since the new school had not been open for this number of years.

The corresponding figures in the control studies amount to an average increase of -4 students in the second year (4 percent below projected enrollment) and zero increases in the third and fourth years.

In fact, the Ext. 85 study showed a small (and insignificant) decrease over the expected enrollment in the second year. Again, the new schools built by the Ministry at some of the sites of this study seem to have reduced the impact of the USAID-funded schools. The combined impact in the Ext. 83 and Ext. 84 studies in the second year after the new schools opened was to add an average of 36 students per site, a 15 percent increase over the projected enrollment.

The same general decrease in impact over time is seen by looking at the annual rates of increase given in Table C-8. The decreased impact in the successive years after the new schools open could be due to the fact that, in its first year, the new school often accepts large backlogs of seven-year-olds, all the six-year-olds who register, and sometimes five-year-olds to fill up classrooms. By the second year, the pool of eligible children is considerably reduced, and since most children enroll in the newly available school as soon as they are eligible, it is not possible to find a large increase in enrollment in subsequent years.

To show the general compound impact of new schools over time, one can compare the total grade one enrollment in 1986/87 (the last year for which

data had been collected), with total grade one enrollment in 1982/83 (just before any of the new USAID-funded schools opened), once using all extensive sites, and once using all control sites. This comparison shows an increase of 34 percent in the extensive sites, which is twice the 17 percent increase occuring in control sites.

FINDING: The impact of new school construction on girls' enrollment in grade one has been greater than the impact on boys' enrollment in grade one.

Discussion:

The impact of new schools was to add, on the average, 22 boys and 19 girls to grade one enrollment in each new school site during the first year after the new school opened. This represents a 15 and 23 percent increase in boys' and girls' grade one enrollment over the linearly projected enrollment. During the following years the impact was smaller, as shown in Table C-10. These figures are obtained using the differences between observed and projected boys' and girls' enrollment in grade one in each site, as indicated before. Most of the differences were statistically significant (at the 0.05 level) especially in the first and second years after the new schools opened.

By contrast, the average increases over the linearly projected enrollment in control sites' in the first year, were -2 for boys and 0 for girls, and near zero in the following years. The differences between observed and projected enrollment were not significantly different from zero in most of the control sites.

Table C-10

The Impact of New School Construction on Boys' and Girls' Enrollment in Grade One in Successive Years After New Schools Opened, in Different Extensive Substudies

	First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
Study Type	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase
Ext. 83								
Boys	21	(13)	23	(14)	11	(6)	12	(7)
Girls	25	(26)	21	(21)	15	(14)	10	(9)
Ext. 84								
Boys	26	(19)	12	(8)	16	(11)	+	+
Girls	26	(28)	13	(14)	16	(16)	+	+
Ext. 85								
Boys	16	(10)	-25*	(-15)	+	+	+	+
Girls	8	(11)	22	(28)	+	+	+	+
Ext. 86								
Boys	21	(16)	+	+	+	+	+	+
Girls	8	(11)	+	+	+	+	+	+
All Ext. Sites								
Boys	22	(15)	12	(8)	13	(8)	12	(7)
Girls	19	(23)	18	(19)	16	(15)	10	(9)

*There is no explanation for this negative effect, nor for the high average increase of girls.
+Not applicable, because the new school had not been open for this number of years.

The impact differs from one extensive sub-study to the other, as shown in Table C-10. In the first year after schools opened, the combined impact in the Ext. 85 and Ext. 86 studies (new governorates*) was only an average increase of 19 boys and 8 girls per site, representing 14 and 11 percent increases, over projected, for boys and girls respectively. This impact is considerably smaller--especially for girls--than the impact of the Ext. 83 and Ext. 84 studies, (in the old governorates) where average increases were 23 boys and 25 girls per site, representing a 15 and 27 percent increase over projected enrollment for boys and girls.

The same impact results on boys' and girls' grade one enrollment can be seen in the annual rates of enrollment increase in the different studies, given in Tables C-11 and C-12. These tables show that the rate of increase of girls' enrollment in the years corresponding to the opening of new schools' are much higher than those for boys, indicating that the impact of new school construction is higher for girls. (See Tables C-11 and C-12). In addition, each table shows that the highest rates of increase for Ext. 83 and Ext. 84 studies occurred in the years at which new schools of that study opened, for both boys and girls, while at the same time no corresponding high rates of increase occurred in the control sample. Again, this is not true for the Ext. 85 and Ext. 86 studies in the new governorates for the reasons mentioned before.

Table C-11

Boys' Enrollments in Grade One and Their Annual Rates Of Increase (%) in All Studies

School Year	Phase I						Phase II					
	Ext. 83		Ext. 84		Control		Ext. 85		Ext. 86		Control	
	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %
1978/79	2929	+	2000	+	1572	+	181	+	883	+	650	+
1979/80	3154	+	2103	+	1631	+	193	+	873	+	692	+
1980/81	3219	+	2233	+	1639	+	175	+	841	+	881	+
1981/82	3247	+	2098	+	1643	+	816	+	1214	+	1450	+
1982/83	3575	10	2325	11	1790	9	781	-4	1212	0	1611	11
1983/84	4074	14	2287	-2	1896	6	940	20	1501	24	1595	-1
1984/85	4240	4	2793	22	1829	-4	1163	24	1559	4	1708	7
1985/86	4065	-4	2608	-7	1937	6	1094	-6	1720	10	1717	1
1986/87	4219	4	2722	4	2020	4	1215	11	1874	9	1791	4

+The annual rate is not calculated because total enrollment in the corresponding years are not comparable due to the number of sites which did not have enrollment data for these years. The first year for which data was available in all sites in all the studies is 1981/82.

*Except the two sites in Ext. 85 that belong to Kafr Al Shaikh and Qena of the old governorates.

Table C-12

Girls' Enrollment in Grade One and Their Annual Rates Of Increase (%) in All Studies

School Year	Phase I						Phase II					
	Ext. 83		Ext. 84		Control		Ext. 85		Ext. 86		Control	
	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %	Enroll.	Rate %
1978/79	1382	+	1110	+	699	+	135	+	348	+	356	+
1979/80	1548	+	1120	+	756	+	123	+	346	+	339	+
1990/81	1700	+	1307	+	922	+	121	+	333	+	437	+
1981/82	1721	+	1349	+	912	+	349	+	517	+	729	+
1982/83	2085	21	1411	5	1049	15	382	9	538	4	779	7
1983/84	2723	31	1501	6	1239	19	443	16	699	30	916	18
1984/85	2790	2	2024	35	1253	1	534	21	833	19	1007	10
1985/86	2809	0	1886	-7	1274	2	557	4	833	0	975	-3
1986/87	2842	1	2008	6	1291	1	696	25	951	14	1007	3

+The annual rate is not calculated because total enrollment in the corresponding years are not comparable due to the number of sites which did not have enrollment data for these years. The first year for which data was available in all sites in all the studies is 1981/82.

FINDING: Construction of new schools had greatest impact on grade one enrollment in the most rural sites.

Discussion:

In the first year after new schools opened, the increase of grade one enrollment over projected enrollment was 23 percent in the most rural extensive sites, compared to 16 percent increase in the less rural extensive sites. (See Table C-13)

The figures showing this impact in the most rural extensive sites for boys, girls, and total, and for each extensive sub-study, using averages and percentages of increase over projected enrollment, are given in Table C-13.

Table C-13

The Impact of New School Construction on Grade One Enrollment in the Most Rural Sites in Each Extensive, Sub-study* in the First Year After the New Schools Opened

Study Type	Boys	Girls	Total
Ext. 83 Average	38	28	66
%	(28)	(38)	(31)
Ext. 84 Average	14	17	31
%	(12)	(22)	(17)
Ext. 86 Average	17	7	24
%	(16)	(14)	(15)
All the Most Rural Sites Average	25	18	43
%	(21)	(27)	(23)

*Ext. 85 does not appear in the table since it does not have any of the most rural sites.

FINDING: The new school construction relaxes crowding in grade one in the related schools.

Discussion:

The average grade one enrollment in the new schools in each of the extensive sub-studies for the successive years after the new schools opened are given in Table C-14. The differences between these averages and the average impact on enrollment in grade one, obtained from regression analysis are estimates of the average number of students who were drawn to the new school from related ones, thereby relaxing crowdedness in the related schools. These estimates of "relaxation" are also given in Table C-14. On the average, in its first year of operation, each new school attracted 16 students (14 boys and two girls) who might otherwise have gone to the related schools. This relaxation effect is higher for boys, representing 40 percent of the average grade one enrollment of boys, than for girls (9 percent) and increases over time. This agrees with what we mentioned earlier, that the impact of the new school construction was higher for girl enrollment than boy, and that it decreased over time.

In a few cases (Ext. 83) the relaxation impact for girls was negative. This suggests that girls might be taking places of boys who now go to the new school but would have gone to the related school had the new school not opened. Observations from the community study support these findings. More

mobile boys, who were more likely to have gone the long distance to related schools than girls, contribute to easing crowding in the related schools when they return to the new schools in their home villages.

Table C-14

Average Grade One Enrollment in New Schools [A], and Average "Relaxation" Impact [R], in the Successive Years After New Schools Opened.

Study Type		First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
		A	R	A	R	A	R	A	R
Ext. 83	Boys	31	10	35	12	37	26	35	23
	Girls	23	-2	22	-1	24	9	22	12
Ext. 84	Boys	41	15	32	20	40	24	+	+
	Girls	26	0	19	6	24	8	+	+
Ext. 85	Boys	42	26	49	(74)*	+	+	+	+
	Girls	17	9	22	0	+	+	+	+
Ext. 86	Boys	36	15	+	+	+	+	+	+
	Girls	14	6	+	+	+	+	+	+
All Ext. Sites	Boys Ave.	36	14	36	24	39	26	35	23
	%	(100)	(40)	(100)	(67)	(100)	(67)	(100)	(66)
	Girls Ave.	21	2	21	3	24	8	22	12
	%	(100)	(9)	(100)	(14)	(100)	(33)	(100)	(55)
Total	Average	57	16	57	27	63	34	57	35
	%	(100)	(28)	(100)	(47)	(100)	(54)	(100)	(61)

*This is too high, due to the corresponding negative impact.

II. IMPACT ON GRADES TWO THROUGH SIX ENROLLMENT

FINDING: New school construction significantly increased the persistence of students in grades two through six in the successive years after new schools opened.

Discussion:

In the sample sites of the ten governorates, on the average, enrollment in grades two through six increased by 87 students per site in the first year after new schools opened. This amounts to an increase of 9 percent over the linearly projected enrollment in these grades. In other words, on the average, in its first year of operation the new school keeps an extra 87 students in the educational system or, equivalently, increases persistence by 9 percent thereby decreasing dropout. The corresponding figures for the successive years following the opening of new schools are given in Table C-15. It is clear from this table that, in the second year after the new school opened, the impact on persistence of an increase of 133 students (19 percent) is much higher than in the first year. This is because enrollment in grades two through six in the second year also include the additional children who enrolled in grade one in the preceding year (i.e., in the first year after the new school opened). It is important to note how the impact differs from one extensive study to the other. See Table C-15.

Table C-15

The Impact of New School Construction on Total Grades Two through Six Enrollment in the Successive Years After Opening New Schools in Each Extensive Sub-Study

Study Type	First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase
Ext. 83	113	(11)	130	(12)	125	(11)	122	(11)
Ext. 84	60	(5)	108	(10)	76	(7)	---	---
Ext. 85	91	(12)	152	(19)	---	---	---	---
Ext. 86	77	(10)	---	---	---	---	---	---
All Sites	87	(9)	127	(12)	104	(9)	122	(11)

It should be noted here that in calculating the averages given in this table, the number of grades taken into consideration differs from one site to the other, and from one year to the next, according to the number of grades opened in the new school in that specific year. The differences between the observed and the linearly projected enrollment were significantly different from zero (at the 0.05 level) in most sites of the four extensive sub-studies, while the corresponding differences in the year preceeding the opening of the new school were not significantly different from zero. Also the differences calculated without including the new school enrollment as part of the observed enrollment were not significant. These results indicate that significant differences are due to the opening of new schools.

The comparable figures in the control sites were small and most were insignificant. The average increases over the linearly projected enrollment ranged between 12 and 16 students, and the ratios of increase ranged between 2 and 4 percent.

FINDING: The impact of new school construction on girls' persistence in grades two through six has been greater than that of boys.

Discussion:

On the average, the new schools added 55 boys and 35 girls to grades two through six in each new school site during the first year after the new schools opened. This represents an 8 and 11 percent increase in boys' and girls' grades two through six persistence over the projected increase. Over time the impact on girl enrollment keeps increasing, while the impact on boy enrollment starts decreasing after the second year, as can be seen in Table C-16. The same general pattern is seen in each of the sub-studies, see especially the Ext. 83 sub-study.

Table C-16

The Impact of New School Construction on Boy's and Girl's Persistence in Grades 2-6 in Successive Years after New Schools Opened, Each Extensive Sub-study

Study Type		First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
		Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase	Aver. No. of Students	% Increase
Ext. 83	Boys	65	(9)	63	(9)	52	(7)	34	(5)
	Girls	48	(14)	67	(19)	73	(20)	88	(22)
Ext. 84	Boys	21	(3)	41	(6)	6	(1)	---	---
	Girls	39	(9)	67	(16)	70	17	---	---
Ext. 85	Boys	67	(12)	91	(16)	---	---	---	---
	Girls	24	(10)	61	(25)	---	---	---	---
Ext. 86	Boys	59	(11)	---	---	---	---	---	---
	Girls	18	(17)	---	---	---	---	---	---
All Sites		53	(8)	61	(9)	33	(5)	34	(5)
		34	(11)	66	(19)	71	(18)	88	(22)

In the first year after new schools opened, the combined impact in the Ext. 85 and Ext. 86 study sites (new governorates) was an average increase of 62 boys and 18 girls per site, representing 12 and 8 percent increases over projected. This is higher for boys and smaller for girls than the Ext. 83 and Ext. 84 impacts in the old governorates, whose average increases per site were 51 boys and 47 girls, representing a 7 and 11 percent increase over projected for boys and girls, respectively.

FINDING: The new school construction had its greatest impact on grades two through six enrollment in the most rural sites.

Discussion:

In the first year after new schools opened, the increase (over projected) of grades two through six enrollment was 13 percent in the most rural extensive sites in the ten governorates, compared to a 5 percent increase in the less rural sites. (See Table C-17 following)

Table C-17

The Impact of New school Construction on Grade 2-6 Persistence in the Most Rural Sites in Each Sub-study* in the First Year After the New Schools Opened

Study Type	Boys	Girls	Total
Ext. 83 Average	79	47	126
%	(12)	(17)	(14)
Ext. 84 Average	-25**	-16**	-41**
%	(-2)	(-3)	(-2)
Ext. 84 Average	145	60	205
%	(32)	(36)	(33)
All the most Rural Sites Average	78	36	114
%	(13)	(13)	(13)

*Ext. 85 does not appear in the table because it does not have any of the most rural sites, except the two sites in Ext. 85 study in Kafr al Shaikh and Qena of the old governorates.

**The overall negative effect here is due to one large and unexplained negative effect in the site of Ali al Shaikh in Bahira Governorate.

FINDING: New school construction relaxed crowding in grades two through six in related schools.

Discussion:

In addition to their effect on persistence, as measured by the average increases in grades two through six enrollment, the new schools had an impact on relaxing the crowdedness in these grades in the related schools. An estimate of this impact is obtained by subtracting the impact on enrollment, obtained from regression analysis, (See Table C-16) from the average enrollment in grades two through six in the new schools. This difference represents the average number of students who were drawn to the new school and thereby relaxed crowdedness in the related schools. This estimate of the "relaxation" impact, together with the average grades two through six enrollment in new schools are given in Table C-18.

Table C-18

Average Grades 2-6 Enrollment (Boys, Girls) in New School [A] and Average Relaxation Impact [R] on Each Sub-study, in the Successive Years After the New Schools Opened

Study Type		First Year Impact		Second Year Impact		Third Year Impact		Fourth Year Impact	
		A	R	A	R	A	R	A	R
Ext. 83	Boys	146	81	163	100	183	131	180	146
	Girls	58	10	81	14	99	26	164	16
Ext. 84	Boys	150	129	171	130	180	174	---	---
	Girls	62	23	87	20	95	25	---	---
Ext. 85	Boys	147	80	179	88	---	---	---	---
	Girls	44	20	58	-3	---	---	---	---
Ext. 86	Boys	159	100	---	---	---	---	---	---
	Girls	45	27	---	---	---	---	---	---
All Ext. Sites	Boys Ave.	116	63	168	107	182	149	180	146
	%	(100)	(56)	(100)	(64)	(100)	(82)	(100)	(81)
	Girls Ave.	54	20	80	14	97	26	104	16
	%	(100)	(32)	(100)	(18)	(100)	(26)	(100)	(14)
Total Average		170	83	248	121	279	175	284	162
	%	(100)	(49)	(100)	(49)	(100)	(62)	(100)	(57)

On the average, in its first year after opening, each new school created places for 83 students (63 boys and 20 girls) who would otherwise have gone to the related schools. This represents almost half (49 percent) of the grade two through six enrollment in the new schools. This relaxation effect was higher for boys (54 percent of grades two through six boys' enrollment in the new school) than for girls (37 percent of grades two through six girls' enrollment in the new school). This is a logical finding since in the absence

of new nearby schools, girls may have dropped out earlier because they considered the related schools to be too far away, while boys who are more mobile would be more likely to have continued to go to the far away related schools. Therefore the effect of new schools for girls is to keep them in school longer, and, for boys, to return them to the nearby new school, thereby relaxing crowding in related schools.

Relaxation of crowding started increasing after the second year, which agrees with the finding that the maximum impact on persistence comes in the second year after new schools open. Note that in the first year after new schools open, the relaxation effect on grades two through six enrollment is higher than on grade one enrollment. This is to be expected, since in its first year the new school draws students to grades two through six from the related schools, including those who would have dropped out (i.e., persistence impact). At the grade one level, the new school accepts first time enrollees some of whom would have gone to the related schools.

III. IMPACT ON ENROLLMENT IN GRADES SEVEN THROUGH NINE

FINDING: The impact of new school construction on grades seven through nine enrollment could not be estimated.

Discussion:

The original design for the extensive study was based on the assumption that new schools would include either grades one through six or grades one through nine. In actuality, most schools became one through six schools with only four including grades one through nine (in Ext. 83). A sizable number (see Table 1) that included preparatory level classes turned out to be preparatory only schools. An attempt to apply the grade two through six design to analyze this group of seven through nine schools did not succeed for the following reasons:

- The seven through nine schools were not intentionally samples. Rather, they turned up in the sample because they were originally thought to be one through nine schools but later were found to be seven through nine schools.

- Unexplained and very large variations in the historical data occurred in many of the records and could not be removed by repeated questioning of the Ministry staff.

- Changes in the organization of the schools were frequent, e.g., closing one preparatory school in a site coincident with opening another. We may not be aware of all these changes, which (if known) might account for some of the unexplained variability.

Table C-19 shows the problems in trying to interpret the results of the regression analysis in this sample of seven through nine schools. Note that the impact was negative, specially in the control sites, which means that the historical data from 1978/79 to 1983/84 produced regression lines which consistantly and significantly overestimated the enrollment in 1983/84 to 1986/87. The impact of the new schools may be seen as inconsistent and mostly insignificant, yet generally higher for girls than for boys. These

Table C-19

The Average Increase over Projected Enrollments in Grade 7-9
In Successive Years After New Schools Opened

Study Type	1983/84		1984/85		1985/86		1986/87	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Control I	-21	18	-82	9	-24	-74	-206	-73
Ext. 83	-21	11	55	57	-200	134	-292	88
Ext. 84	---	---	62	13	102	37	98	55
Control II	---	---	---	---	-31	27	-68	0
Ext. 85	---	---	---	---	359	197	-25	-71
Ext. 86	---	---	---	---	---	---	289	232

results take into consideration the changing number of grades opened in the new schools in successive years.

IV. EXAMINATION RESULTS

FINDING: New school construction showed no significant impact on levels of academic achievement.

Discussion:

To evaluate the impact of new school construction on student achievement, examination data were collected for grades two, four, six, and nine from the schools included in the phase I study.

The analysis of the grades two and four examination results produced no data which could be used to evaluate the impact of the new schools. This was because these examinations had such high passing levels for all children in all sites that they produced no variance which could be analyzed. (See Table C-20)

Passing levels for grade six examinations were lower, particularly in the most rural sites. The most direct evaluation of the impact of the new schools using these grade six data was to compare the passing rates of children in the new schools to the passing rates of children in nearby matched comparison schools. When this was done for the Ext. 83 sites (Table C-21) the results showed no clear advantage for either group. Essentially, one might conclude that the children in the new schools performed at the same level as those in the matched comparison schools.

In addition, categorical data analysis using the examination results of the school year 1984/85 showed no significant differences among sites, or types of schools, or between boys and girls.

Table C-20

Passing Rates in Percentages for Examinations in 1983/84

Study Type		Grade Two	Grade Four	Grade Six
Ext. 83	Boys	94.5	96.2	88.0
	Girls	94.6	96.8	84.8
Control	Boys	95.9	92.4	83.7
	Girls	95.7	89.3	86.3

In fact, there is no reason to expect that the examination results in the new schools would vary from those of related or matched schools since the educational programs and the teaching methods are essentially the same in all schools.

Table C-21

Success Rates in Percentages for Ext. 83 New Schools and Matched Comparison Schools on Grade Six Examinations

School Type		1984 / 84	1984 / 85
New Schools	Boys	83.7	83.8
	Girls	85.0	84.1
Matched Schools	Boys	89.5	90.4
	Girls	88.4	82.1

In spite of these findings, the impact that the new schools had on increasing student enrollment and persistence, and on relaxing enrollment in related schools, means that over time there will be a positive effect on students' literacy and numeracy.

APPENDIX D

EQUIPMENT STUDY
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

STUDY APPROACH

The purpose of the Equipment Study was set forth in the project paper and the RFP. It was to determine and assess the relationships obtaining between the input and use of new USAID-funded equipment and enrollment, attendance, grade repetition, and students' learning of practical skills and knowledge in the basic education courses offered in grades five through nine. The study was conducted in selected sample schools in the five governorates of Kafr al Shaikh, Bahira, Assiut, Sohag, and Qena. (See Appendix H for sample selection)

After school selection and an initial period of data gathering, it became apparent that no logical relationship existed between the input and use of AID-funded equipment and enrollment, attendance, and repetition. Therefore, after consultation with the AID project officer, the team concentrated its time and effort on studying the relationship between the input and use of AID-funded equipment and student learning of practical skills and knowledge. The study was divided into two phases at that point, each planned for a two-year period.

The first phase was designed, therefore, primarily as a descriptive study, to gather and analyze data on:

- the selection, acquisition, and distribution of equipment and the efficacy of that process;
- its instructional use in schools, in particular with reference to the curriculum;
- the amount and nature of teacher and headmaster training;
- the suitability of the equipment for its intended uses;
- constraints that might inhibit its use;
- administrative or logistical problems with regard to its use, storage, record keeping, replacement, and repair; and
- school and school staff characteristics.

The second phase, which examined the relationship between the input and use patterns of equipment and the contributory variables examined in the first phase, was integrated into a more general study of school- and home-related factors that influenced persistence and achievement. A new sample of five school clusters was selected, one in each of the five governorates of Minya, Bani Suaf, Fayyum, Sharqiya, and Giza, new to the study in 1986/87. These clusters were composed of the new school in the new school community; the preparatory school that the new primary school graduates would attend; a related comparison school, and a standard-setting city school.

Table D-I shows the location, level, number, and timing of the data gathering visits made to the schools. A complete listing of sites and the numbers of schools visited throughout the life of the project can be found in Table A-44, Appendix A.

Table D-1

Number and Location of Sample Schools

	Schools			Governorates
	Primary	Preparatory	Total	
First phase				
1983/84*	14	15	29	3 (Bahira, Assiut, Qena)
1984/85**	30	12	42	5 (Bahira, Assiut, Kafr al Shaikh, Qena, Sohag)
Second phase				
1985/86*	27	8	35	5 (Bahira, Assiut, Qena, Kafr al Shaikh, Sohag)
1986/87*	16	9	25	5 (Minya, Bani Suaf, Fayyum, Sharqiya, Giza)
Totals	87	44	131	10

*Two visits were made to each school this year, one in the fall just after schools opened and one in the spring as late as possible before schools closed.
**One visit was made to each school in the fall of the school year.

A total of 464 school visits were made. Data were gathered through the use of individual and small group interviews, questionaires, the examination of school records, the administration of practical skills tests, and through classroom observations.

The findings, conclusions, and recommendations of the first phase are summarized in this appendix. Readers interested in a more detailed presentation and discussion or in looking up the references are directed to Vol II, First Annual Report (October 1984) and "Chapter II," The Second Annual Report (September 1985).

The findings conclusions, and recommendations of phase two of the study are reported in Vol II, Third Annual Report (October 1986) and in "Appendix B," Vol II, Fourth and Final Annual Report (September 1987).

The reader interested in site selection, study methodology and procedures is referred to Vol II, The First Annual Report, (October 1984).

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

EQUIPMENT SELECTION, PROCUREMENT, AND DISTRIBUTION

FINDING: Science, industry, and home economics teachers reported that the kind, quality, and amount of equipment furnished was generally adequate to their needs. Agriculture teachers, however, reported that the type and quantity of equipment was inadequate and in some cases did not fit the curriculum. (III-24, 25, 26, 27, 36, 37, 38.)*

Conclusion:

There are some problems with the equipment in each field but the most serious are in agriculture. Agriculture curriculum goals can not be fully met, particularly in the preparatory schools, with only the present type and amount of equipment.

Recommendations:

- Lists of equipment and their specifications should be reviewed by Egyptian supervisors or those close to the teachers who actually use the equipment, by AID-designated consultants familiar with the equipment and with Egyptian educators to ensure that they fit the curriculum, are of direct use in instruction and are suitable for the level of the students.

- Special attention should be paid to the agriculture equipment list. It should be reviewed to eliminate some items that receive little or no use and other items should be added so that the curriculum needs can be better met.

FINDING: From our school observations we found that many of the new schools, in particular, had little or no music or physical education equipment. Many teachers and headmasters asked if it was possible to request this kind of equipment. (III-37.)

Conclusion:

To function fully as they should, many schools have need of additional equipment other than that currently being provided.

FINDING: Fewer than 10 percent of the schools have received their full allocation in all three practical fields and science. Moreover, distribution practices were changed in some governorates so that partial packages or even individual items of equipment (three hammers, etc.) were distributed to schools rather than the complete set they required. Regional and area

---

*All cross-references in the text are to Chapter III of the Second Annual Report.

differences abound as well. City schools tend to have the most equipment (one medium-sized city school has enough carpentry equipment for six schools and 35 steam irons in the home economics room). (III-19, 20, 21, 37.)

Conclusion:

More equipment is needed by schools in the three practical fields and in science. Current distribution practices in the governorates are ineffective, inefficient and unsystematic.

Recommendation:

Consideration should be given to expanding the commodities program to include other school subjects--music and physical education are two that need attention now--and to the area of instructional supplies (paper, chalk, pens, pencils, notebooks, etc.), provided this expansion does not occur at the expense of completing equipment purchases and the distribution of equipment for the three practical courses, science, and audiovisual education. Further consideration should be given to redesigning the equipment distribution and record keeping system for the schools and governorates.

EQUIPMENT MAINTENANCE, REPAIR AND REPLACEMENT

FINDING: A large proportion of the industrial equipment is in a state of disrepair. There is little or no maintenance, and there are no maintenance, repair or replacement budgets. (III-16.)

FINDING: Many teachers in double shift schools are reluctant or refuse to share their equipment with the teacher of the other school, due to the lack of budget for maintenance, repair, and replacement, and the system of teacher accountability for the equipment they have been assigned. (III-16, 17.)

Conclusion:

Unless adequate attention is paid now to the question of proper maintenance, repair, and replacement of equipment, and budgets are established for this purpose, large amounts of equipment will soon become useless, especially in carpentry and in sewing (home economics) where some fragile plastic parts for sewing machines are unobtainable in some areas of the country.

Recommendation:

A detailed examination should be made of the official systems in use in the governorates and their schools for the distribution, assignment, redistribution, inventory (recordkeeping), maintenance, repair, and replacement of equipment. Recommendations can then be made for implementing more efficient systems. Schools also should keep only the equipment they actually need. Excess equipment should be redistributed to school in need.

FINDING: Some of the school furniture, desks and benches, for example, are now made in the government's technical schools, thus saving hard currency, providing training for students, and extra income for teachers and some students (for extra summer production work).

FINDING: Egypt is currently dependent on USAID for instructional equipment and some instructional materials (maps and globes, for example). In fact, several million dollars has been spent on the purchase of maps alone (from foreign sources).

Conclusion:

The expenditure of over 40 million USAID dollars for instructional equipment and materials for the primary and preparatory schools of Egypt, while extremely useful in and of itself, has not increased the country's capacity to produce any of these items, leaving it dependent on hard currency purchases.

Recommendation:

Consideration should be given now by the MOE and USAID/Cairo to the manufacture of instructional equipment and materials in Egypt, making use of both the public and private sector and reducing the need for foreign purchase.

MATERIALS TO USE WITH EQUIPMENT

FINDING: The effective use of most instructional equipment, such as stoves, mixmasters, sewing machines, hand tools, etc., requires an adequate supply of raw materials if students are to learn the practical skills for which the equipment is provided. Most teachers of the practical courses report they emphasize the teaching of the practical aspects of their subjects, even though classroom observations of teaching did not bear this out. (III-31, Table III-11.)

FINDING: In school year 1984/85, 38 percent of the primary schools and 64 percent of the preparatory schools surveyed reported receiving less than the correct amount of money (40 LE, primary, 60 LE, preparatory per class) for materials purchases. There are variations in the allocations among schools (city schools generally get more than rural schools), among governorates, and between years. (III-17,18, Tables III-8, 9, III-36.)

Conclusion:

Inadequate materials budgets are severely constraining the instruction of students in practical skills, particularly in high cost materials courses like carpentry, therefore reducing the utility and need for the equipment.

Recommendation:

Every effort should be made to see that all the schools are allocated their full materials budget. Further, the question of whether those allocations need to be increased should be reexamined carefully by the MOE.

(See also the recommendation resulting from the February/March 1986 field study visits to schools for the work-sample testing of students to assess practical skills development)

TEACHER IN-SERVICE TRAINING TO USE EQUIPMENT AND TEACH PRACTICAL SKILLS

FINDING: Of the 450 teachers who responded, 42 had not attended an in-service course within the last two years. Only 9 of 68 headmasters had had any in-service training within the last two years. Most of the teachers wanted more training as did 85 percent of the headmasters interviewed.

FINDING: Whole-group, rather than small-group or individual instruction, teacher talk, and demonstration teaching dominates the classroom. The predominant learning mode is for students to observe, listen, memorize, and recite on request to show mastery of the material. There is little problem solving or student intiative in learning. Students are passive, always waiting for directions from the teacher before proceeding except to copy materials from the blackboard into their notebooks. No inductive or inquiry oriented teaching was evident, nor did we see much cross discipline integration in instruction, e.g., use of math learning in measurement, in carpentry or in computing amperage or resistance in electricity.

Conclusion:

The changes in teaching and learning at the heart of the basic education reform movement are not likely to occur unless a more active and vigorous in-service training program directed at instructional improvement is designed and implemented on a nationwide basis.

Recommendations:

- A revised, more effective, and more efficient in-service training system for teachers and especially for headmasters in instructional leadership should be devised and implemented on a nationwide basis. It should be an integral part of a larger system for developing and testing innovative methods of teaching. Effective basic education schools and successful teachers and headmasters should be used as trainers.

- A sub-system for communicating the results and methods, along with proven methods for implementing the changes through training programs, appropriate supervision, and an incentive system for teachers and headmasters should be developed and maintained.

SUBJECT AND STUDENT EVALUATION

FINDING: The practical courses are pass/fail courses. The results of student performance are excluded in computing overall grade averages. (III-32, 33, 41, 42.)

Conclusion:

The practical courses and the learning for which they are intended are devalued in the schools by teachers, students, and we suspect, by parents, nor do educational officials have any consistent feedback on student performance by which to evaluate whether or not the objectives for which the practical courses were designed are being met.

Recommendation:

A consistent, objective, student performance assessment system for the practical courses needs to be designed, tested, revised, and implemented on a nationwide basis. The results should have important consequences for students and teachers, so they will be taken seriously and be administered properly. They must contain objective ways of measuring the practical skills as well as knowledge, so they may be of use to school, governorate, and MOE officials in evaluating how well the courses are achieving their objectives.

ADEQUACY OF FACILITIES

FINDING: There is a clear and present need for workshops and adequate storage space and storage facilities in the schools. (III-9, 36, 40.)

Conclusion:

The lack of workshops or adequate working spaces for teaching the practical courses, even in new AID-funded schools, severely inhibits instruction in these courses.

Recommendation:

The MOE's current practice of constructing workshops for schools that do not have them should be continued and expanded. Workshops and special purpose rooms should be included in new USAID-funded schools.

INCREASED EFFECTIVENESS OF USAID-FUNDED EQUIPMENT

The reader will have seen the following recommendations in Vol. I and in Appendix B of this report. In the interests of completeness and in case the reader does not have access to either of those, they are repeated here, and directly involve increasing the effectiveness of USAID-funded equipment. Though a number of the problems associated with equipment use are now being addressed by the MOE and USAID, we reiterate the needs uncovered by the study:

- The basic learning objectives of the industry and agriculture practical courses should be reviewed to evaluate whether they are appropriate to the general aims for which they were designed.

- Specific, measurable, learning objectives should be developed along with a formal assessment system to measure and evaluate the success of the industry and agriculture programs.

- The practical learning courses should be re-oriented so as to enhance their importance as courses, in the eyes of students, parents, and school authorities, especially at the preparatory level.

- In-service teacher training in the use of equipment emphasizing hands-on use should become an integral part of the practical skills courses.

- Adequate raw materials budgets should be provided.

- Equipment lists should be reviewed to ensure that they fit the curriculum.

- Consideration should be given to other subject areas where equipment might be used.

- The systems of distribution, repair, maintenance, and storage should be improved, and budgets should be provided to support these changes.

- Consideration should be given to how alternative equipment could be produced in Egypt at lower cost.

We further recommend that the necessary technical assistance be provided to facilitate MOE implementation of the recommended changes.

APPENDIX E

TECHNICAL ASSISTANCE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

BACKGROUND AND STUDY APPROACH

In September 1979, the Egyptian MOE listed the following to be major problems in their primary and preparatory schooling for whose solution they sought USAID financial help.

1. Insufficient number of adequate classrooms and educational aids
2. Urban/rural imbalance in the quantity and quality of educational opportunities
3. Curricula that does not prepare students for practical, productive lives
4. Rote memorization dominating the learning-teaching situation
5. Low teacher qualifications
6. High (pupil) truancy and dropout rates[1]

AID responded with three programs aimed specifically at helping to solve the first five of these problems. The elements of these programs include:

1. A school construction program restricted to rural villages in those five governorates with the lowest enrollment rates, particularly of rural children and girls.
2. A commodities program consisting of the purchase of instructional materials and equipment, such as hand tools, health and science equipment, maps, charts, and globes, A/V equipment, stoves, sewing machines, and assorted items of kitchen equipment, all needed to reinforce "the new basic educational curriculum."
3. A technical assistance program to help with problems 3, 4, and 5: in short, technical assistance to support the MOE's own efforts to improve the relevance, efficiency and effectiveness of basic education.

In this latter regard, the MOE requested help with curriculum and the preparation of instructional materials, teacher training, educational planning, educational economics, educational administration, student flow, dropouts in basic education, and school building design.

As originally conceived by the MOE with USAID/Cairo's concurrence, the technical assistance project contained no provision for implementation, neither planning nor funding, nor assistance for capacity building. Rather, the work was thought of more in the nature of a set of technical research projects in which foreign experts would work with Egyptian counterparts to

---

[1]"Working Paper Concerning the Development and Modernization of Education in Egypt." Ministry of Education, Cairo, September 1979.

gather and analyze data on a given problem and provide a technically sound solution in a final report.

Work orders[1] No. 2-5 (see following pages for titles of work orders) were responsive to the problem list provided by the MOE, with the exception of work in the areas of "educational administration." Subsequently, with the MOE under the direction of a new Minister, five additional work orders were submitted to the MOE for consideration in response to new perceptions of need expressed variously by members of the Technical Secretariat and the Minister in conversations with the project director. The first three were approved in February, 1985 and the Minister approved the final two a year later, just three months prior to the end date of the contract.

Our study of the TA program was hypotheses driven, primarily analytic in nature, and designed:

- to assess the amount, nature, and utility of the technical assistance at the policy and operational level of the Ministry and its governorate offices;
- to determine what the program's effects, if any, were on other institutions in Egypt's educational system--such as the School of Education's pre-service education programs and the Teacher Training Institute Programs; and
- to determine what impact the program would have on actual school practices.

The findings, conclusions and recommendations of the TA study are summarized in this appendix. Readers interested in a more detailed and analytic discussion of the project and other references are directed to Vol II, Appendix C, The Third Annual Report, (pp. C-1 ff).[2]

---

[1]Note that Work Order No. 1 authorized and established the TA system.

[2]See Appendix C-I, Vol II, The Third Annual Report, (Oct. 1986), for copies of all work orders, and further references to Appendix C.

SCOPE OF TECHNICAL ASSISTANCE ACTIVITIES

Background

The Ministry of Education had never before participated in a technical assistance contract and it was only after long discussion that an agreement was reached for a three-year, host-country contract. AID/Cairo, on the other hand, quite rightly believed a well-designed technical assistance contract that was programmed to render assistance in key areas supportive of the basic education program would not only benefit the MOE but would increase the benefits of the other two components of the AID program.

For its part of the solicitation for interest in bidding, the MOE stated that it wanted studies done in curriculum and the preparation of instructional materials, teacher training, educational planning, educational economics, school mapping, school administration, student flow, dropouts in basic education, and school building design.

After award of the contract, the first five technical assistance work orders were authorized by the MOE in early June 1983, in the first week of the three-year contract. They encompassed all the studies requested by the MOE except for the school-site mapping (which was already underway in the MOE as a separate project) and the study of school administration.

No. 1: Authorization and establishment of the technical assistance organization and a "charter" for its operation.

No. 2: "Assessing the State of the Art of Basic Education." Basically an analytical study of the laws and philosophy of basic education, concentrating on drawing up ideal models of curricula, model schools, and teacher training.

No. 3: "Educational Economics of Basic Education" (also contained work on student flow and dropouts).

No. 4: "School Designs for Basic Education."

No. 5: "A Computer-Based Planning Model for Basic Education."

FINDING: The contractor made every effort to get off to an early start and incorporated all but one of the studies requested as the first set on which it would work. Subsequently, five additional work orders were negotiated and approved.

In February 1985:

No. 6: "Development of Basic Education Teachers In-service Training, Programs and Techniques"

No. 7: "Handicapped in Basic Education"

No. 8: "Organization and Management"

In February 1986:

No. 9: "Experimental Schools"

No. 10: "Educational Supervision"

FINDING: By May 31, 1986, the original end-date of the technical assistance contract, three of the nine technical assistance work efforts had been completed, Nos. 2, 3, and 4. A fourth, No. 6, was complete except for its final report. Work was in progress on three of the remaining five, No. 5, 7 and 8, and had not begun on the last two, Nos. 9 and 10. Consequently, the contract was extended for an additional year to allow for completion of the work. (See Figure C-3, pp. C-23, 24, 25.)

Conclusion:

The technical assistance programming was comprehensive enough in its scope to incorporate at least some work in almost every aspect of the Ministry's operations but overly optimistic in its estimates of the time needed to complete such an ambitious plan of work.

Recommendations:

To the degree possible, the scope of work in subsequent technical assistance assignments should be narrower and focused on fewer areas of higher priority. Work should be concentrated on improving components of the MOE's organization and functioning that are key to increasing the efficiency and effectiveness of the basic education program.

The scope of work of future assignments should be broadened to include implementation of recommended changes within the MOE to ensure that the required and agreed upon changes in practice, procedure, and policy are "institutionalized."

DESIGN AND OPERATION OF THE TECHNICAL ASSISTANCE DELIVERY SYSTEM

System Design

FINDING: The technical delivery system design contained all the usual provisions for the elements needed in such systems except for specific mention of the assessment needed and any mention at all of the most important element--that of implementing or "institutionalizing" the recommended changes in practices, procedures, etc. resulting from the technical assistance itself. (See pp. C-4, C-27.)

FINDING: The expectations held by the MOE for the nature of the technical assistance efforts were that the work would consist essentially of a set of research studies on topics already selected by the MOE prior to the contract awards. This expectation was mirrored in the design and conduct of the first three work orders, Nos. 2, 3, and 4. That is, they were "low client involvement" efforts with low potential for implementation, in effect basic

status studies leading to general recommendations difficult to implement by themselves without a great deal of additional technical effort. (See p. C-6.)

Conclusion:

In the early stages of the contract, as far as the MOE and the contractor were concerned, no formal provision needed to be made in the design of the system for additional needs assessment or for implementation. Needs analyses could be dealt with by including the activities in subsequent work orders as stage one of the work. Implementation issues, if they ever arose at all, could be dealt with as either the last stage of a work effort or as follow-on activities.

Recommendation:

Whether, how, and when there will be implementation of the changes recommended by technical assistance is an issue of key importance to AID and the MOE. Hence it should be dealt with consciously and formally as a technical, and policy programming and decision-making issue early on in agreement discussions, not dealt with by default.

FINDING: The formal organizational structure of the technical assistance system contained a technical arm, the Technical Secretariat, and an executive arm, the Executive Committee, which functioned as deliberative bodies with contractor management representation, the operations arm. The "charter" for the operation of the system laid out the rights, responsibilities, obligations, and a work flow and decision-making cycle. (See Figure C-1, p. C-5, Appendix C.)

FINDING: The structure contained no formal method, set of procedures, or other vehicle, however, to allow that AID's concerns, needs or desires be considered.

FINDING: The formal organizational structure and its "charter" has survived intact three changes of Ministries of Education, three changes of First Undersecretaries, four reconstitutions of membership, and a change in the in-country management personnel who function as secretary, coordinator, and manager of all in-country activities.

Conclusion:

The robustness of the organizational structure and its "charter" for the delivery of technical assistance is testimony to the quality and care with which it was designed to provide the formally constituted forums, roles, and the hierarchy of authority in which important decisions of consequence to the MOE and the contractor could be discussed and agreed upon in a fashion that provided the necessary safeguards to two of the three concerned parties.

Recommendation:

Future decision-making bodies and authority structures for the delivery of technical assistance should have formal provision made to allow AID's needs, concerns, and issues along with all others to be considered, deliberated, and acted upon as part of the normal operation of the system.

System Operations

FINDING: The two more successfully executed and received of the three early work efforts were short term, clearly defined, and bounded efforts requiring little client involvement beyond the provision of adequate and timely data. They were also largely technical and cognitive in nature, applying technical analysis to the subject problems and requiring no implementation within the client organization as part of the effort. (See p. C-33.)

FINDING: Conversely, the least successful of the three was also short term, technical, and analytical in character, but was not so clearly defined or bounded in its scope and required much more client and counterpart expert involvement--which it didn't get.

Conclusion:

Time and effort spent by the contractor and the Technical Secretariat in translating needs statements into operationally defined work efforts with clear objectives and in setting up a system of work-in-progress reviews would go a long way toward ensuring more adequate work performance and higher client satisfaction.

Recommendation:

Vaguely worded, general work efforts should be avoided, if at all possible. If the work can only be defined generally, the first stage should provide for the gathering of data and their analyses in order to more clearly define and bound subsequent stages of the work.

FINDING: In general, five factors account for most of the discrepancy between planned and actual work completions:

- Lack of timely action by officials in the MOE: For example, the Academy's nominations of experts for the first five work orders were submitted to the MOE for approval on July 15, 1983. Neither approval nor any nominations by the MOE for counterpart experts was forthcoming until early December, thus causing the first two work orders to be substantially delayed. Work order No. 2, due to begin in late August, didn't start until mid-December. No. 3, due to start in October 1983, was delayed until May 1984--some eight months later. Appropriate clearances and approvals for the procurement of computers for Work Order 5, specifications for which were ready in February 1984, took so long in the various MOE and USAID offices that the Academy was prevented from sending out requests until April 1986--over two years later.

- Lack of readily available and accurate data: Work Orders 4, 6, 7, 8 all required extensive data acquisition, synthesis, and analysis as the first stage in the work effort.

157

- Need to have materials and reports in two languages: Time required for translation had not been programmed into the project.

- Change in the nature of the work over time: Relatively simple two- or three-person efforts became more complicated six- to ten- or 20-person efforts with many more stages and higher client involvement. The more complicated efforts required much higher levels of management time, energy, sophistication, and interpersonal skills as planning, logistics, and complicated work designs and scheduling increased.

- Lack of adequate provision by AID/MOE for sufficient management time, energy, and sophistication in the original scope of work: This was particularly the case in Egypt, where the requirements for management time, skills and sophistication in planning and managing complex operations grew as the contract progressed.

Conclusion:

Some of the planning assumptions which guided the project's design and original formulation, such as the amount of effort that should be devoted to in-country project management, proved to be unfounded. Some problems in the system were self-correcting, having required only more experience, the development of trust among the parties, and procedural adjustments. Others required specific changes in the allocation of time and effort in project management to correct problems such as those resulting from the increased complexity of later work orders.

FINDING: By late fall, early winter of 1985, increased time and more skillful and sophisticated project management in Egypt had been put into operation. Subsequently, more Egyptian experts were involved in more technical and responsible roles in the work efforts; there was a higher level of project involvement by high-level MOE officials in substantive and coordinative roles in each work effort, and USAID/Cairo officials were being kept better informed and were more closely involved with the work. (See pp. C-26, 27.)

Conclusion:

With time and experience, the people and organizations involved in comprehensive, multi-task, broad-scope technical assistance projects will learn new roles and responsibilities, adjust to new relationships, adapt and adjust procedures, and regularize operations. However, such projects benefit from the provision of a formal system of regular progress review and analysis so that adaptations or changed procedures can be reviewed and regularized, and other organizational or contractual issues and problems can be identified and corrected.

Recommendation:

Future technical assistance projects should include a system of regular, formal, internal review and progress checks, and a formative evaluation component designed to provide feedback of results to all interested parties--the MOE, AID/Cairo and the contractor.

IMPACT OF TECHNICAL ASSISTANCE

FINDING: By the time of the technical assistance contract's original end date, May 31, 1986, there were no actual noticeable effects on objectives, procedures, policies, programs, or operations within the Ministry of Education, its governorate offices, the schools, Faculties of Education or Teacher Training Institutes arising from eight of the nine substantive technical assistance work efforts (Nos. 2, 3, 5, 6, 7, 8, 9, and 10). (See Figure C-3, pp. C-23-25, Appendix C.)

FINDING: The results of Work Order No. 4, School Designs for Basic Education, were in the beginning stages of implementation by the MOE. At the MOE's direction working drawings were made of new school designs and for modifying existing school designs to improve them in ways recommended in the Final Report of Work Order No. 4.

FINDING: Work Order No. 2, Assessing The Art of Basic Education (curriculum and teacher training), and No. 3, The Economics of Basic Education, had been completed and had fulfilled one of their original purposes of serving as general purpose surveys, status studies, and providing general recommendations, some of which surfaced again as new work orders or as aspects of new work orders.

FINDING: None of the other work orders had been fully completed, though No. 6, for in-service teacher training, had completed all but its final report.

Conclusion:

Until the remainder are completed and their recommended changes have been implemented by the MOE, it is not possible to gauge noticeable or measurable effects of any of the technical assistance efforts in changes in rationale, objectives, or procedures for supporting, improving, or evaluating the basic elements of basic education. (See Figure C-3, pp. C-23-25, Appendix C, for a summary of actual and potential impact.)

Recommendation:

USAID/Cairo and the MOE should assign responsibility for follow-up evaluation in the MOE and schools of the effects of the completed technical assistance contract to the formative evaluation unit we recommend be established in the MOE under the technical supervision of the next technical assistance contractor. The data and information collected in the formative evaluations should be made available to an external evaluation contractor for use in mid-course monitoring and for an end-of-contract summative evaluation.

154

FINDING: As of May 31, 1986, three years after the beginning of the technical assistance contract, 60 percent of the work orders had yet to be completed or to have decisions made about the disposition of their products. (See Figure C-3, pp. C-23, 24, 25.)

FINDING: All the work orders still to be completed are entering a "high involvement" phase, requiring training and the active consideration by the MOE of organizational changes of varying levels of complexity, from restructuring the full range of educational services to handicapped children and staff training for those services, to a reorganization of the in-service teacher training operation in the MOE, to a reorganization of the entire MOE.

FINDING: More technical assistance remains to be completed in this last year than has been accomplished in the first three years of the contract and it requires the active involvement of high level MOE officials to be completed--not to mention implemented.

Conclusion:

The probability is great that the last three stages of the full cycle of technical assistance delivery--final technical review, action by the Executive Committee, and final disposition--will be completed. (See Figure C-2, pp. C-15-18, Appendix C.)

Recommendation:

During the year (June 1, 1986/May 31, 1987) AID/Cairo and the MOE should make some decisions on:

- which work efforts should be implemented by the MOE without additional support;
- which work efforts should be shelved (action deferred until a later date);
- which work efforts should be abandoned;
- which work efforts should be implemented through follow-on technical assistance work supported by AID;
- which work efforts require additional technical assistance work to reach a stage in which they can be implementable;
- what new candidates for technical assistance exist; and
- how to design a general authority and decision-making system of formal progress reviews and formative evaluation to be included in the next technical assistance project. These should include provision for greater USAID/Cairo involvement.

The reader may also have seen the following recommendations in Vol I, pp. 25/26 of this Report. They re-state in succinct fashion what appeared to the team to be the most important of the recommendations. The reader will note they are directed totally at how to improve the processes of TA, not at judging the worth of the substance of the work efforts, nor at ranking them in order of their "importance."

The evaluation of the TA project was terminated on May 31, 1986, when only Work Orders 2, 3, and 4 had been completed. The team was familiar with the content of the work in progress on work orders 5, 6, 7, and 8 and has presented its best estimate of their potential impact on the first of the three areas of impact toward which they were directed--see Table C-2, p. C-38, Vol II, Appendix C, Third Annual Report.

However, the team has not studied work orders 5, 6, 7, 8, 9 and 10 as their content has been refined, since that work has been performed subsequent to the end of the evaluation, and, therefore, we are not familiar with their substance nor in any position to report on them.

IMPROVING THE EFFECTIVENESS OF TECHNICAL ASSISTANCE

For the future, technical assistance should be designed with the following changes in its processes and procedures:

- Work orders should concentrate on fewer areas of high priority for school improvement and should contain provisions for the institutionalization of agreed-upon changes.

- Regular communication channels between the MOE and USAID should be institutionalized so that both sides can voice their needs, concerns and issues as part of the normal operation of the technical assistance effort.

- A system should be developed for regular, formal, internal review and progress checks, with technical assistance provided by the next TA contractor in designing and training a formative evaluation component in the MOE. This component could be a part of a unit in the outcome-based system that provides feedback to all the interested parties: the MOE, USAID and the contractor;

- A system for establishing work-order priorities should be formally established. It should be used to make decisions about which of the current first phase work orders should be continued into the next phase; in what order; which should be terminated; and what new work should be undertaken. It would be of importance for USAID to participate fully in this process.

- An external evaluation effort should be funded that uses formative evaluation data as well as its own independently gathered data to monitor and evaluate mid-course and end-of-contract impacts.

APPENDIX F

IMPROVING THE EFFECTIVENESS OF PRIMARY EDUCATION IN EGYPT

IMPROVING THE EFFECTIVENESS OF PRIMARY EDUCATION IN EGYPT

In the past ten years the Government of Egypt has made impressive efforts to expand educational opportunities for children all over Egypt. This rapid expansion, however, has been carried out at the expense of quality in the educational program.

Two major problems in the existing educational system are: 1) because of a lack of agreed upon standards with which to measure results, it is difficult to identify the locus of problems, and 2) once problems are identified, it is difficult to correct them because of the lack of routine mechanisms to implement remedial actions.

The purpose of this appendix is to suggest how the present components of the educational system can be modified in a modest and incremental way to create a system in which problems can be objectively identified and corrected, so the results that Egyptian educators desire are produced.

Operating schools on the basis of constantly improving the system so as to achieve desired learning results or outcomes--often called "outcome-based" education--links the components of education in a clear way to the attainment of measurable results. Whenever the desired results are not achieved, the parts of the system are adjusted until the appropriate results are obtained.

Outcome-based systems are not a "new" idea. They exist naturally wherever good management techniques are present. Good schools everywhere use these techniques, whether they are aware of it or not. An outcome-based system does not require revolutionizing a system, but rather integrates the parts into a smoothly functioning whole to produce specified results.

There are only a limited number of elements that can be manipulated to improve the quality of educational programs: the curriculum, the learning objectives, testing, instructional materials, the use of time, teacher training, supervision, and management. Outcome-based systems align these elements to produce specified, measurable goals. One way to begin such a system is to conduct the following set of activities.

ACTIVITY ONE: DEVELOPING OBJECTIVES

Egyptian educators need to draw up specific, measurable objectives for each grade level and subject matter. At present, such detailed, measurable objectives do not exist in the Egyptian curricula. These objectives constitute a specific plan of what educators want children to know by the end of each grade, in each subject, and at the end of each educational level.

Experts in child development must review the objectives to determine their appropriateness for the age level of the child. Curriculum specialists must review the objectives to see that they are sequenced in a way appropriate to the subject content. It is important that the objectives be measurable: an objective such as "knowledge of the addition tables" is measurable;

objectives such as producing "a good citizen" are not measurable but can be broken down into measurable units, for example, "knowing a specified list of elements of the Egyptian Constitution." Such objectives constitute the outcomes or results on which the educational system is focused.

ACTIVITY TWO: TESTING

Criterion-referenced tests are developed to connect test questions directly to the objectives. For example, if the objective is to teach the child 1 + 1 = 2, the test question asks, "1 + 1 equals ____?". The teacher and the child know precisely what must be learned in order to pass the test. There are no tricks, or efforts to see how clever the child is, only a test that seeks to find out if the child has learned the skills identified in the objectives and can apply this knowledge to the solution of problems. Using these tests, it is possible to determine whether the existing educational program teaches the skills and knowledge that the educators want. Specific areas of success and failure can be identified for continuation or correction. The tests are administered frequently to determine what skills children have learned and what skills they must go back and review.

ACTIVITY THREE: MATERIALS

Textbooks and other instructional materials are developed that are linked specifically to the teaching of skills named in the objectives. Each unit is explicitly designed to teach one or more objectives and the teacher is informed, through instructions in the texts or teacher's guide, exactly what the object of the lesson is and how to teach the materials.

As materials are developed they are tested in a small group of schools to see if they are effective in producing the desired results in student learning as measured by the criterion-referenced tests (Activity Two). If not, the materials are modified until they lead to satisfactory results before being disseminated to the rest of the schools in the country. Clear instruction is given in the teachers' guides on how to treat the small percentage of children who do not pass the skills tests, so teachers will know what sections to review with these children. Supplemental materials may also be developed to help slower learners.

ACTIVITY FOUR: TEACHER TRAINING

Teachers are given in-service training in how to use the new materials and in the objectives of an outcome-based system. Because the materials are appropriate to the development level of the children, because clear instructions are given in how to teach the units, and because the learning objectives are well known, the job of the teacher is made easier. Programs for pre-service training of new teachers are also developed to instruct them in the use of the materials. Such training can be practically oriented since the materials are based on very concrete processes and outcomes.

ACTIVITY FIVE: MANAGEMENT

Training courses in the installation and maintenance of an outcome-based system need to be provided for supervisors and school directors. The courses train these managers in the objective standards for measuring the outcomes of instruction and teach them how to provide feedback to the curriculum developers so that the instructional system and its materials can be constantly improved to produce better results. Classroom supervision of teachers is made easier and more consistent, as the supervisor and the teacher are in agreement about the intended outcomes of instruction, leaving the supervisor free to concentrate on helping the teacher become more effective as a teacher.

ACTITIVY SIX: SOLUTION-ORIENTED STUDIES AND POLICY ANALYSIS RESEARCH

To find the bottlenecks in the present system, small scale practical studies should be conducted to identify solutions that will increase the efficiency of the educational system. Such studies might, for example, examine how the textbook distribution system could be improved to get materials into the hands of students in a timely way, or study ways to improve school record keeping systems to provide a better basis for planning.

Macro-level research should also be conducted to assemble the evidence supporting various policy options. In this way, decisions at the policy level can be made on the basis of concrete, scientifically established results. There is an important need for research that maximizes the effective and efficient use of educational resources. This research might examine such issues as the determinants of effective schools or effective teachers or other relevant policy issues.

ACTIVITY SEVEN: EVALUATION AND PROGRAM IMPROVEMENT

To drive the outcome-based system, the Ministry of Education should set up a unit within the Ministry to continually evaluate the capacity of the various elements of the educational system to produce the desired outcome. Such a unit would monitor project interventions, assess the impact of corrective measures to improve the system, feed this information back to program developers for further modification, and conduct assessment of the changes. This would create a mechanism for the continuous improvement of school programs.

Present plans to establish a computer-based planning system should include a learning performance verification system so that responsible officials of the MOE can monitor students' performance regularly by subject, by school, by grade, by sex, or on the basis of other critera considered important. With such a system, the MOE can readily focus its attention on specific learning performance problems.

All of the activities described above must be implemented in an integrated way in order to achieve the best results. Failure in one element reduces the effectiveness of the system as a whole. Teacher training without appropriate materials will be ineffective; materials without clear objectives

will be difficult to teach; tests not related to learning objectives in the curriculum will not measure the effectiveness of the intended training. The advantage of such an integrated system is that once materials are tested and proven to be effective, then the failure of children to achieve the desired skills, as shown by the tests, means that more attention must be given to the way teachers are trained or motivated to use the materials. It becomes possible to find out exactly where the problem of poor results lies, and to pinpoint exactly at which grade level and in which skills teaching may be deficient.

To institute an outcome-based system in Egypt, the Ministry of Education may want to request the following assistance from foreign donors.

Technical Assistance

Modest technical assistance may be needed from experts experienced in developing specific measurable objectives for each grade and subject level. The final objectives and content matter should be developed by Egyptian educators, with technical assistance concentrated on the developmental appropriateness of the objectives, their sequencing, and insuring that the objectives are detailed and measurable. Technical assistance may also be necessary in the initial start-up period to develop criterion-referenced diagnostic and terminal-objective tests. Instructional materials tied to objectives can be developed in Egypt or contracted out to experts experienced in the development of outcome-based textbooks. Outside donors might be asked to support instructional materials development, production, and testing. Technical assistance may also be required to set up research and formative evaluation capabilities within the Ministry.

Training

Outside assistance should be solicited to develop and implement training courses for pre- and in-service teachers, supervisors and managers in the use of outcome-based instructional materials. Such assistance should take the form of support for the development of training programs, for the actual training of teachers, managers and supervisors, and for short term visits abroad for policy level officials to see such systems in operation.

Research

Foreign donor assistance should be solicited to expand the Ministry of Education's capacity to carry out studies monitoring educational trends, identifying solutions to problems, and assessing the impact of current and future projects. Research should be focused on improving the efficiency and effectiveness of the educational program and providing information that will ensure the most cost-effective use of educational resources. Also included should be support for a unit responsible for continuous formative evaluations.

APPENDIX G

MASTER DATA FILE

The data for the five sub-studies are entered on a total of seven diskettes as ASCI files. One copy of each, along with its code manual, is on file with CAPMAS, the Ministry of Education, and the HRDC office of USAID/Cairo.

This appendix contains an index of the diskettes, showing the files on each and the total number and length of each record by file name for each file on the diskette.

Diskette Number	File Name	Total Number of Records	Record Length
1	Enroll (Study-type = control)	1558	153
2	Enroll (Study-type = exten 83 and exten 84)	2025	153
3	Enroll (Study-type = exten 85, exten 86, inten 83 and inten 84)	1327	153
	Exam 1	212	32
	Exam 2	379	32
4	Form 31	270	124
	Form 32	17	77
	Form 33	270	107
	Form 34	253	101
	Form 35	185	101
	Form 36	70	101
	Form 37	15	101
	Form 38	4	101
	Form 39	270	63
5	Adult 85	569	21
	Cur 85	1008	27
	Never 85	623	18
	Drop 85	407	22
	Less 85	583	15
	Dif 85	192	72
	Adult 86	898	29
	Cur 86	670	61
	Never 86	313	19
	Drop 86	528	61
	Less 86	557	10
	Dif 86	355	17

Diskette Number	File Name	Total Number of Records	Record Length
6	Form 584	68	222
	Form 684	451	126
	Form 784	151	40
	Enroll 84	666	129
	Exam 84	553	150
7	Form A85	34	133
	Form B85	327	49
	Form C85	34	96
	Form D85	34	169
	Form E85	492	98
	Form F85	34	60
	Stud 85	745	23
	Teach 85A	47	156
	Teach 85B	47	125
	Super 85A	9	106
	Super 85B - a continuation of super 85A	9	79
	Head 85A	31	106
	Head 85B - a continuation of super 85A	31	79
	Enroll 85	380	41
	Exam 85	68	24
	Form A86	22	139
	Form B86	467	62
	Form D86	24	66
	Form E86	200	57
	Stud 86	531	22
	Enroll 86	277	41
	Exam 86	37	12

Diskette Number	File Name	Total Number of Records	Record Length
3	*Enroll (study type: exten 85, exten 86, inten 83, and inten 84)	1327	153
3	*Exam 1	212	32
3	*Exam 2	379	32
4	*Form 31	270	124
4	*Form 32	17	77
4	*Form 33	270	107
4	*Form 34	253	101
4	*Form 35	185	101
4	*Form 36	70	101
4	*Form 37	15	101
4	*Form 38	4	101
4	*Form 39	270	63

APPENDIX H

RESEARCH METHODOLOGY, HYPOTHESES AND DISCUSSION OF ISSUES

RESEARCH METHODOLOGY, HYPOTHESES AND DISCUSSION OF ISSUES

This appendix has three sections. The first describes the research methodology for the Study of USAID Contributions to the Egyptian Basic Education Program; the second provides summary comment on the original research hypotheses and the third discusses some of the research issues that have arisen in the course of the study. In the last section we suggest some future research priorities.

SECTION ONE
RESEARCH METHODOLOGY

I. INTRODUCTION

The overall study of USAID contributions to the Egyptian Basic Education Program is composed of five related studies:

- an extensive quantitative study of the impact of new schools making use of enrollment and examination data collected from governorate and school records for a set of new-school and control sites;
- an intensive qualitative study of new-school communities drawing its data from interviews with village leaders and parents; its aim is to understand the factors that influence children's enrollment and persistence in school;
- an intensive qualitative study of schools drawing data from classroom observations, from interviews with teachers, headmasters, supervisors, governorate educational leaders, school records, and regular examination results, aimed at understanding the factors that affect school efficiency and student achievement;
- a study of new equipment which is qualitative and administrative, drawing data from interviews with teachers and school administrators, classroom observations, and project administered work-sample tests of practical skills, aimed at understanding how new equipment has been distributed and used; what factors constrain its effective use; how it fits into the overall curriculum; and the extent to which it helps to provide children with desired practical skills; and
- a study of technical assistance which is qualitative and administrative, drawing data from interviews of technical assistance providers and recipients, aimed at understanding the content and process of the technical assistance activities and their impact on Ministry of Education policy and procedures.

Designs for these studies are presented below.

II. THE EXTENSIVE STUDY OF NEW SCHOOLS

Purpose

The extensive study assesses the impact of USAID-funded new-school construction on enrollment, persistence, and literacy using data available from existing records.

Site Selection

Using records available at the governorate level, the team studied approximately 20 percent of the new-school sites in the original five governorates covered by the first phase of the USAID project. At the start of the evaluation it was anticipated that between 100 and 120 new schools would be opened for service by the fall of 1983 and an additional 100 to 120 schools by the fall of 1984. A 20 percent sample of this group was therefore 40 to 50 schools. The original design ignored schools opened after the fall of 1984, as there would not be time during the project to assess their effects adequately. A sample of 20 of the 1983 schools was chosen by taking the governorate lists maintained by USAID, and in consultation with appropriate governorate officials, it was determined which schools most likely would have opened by fall 1983. From these lists, four sites from each governorate were selected by choosing every nth one, starting with a site chosen at random from among the first n. (The value of n was chosen so as to obtain four schools from the list.) This is referred to as the Ext. 83 sub-study. In the fall of 1983, the same procedure was used to choose 20 of the 1984 schools (Ext. 84 sub-study). For the 1986/87 school sample (Ext. 86 sub-study), the new schools that had been opened at the beginning of that school year were selected in the five governorates covered by the second phase of the USAID project.

Choices of Control Samples

In the review of the site maps for each markaz where new schools were scheduled for construction, additional sites in the original five governorates were identified which fulfill AID criteria for new schools but where schools were not likely to have opened before fall 1986. A sample of 20 of these sites, four in each governorate, chosen according to the scheme described above, formed the control or comparison sample. After the new schools opened in fall 1983, measures of enrollment, persistence and literacy from those "Ext. 83" sites were compared to measures from sites where schools were not scheduled to be constructed until after 1986. In fall 1984 when the second group of schools opened, "Ext. 84," two treatment groups existed (one which was two years old and one which was one year old) to compare with the non-treatment control group. These groups were then followed through 1985/86 and 1986/87. Similarly, four control sites had been chosen in each of the new five governorates to form a control sample to be compared with the "Ext. 86" sites.

Identification of Related Schools

"Related schools" are defined as those schools, which some youngsters currently living in the attendance area of a new school may already have been attending before the new school opened. The first step in identifying these

related schools was to determine the location of a new school. The second was to draw the borders of the attendance area it was most likely to serve, and the third was to identify the existing schools which some of the children in that new-school attendance area originally attended or to which they might presently go. These were the related schools, and included schools on regular session, schools on double shift, evening schools, or one-room schools.

Data Collected

The main body of data for the extensive study was collected from governorate records and includes:

- enrollment in grades one through nine, by grade level, and separately for boys and girls;
- attendance at second, fourth, sixth and ninth grade exams, i.e., the numbers of boys and girls sitting for the examinations; and
- numbers of boys and girls passing the second, fourth, sixth and nineth grade exams (The number of youngsters that passed the examinations served as the proxy for literacy and numeracy).

In order to assess adequately the impact of a new school in a given site, information was collected on enrollment, persistence, repetition and achievement from both the new school and its related schools. The data were collected historically lack to the 1978/79 school year.

Method of Data Collection

The data were collected by governorate education officials with guidance from Dr. Makary and the Creative Associates research staff.

Data Reduction

Records were checked for completeness by the researchers as they were collected from the governorate offices. The primary files were then kept in Creative Associates' Cairo office under the direction of Dr. Makary. Coding and computer entry of the data were variously conducted in the Center for Statistical Research, University of Cairo, in the Center for Demographic Studies and in the Statistics Department Computer Center in the Faculty of Economics, Cairo University.

For all computer analysis, data files were maintained in the Creative Associates office. Copies of the data files have been made for the Ministry of Education, USAID/Cairo, and for CAPMAS, as required by the contract.

Statistical Analysis

A time-series analysis was used to estimate the expected grade one enrollment at a given site in the absence of the new school. Historical data were recorded for each related school at each given site. The data were for the five year period 1978/79 to 1982/83, in first phase sites, and for the

seven-year period, 1987/79 to 1984/85, in the second phase sites. The historical data points from all the related schools of the site were used to fit a trend (or regression) line which was used to project grade one enrollment in the site for the school year in which the new school opened and in each successive year, under the null hypothesis assumption that there would be no new school effect.

In each extensive site, when the new school opened, its grade one enrollment was recorded, together with the actual grade one enrollment from each of the related schools of the site, for that school year and each of the successive years. The resulting observed enrollment was compared with the previously projected value. The difference between the observed and projected enrollment for each site in each of those years served as the measure of impact of the new school on initial enrollment (See figures H-1 and H-2). These differences were aggregated across sites for each extensive sub-study.

Similarly, differences between observed and projected grade one enrollment were computed for each control site for the corresponding years and then aggregated across sites for each control sub-study to find out whether or not the aggregated impact computed in each extensive sub-study was mainly due to the opening of the new schools.

These comparisons have been made for boys and girls enrollment, as well as for total enrollment.

Figure H-1

New School has Positive Effect on First-Grade Enrollment at a Given Site

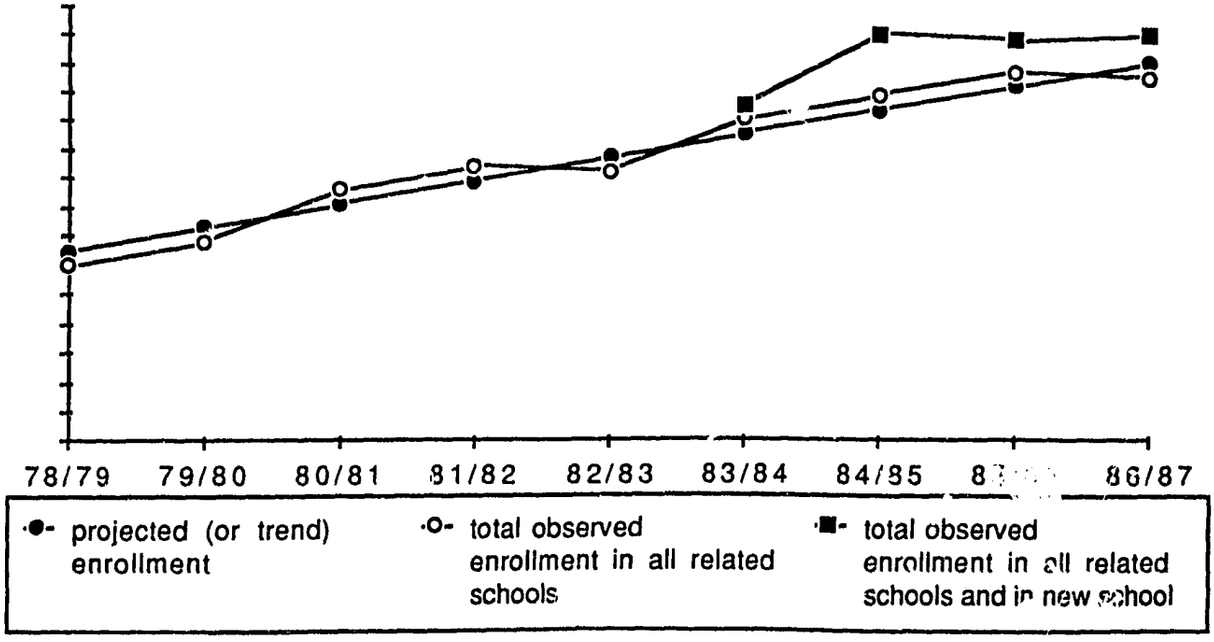
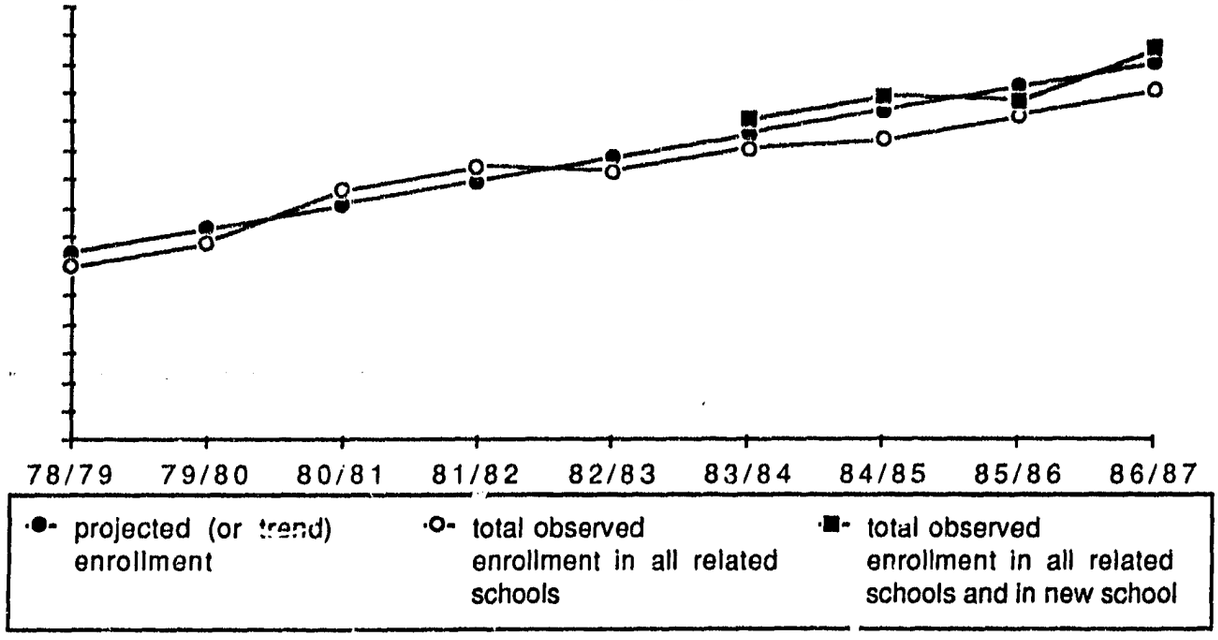


Figure H-2

New School Draws Enrollments Away from Related School Has no Positive Effect on Initial Grade One Enrollment at A Given Site



In order to measure persistence in grades two through nine, the team used a time-series comparison similar to that used for enrollment in grade one, but this time using total enrollment in grades two through six and grades seven through nine.

A comparison between exam results in new schools and related schools was used to determine whether or not the achievement of children differs in the new schools in comparison with old established schools. This literacy analysis was performed for grades two, four, six and nine.

The Problem of Estimating School Age Populations at Each Site

In the original proposal the plan was to estimate the numbers of youngsters at the age levels corresponding to each grade in school in the communities to be served by the new schools. By so doing, simple enrollment data could be converted into the proportions of enrollment of youngsters living in the community served by the new schools. It was found impossible, however, to determine school-age populations for the geographically irregular attendance areas of new schools with any accuracy. For this reason, the design was altered, as described above, so that those estimates were no longer essential in finding the impact of new schools on local communities. To obtain a rough estimate of the eligible-age children enrolled in grade one or persisting to higher levels of the primary school community, sample data have been used for periods before and after the new schools opened.

Annual Reports

Initial data for the Extensive Study was collected from the 1983 sites and the control sites in October 1983. These were analyzed during the winter and the first annual report was submitted in September 1984.

Annual reports cross-related to data from community site visits were similarly presented in the fall of 1985 and 1986 and a final report in the fall of 1987, with each report extending the time-series analysis one year further.

II. INTENSIVE STUDY OF NEW SCHOOL COMMUNITIES

Purpose

The Intensive Study of New School Communities examines interlocking data from community leaders and parents to assess the effects of contributory and exogenous factors on enrollment and persistence in school, disaggregated by sex and socio-economic variables.

Site Selection

It was assumed that the following variables would be important to take into consideration nationwide in the selection of sites for the intensive community sample:

- accessibility of educational opportunities (as a function of physical distance);
- occupational opportunities situated within potential reach of community members requiring education (as a function of industrial and commercial ventures in surrounding areas);
- value placed on education by community members (as measured by the number of schools within a specified radius of the new school and the long established nature of these pre-existing schools);
- socio-economic level of the community (as measured by the relative affluence of families); and
- association with urban or rural contexts (as measured by frequency of contacts and the convenience of transportation systems to urban centers).

In 1983 ten intensive sites were selected from among those where new schools were to be opened in the fall of 1983 and 1984. Eight of the sites were chosen to reflect prototypical combinations of the five variables. Two sites were chosen as particularly interesting for studying girls' participation. Each variable was assumed to have two dimensions, one positively and the other negatively affecting educational participation. For convenience the former were called "urban" villages and the latter "rural" villages. The first year data collection tested these assumptions.

Table H-1

Variables Assumed to Affect Educational Participation

Variables	Negative Pole	Positive Pole
1) Spatial variables in the distribution of school populations	Far/dispersed	Near/concentrated
2) Occupational variables	Agricultural	Industrial/commercial
3) Value in education	Few or no nearby schools	Many established schools
4) Socioeconomic level	Poor	Affluent
5) Urban/rural	Rural context	Urban impact

The selected sites were the following:

1. Manshiya (Bahira): A remote rural community in a region of one-room schools; oper ! in fall of 1983.

2. Manshat al Awkaf (Bahira): An urban village on the fringe of the large urban center of Kafr Duwar; opened in fall of 1983.

3. Kafr Nakla (Bahira): An urban village (originally categorized as mixed but exhibiting "urban" tendencies) on the edge of the small industrial town of Mahmudiya; opened in fall of 1983.

4. Nag Khutaba (Qena): An isolated rural community on the edge of the desert; opened in fall 1983.

5. Nag Dahi (al Kilh) Qena): An urban community near the medium-sized agricultural industrial center of Nag Hamadi; opened in fall of 1983.

6. Nag al Tarif (Qurna)(Qena): An urban village (originally categorized as "mixed" but exhibiting "urban" tendencies) six kilometers across the river from the tourist town of Luxor; opened in fall of 1985 (scheduled to open in 1984).

7. Roda (Kafr al Shaikh): A small remote dispersed community in a reclaimed land area of the Delta; opened in fall 1984.

8. Nag al Harif (Sohag): A remote rural agricultural village settled during the land-reform period after the revolution; opened in fall 1984.

9. Bani Rafa (Assiut): Site of a new girls' school for a small town with low girls' attendance and a number of over-crowded schools; never opened (was to have opened in fall 1983).

10. Ghanayim (Assiut): Site of a girls' preparatory school in a large town with low preparatory level attendance of girls; opened in fall 1984.

Throughout the study special attention was paid to differences in schooling for boys and girls and all data are routinely disaggregated by sex.

Villages were visited on the following schedule:

Year One:

Preliminary data were collected on families in eight sites (two rural, two urban and mixed, and two girls' sites) to assess the extent to which factors assumed to affect education positively or negatively indeed produce a measurable impact.

Year Two:

Full data were collected on six of the sites, including two sites in Sohag and Kafr al Shaikh not visited in year one.

Year Three:

Full data were collected on four of the sites and follow-up data collected on the remaining six sites visited in the previous year. One girls' site school did not open, though classes became segregated in this year to prepare for its opening.

Year Four:

A household questionnaire was administered in five communities of five new governorates to dropout and control families (see the Intensive School Study for details of their selection)

Data Collected from the Community

Site Size

Sites were defined as the area encompassing the residences of the potential student population of the new school, a population that either had no previous opportunities to attend school or in which some children were already attending previously existing schools. Information used to define this new-school attendance area for each site was gathered from markaz officials and community leaders.

Size of Household Sample

Approximately 40 households in each new school attendance site were surveyed, for a total of 405 households for the Intensive Study of the New-School Communities and an additional 355 dropout and control households for the School Efficiency Study (collecting the same data as in The New School Community Study), for a grand total of 760 households.

Household Sample Selection

Interviews with community leaders determined the socio-economic spread of households and pinpointed the physical areas in which a socio-economic cross section of the population could be found (e.g. discrete areas; a main road that traversed the community; other physical features that lead to mixing or separation of various socio-economic groups).

A pathway leading through the location of different socio-economic groups was defined and then every nth household along that pathway was selected, having chosen n so as to obtain an appropriate size sample from all the groups that required representation. Families with no children and families with children, less than or more than the age limits defined below, were automatically excluded from the sample and the interviewers moved on to the next immediate house. Only households with children from the ages of four to fifteen were included in the survey) age four because a child of this age might enroll during the life of the project, and age fifteen because it was the last age that could be considered relevant to the basic education school cycle of nine years.

Girls' Intensive Study Sites and Household Sample Selection

Community size of the special girls' sites was defined to include all the communities from which students in the new girls' school would be drawn. The method of selecting households was the same as that for the new school sites above except that families with boys only were excluded.

Nature of Community and Household Studies:

Studies were carried out to elicit information on socio-economic and cultural factors affecting child enrollment.

Community surveys were taken to determine community characteristics potentially affecting school attendance; general socio-economic profile of inhabitants, their occupational structure, etc.; and history of education and present availability of facilities.

Household surveys were also carried out to assess the effects of specific characteristics on families' decisions about sending children to school. To limit the number of variables parents were asked why children did not enroll or why they dropped out of school. Evidence of these reasons was then correlated to educational participation to confirm their importance independently, whenever possible. Thus, if distance or economic reasons were identified by a significant number of parents as important, a relationship between the distances or economic levels of students and their educational participation was drawn to see whether these were important factors in actual practice.

In order to understand the problem fully it was necessary to complete a fairly extensive questionnaire in each household to obtain an educational profile for every family member. Strategically, a decision was made to administer a relatively complicated questionnaire to a small sample of households, rather than to ask overly simple questions of a larger sample.

The information obtained in the household survey was of three kinds:

- an assessment of the socio-economic conditions of the family and its distance from educational facilities;
- an educational profile of each family member; and
- attitudes of parents about the education of children.

Method of Data Collection

Interviews and observations in the intensive sites were carried out by Egyptian field researchers. These researchers were trained and supervised in the field by Dr. Andrea Rugh. Most of the data was collected during major site visits in 1984, 1985 and 1986.

Data Reduction and Analysis

Data from the intensive site studies is primarily descriptive and qualitative. Each form was checked by the Supervisor (Madiha Mustapha) as it came from the field researcher and was then filed at the Creative Associates office in Cairo, under the supervision of Dr. Makary. Salient information from the interview forms was coded for the computer and used to assemble sub-sets of records for cross comparison. Many of the qualitative responses were further reduced to categories and scales which were then tabulated and displayed as frequency distributions. The reports have appeared in the form of analytical and interpretive essays supported by prototypical, qualitative descriptions and quotations, which in turn, were supported by associated frequency distributions of similar observations and responses.

Annual Reports

Data from the community site visits that were analyzed during each spring and summer were used to prepare a report submitted in the fall of each year.

III. INTENSIVE STUDY OF SCHOOL EFFICIENCY AND EFFECTIVENESS

Purpose

The intensive study of schools examined a broad set of data from new schools, related comparison schools and city schools to assess the effects of various school-related factors on the enrollment, persistence and achievment of children. The study also compared various categories of schools to assess the impact of new-school construction.

Site selection

Three types of schools were selected for the school study: new schools in the same sites as the community study (see above for site selection); related or comparison schools, already established schools near the new schools having community and school characteristics similar to the new schools; and city schools in the district capital considered the optimum in terms of educational program by governorate or local district leaders. Thus,

in each region studied, there was a basic cluster of three schools: new, comparison and city. In the last year of study, when it became apparent that most new schools, unless deliberately intended for preparatory level, would not expand to complete grades one through nine of basic education as originally expected, the basic cluster of three schools was expanded to include the preparatory schools to which new-school students would go. The addition of these preparatory schools allowed the team to consider questions of student flow through the full nine years of basic education and to assess the impact on grade seven enrollment of constructing new primary level schools. In addition, it was possible to look more closely at practical skills courses and achievement at this level.

In the final two years of the study, specific attention was given to the phenomenon of dropout. Dropouts were identified by comparing class lists of the previous year with current school year class lists and visiting classes to determine the "pool" of children not present in school. A sample of these children's homes was visited and data collected on the reasons for dropout and the salient characteristics of their families. (Details of this study can be found in Appendix A)

Data collection

Data were collected on the various characteristics of the schools, including:

- General school information: General school information included the schools physical size, age, gender mix, educational level, facilities, curriculum, schedule, staffing, background data on each staff member (age, sex training, years of teaching experience, subjects taught, distance of residence from school, etc.).

- Enrollment data: From all schools in each intensive site, annual enrollment, repetition, dropout, and achievement data were collected from school records (as of a fixed date in the school year common to all schools). These data were collected by grade level and separately for boys and girls.

- Persistence data: The proxy for persistence was the number of children at each grade level dropping out during the school year. Reasons for dropout were collected in the school and then from home visits with parents. A study was conducted comparing dropout families with control families for salient factors affecting dropout with special attention to the factors affecting dropout both in the school and in the home. (See Appendix A)

- Repetition data: In each school in each intensive site, data were collected on grade repetition by grade level and by sex.

- Achievement data: In addition, in each school data were collected on the number and percentage of youngsters who passed the second, fourth, sixth, seventh, eighth, and ninth grade end-of-year examinations.

Method of Data Collection

Egyptian field researchers worked under the direction of Dr. Wade Robinson to interview teachers, headmasters and other staff, and to collect data on school characteristics, student flow and achievement.

Data Reduction and Analysis

Data collected were primarily descriptive and qualitative. The data were filed in the master data files in the Creative Associates office in Cairo under the supervision of Dr. Makary. Salient data from the forms were coded and entered in the computer for later tabulation into frequency distributions, for making cross comparisons, and for other statistical treatment. The qualitative responses were reduced to categories and scales for display as frequency distributions. Reports on the intensive study of schools are primarily descriptive and analytical, with the use of some simple descriptive statistics to support the interpretative analyses.

Quantitative data on enrollment, persistence, repetition and achievement from each of the schools in the intensive site were cross checked against the annual report data from the same schools submitted to the governorate to assess the reliability of the governorate level information. The number of "paper children"[1] were also determined for each school in the 1986-87 sample.

Annual reports

Data from the intensive school study were analyzed and reported annually in a report submitted in the fall of each year.

IV. INTENSIVE STUDY OF BASIC EDUCATION INSTRUCTIONAL EQUIPMENT

Purpose

This study was designed to explore the impact of basic education instructional equipment on student learning in both "theoretical" and "practical" aspects of the practical skills courses offered in grade five through nine in basic education schools.

The first two-year phase of the study analyzed the factors which affected equipment use to determine what enhanced or constrained effective use in instruction.

---

[1]See Terminology, Vol. I of this report.

*The MOE uses the term "equipment" to refer to tools, machines, etc., and "materials" to mean consumable items such as paper, clay, and lumber. Written materials are not included in the definition of "materials."

In the first two years of the study, the design was expanded to include simple work-sample tests of practical skills learning in the new industry courses offered in the primary and preparatory schools in order to assess the comparative effects on practical skills learning among new, comparison, and city schools and "urban" and "rural" village schools.

School Selection

For the 1983-84 school year, the team selected equipment study schools in Bahira, Qena, and Assiut, conveniently near the "community school sites" wherever possible. After consultation with the appropriate governorate level school authorities, the schools were chosen to represent as closely as possible the dominant practical course offerings of the markaz in which they were situated.

For the 1984-85 school year, 10 clusters of these schools were selected in the five governorates of Bahira, Kafr al Shaikh, Assuit, Sohag, and Qena. The new school, a related school in a matched community, and a markaz standard setting school were chosen for each cluster, so that comparisions could be made of efficiency measures, and of the newly developed project administered work-sample tests in carpentry and electricity for grades five, six, seven, eight, and nine.

For the 1986-87 school year, five similar clusters of primary schools were selected in the governorates of Minya, Bani Suaf, Fayyum, Giza, and Sharqiya. Additionally, the preparatory school which most of the graduates of the new primary schools would attend was added to the cluster. Work-sample test results in these preparatory schools were combined with those from the few preparatory schools in the first five governorates and have been reported in the fourth and final annual report.

Data Collection

- Equipment input: Data were collected on the amount and nature of the AID-financed equipment in schools, on grade level use, number of students exposed to the equipment, the number of items of a similar sort in a package, when they were received and their use begun, and their current condition. Similar data were collected on other equipment furnished from external or MOE sources.

- Equipment utilization: Data were gathered on the frequency, duration, and nature of instructional use of all equipment, i.e., whether teachers used the equipment (and materials) to demonstrate their use only, used them in a hands-on manner to develop practical skills of students, or both.

- Nature of assessment: Information was gathered on assessment practices used to test students for both theoretical understanding and practical skills and was analyzed in relation to curriculum goals, objectives and content.

- Factors affecting use: Data were gathered on the availability and use of materials supporting instruction such as texts, guides for the technical use of equipment (for teachers), instruction on the pedagogical use of the equipment, the presence of necessary expendable materials (e.g., lumber, wire, etc.), the availability of extra parts, and the budget and pacing of use of materials during the instructional year. Physical aspects of the buildings such as the presence of electricity and water were examined along with those administrative factors which affected use, such as storage and circulation practices, policy on breakage or loss, repair procedures, and others. In addition, data were collected on the training and experience of the teachers of practical courses, their interests and perceptions.

Method of Data Collection

Egyptian field researchers worked under the direction of Dr. Wade Robinson, interviewing staff and observing practical classes in the chosen study schools. Field researchers were guided by interview, questionnaire and observation forms and protocols.

Data Reduction and Analysis

As in the intensive school studies, data from the intensive new equipment studies were primarily descriptive, analytic and qualitative. Salient information from the interview forms were coded for the computer and used to assemble sub-sets of records for cross comparison. Many of the qualitative responses were further reduced to categories and scales which were tabulated and displayed as frequency distributions. The assembled data on amounts and types of use of the equipment and materials were examined for the purpose of extracting predominant patterns of use.

Annual Reports

As in the other new-schools studies, data from site visits in October/November were analyzed and used to prepare annual reports. Patterns and relationships described in the first annual report served as the basis for the design of confirmatory studies carried out in the fall of 1984.

V. TECHNICAL ASSISTANCE STUDY

Purpose

The purpose of the Technical Assistance Study was to gather data from technical assistance providers and Ministry of Education officials in positions of primary and secondary leadership in curriculum, teacher training, educational planning, and cost analysis in order to assess the degree to which the provision of technical assistance stimulated noticeable changes in:

- important aspects of the rationale, objectives, and procedures used in organizing and supporting basic education;

- the rationale and procedures which guide the evaluation of the effectiveness and efficiency of programs in basic education;

- educational activities in primary, preparatory, and basic education schools; and

- other areas such as administration of basic education and school building design that the Ministry designated to receive technical assistance attention.

Subject Selection

On the basis of interviews with key leaders in the Ministry, it was determined that once the technical assistance efforts reached their implementation stages, they would have to be studied at multiple levels, both within the Ministry itself and its sub system (e.g., the teacher training branch in the central ministry, in the teacher training institutes and in the faculties of education); in the systems and sub-systems of the governorate level, and at the level of the basic education programs in primary, preparatory, and basic education schools.

Key technical assistance providers and key recipients responsible for planning, development, implementation, and evaluation activities were identified at each level for the Ministry, the governorates, and the schools. These individuals and the program and/or project activities in which they engaged constituted the universe from which we planned to collect data during three years of the technical assistance effort.

Data Collection

Data within each technical assistance area were collected from the technical assistance providers and key MOE officials, as appropriate, to assess base-line positions, policies, procedures, rationales, objectives, and practices relevant to the TA effort.

Plans had been made to assess implementation, (see the paragraph on Subject Selection, above), and MOE evaluation efforts as well, but no implementation took place nor was there any systematic MOE evaluation of the TA work results, except that provided by Technical Committee of MOE officials that read draft and final work order reports for the three work orders completed during the three years of the TA effort. Data were gathered systematically over time, however, on important aspects of the actual technical assistance activities, their intended outcomes, and the perceptions of key technical assistance providers with regard to the significance or potential of the intended outcomes and problems.

Methods of Data Collection

Primary data sources for the Technical Assistance Study consisted of the various documents generated in technical assistance planning and provision and the perceptions of key individuals involved in the effort. The major data consisted of document analyses and interview studies of key technical assistance providers.

The dimensions of technical assistance service delivery were to have been rated by key providers and recipients. The ratings were related to the degree and importance of resulting changes from technical assistance as well as to the qualitative reactions participants associated with the activities themselves until it became obvious that no significant change was occurring as a result of the technical assistance effort. At that point in May of 1986, the study of technical assistance was halted.

Data Reduction and Analysis

The Technical Assistance Study directed by Dr. Wade Robinson yielded primarily descriptive, analytical, and qualitative data.

Annual Report

Annual reports were presented in the fall of 1984, 1985 and 1986.

SECTION TWO
RESEARCH HYPOTHESES

INTRODUCTION

The RFP for the Study of USAID Contributions to basic education proposed a number of hypotheses to be tested by the evaluation team. Over the course of the study, with the concurrance of USAID/Cairo, some of the hypotheses were modified and some omitted as the team became more knowledgeable about the kinds of data available and the usefulness of pursuing certain avenues of inquiry. To complete the record, this section reviews the original research hypotheses and comments on the extent to which it was possible to gather data enabling them to be accepted or rejected in their null form. The main hypotheses are listed below by type. Comments here relate primarily to the nature of research issues, the proxies used, or the methods followed to develop conclusions.

I. IMPACT HYPOTHESES

Hypothesis 1

USAID-financed new schools will measurably increase the enrollment of students in grade one.

Comment: Null form rejected.

Hypothesis 2

USAID-funded new schools will measurably increase the persistence of children in school.

Comment: Null form rejected, using enrollment in grades two through six as a measure of persistence.

Hypothesis 3

USAID-funded new schools will measurably increase the literacy and numeracy of school-age children.

Comment: Null form rejected, using the broader interpretation that the increased number of children enrolling and persisting in school is the basis for an increase in literacy and numeracy skills. However, the null form of the narrow interpretation that the new schools per se would not increase literacy and numeracy was not rejected. Children in new schools showed no greater achievement levels than children in similar established schools.

II. SPECIAL IMPACT HYPOTHESES

Hypothesis 1

USAID-funded new schools will have the greatest impact on target disadvantaged populations (girls, rural and poor children).

Comment: Null form rejected in the extensive study for girls and remote rural groups and strongly indicated in the community study for all three groups.

III. CONTRIBUTORY AND EXOGENOUS VARIABLE HYPOTHESES

Hypothesis 1

A relationship exists between the project goals of enrollment, persistence and the development of desired skills and the distance a school is located from a student's home, the degree of crowding and the adequacy of facilities.

Comment: Null form rejected for the relationship between enrollment and persistence at the primary level and distance (and therefore, by logical extension the development of desired literacy and numeracy skills). Strong evidence to reject null form in interview and enrollment data for the relationship between enrollment in grade one and crowding. Not rejected for those factors called adequacy of facilities, availability of furniture, conditions of sanitation, maintenance, etc. as long as these factors did not include limitations of physical space (i.e., crowding).

Hypothesis 2

A relationship exists between the project goals and the following variables, all of which may have a differential impact with respect to disadvantaged populations: variables in the basic education system, family socio-economic status, family expectation for children's futures and the perceived relevance of education, sex-role related perceptions, and community level constraints.

Comment: The null forms of the hypotheses were rejected for the following relationships:

- Enrollment in grade one and persistence through primary level is related to socio-economic level of the household with a stronger impact on girls than boys;
- Sex-role related perceptions constrain the enrollment and persistence of girls and encourage those behaviors in boys. However, over the three-year period of the community study there has been a noticeable drop in the extent to which parents identify sex-role related reasons for the lack of educational participation of girls.
- Community level factors, such as the existence of a variety of nearby occupational opportunities, are related to educational participation. Two types of rural communities exist: one near urban areas of varied occupational opportunity where most boys enroll but many drop out early to take advantage of industrial or other income earning opportunities, such as daily harvesting of crops for the city markets. The second type, remotely

rural villages, sends fewer boys to school but these children may stay longer to try for their only major occupational alternative, a government job. Girls in both environments go to school and stay in school until their absence from home conflicts with other family needs or plans.

It was not possible to find a direct relationship between families' articulated expectations for children's futures and their educational participation mainly because there was so little variation in response. Most families want their children to become highly educated professionals, though few ever do. The parents of the few remaining non-enrolled children do not find high relevance for their children in education.

In addition, variables in the basic education program which were closely related with dropout were repetition and exam failure, affecting boys more than girls. High academic achievement was related to the presence of an experienced headmaster of local origin with strong goal orientation and a well-organized plan for school improvement, locally recruited staff, and regular homework in the main academic subjects.

IV. EQUIPMENT HYPOTHESES

Hypothesis 1

Certain patterns and levels of utilization of equipment supplied by USAID will measurably increase both the knowledge of the principles of the practical courses and the practical skills of school children.

Comment: There was not enough variation in pattern or level of utilization to make comparisons possible. The predominant teaching pattern which emphasized theoretical, as opposed to hands-on use, served to reduce the level of practical skill attainment potentially made possible by the provision of equipment. Overall practical skills scores were low on tests administered by the team.

V. TECHNICAL ASSISTANCE HYPOTHESIS

Hypothesis 1

USAID-financed technical assistance will stimulate noticeable changes in important aspects of the rationale, objectives and procedures through which the Egyptian Ministry of Education organizes and supports curriculum development, teacher training, educational planning and cost analysis for primary education programs.

Comment: By May 1986 there was no evidence of any impact.

Hypothesis 2

USAID-financed technical assistance will stimulate noticeable changes in the rationale and procedures which guide the Ministry in evaluating the

effectiveness and efficiency of programs in the areas of curriculum development, teacher training, and related programs which enhance the relevance, efficiency and effectiveness of primary education.

Comment: By May 1986 there was no evidence of any impact.

Hypothesis 3

USAID-financed technical assistance may have a noticeable effect on educational activities at the primary level.

Comment: By May 1986 there was no evidence of any impact.

VI. OTHER HYPOTHESES

Testable but not tested

A large number of hypotheses were related to other contributory and exogenous variables. To reduce the number to manageable size the community study was designed so that only the most relevant factor affecting educational participation could be identified and tested. This was done in four ways:

- Sites strong in positive and negative characteristics assumed to be related to educational participation were selected to test the impact of certain kinds of environments. (See above)

- Parents were asked to identify the reasons why children did not enroll or dropped out of school. Their answers could be summarized in four categories: economic, gender-related, accessibility of facilities, school-program related.

- Scales or comparison units were developed for those four categories of reasons and were then related to enrollment and persistence behavior. (See last paragraph before "Other Hypotheses" above)

- Other factors not identified by parents but in the literature as potentially important such as birth order, parent's educational level and composite family patterns were also tested against behavior (See Findings in Vol. I, and the Community Study Vol II. Third Annual Report).

Variables not identified in this way were omitted from the study.

Untestable

A few hypothesis were untestable because of inability to obtain data or because there was a lack of logical connection between the expectation and the related variable. These include the following:

- Increases in the age-eligible population enrolled as a result of project construction. Population figures could

not be determined for the irregular attendance areas of the new school sites, so rough estimates of age-eligible children were determined from the community study. (See Findings Vol. I)

- The relationship between USAID-funded contributions and attendance. Attendance data was found to depend too heavily on individual teacher's systems for record keeping to use effectively. The team substituted persistence measures as more reliable indicators of change.

- The relationship between equipment provision and desired changes in repetition, enrollment, and persistence rate, especially for target audiences was untestable because utilization of equipment did not differ enough among schools and because of the lack of direct connection between dependent and independent variables.

- The relationship beween new-school construction and increases in academic exam achievement was tested even though the lack of a connection should be expected since no change was made in the academic progam of the school.

Additional hypotheses

Numerous hypotheses were added to the evaluation study as it became apparent what lines of inquiry would add to the knowledge of factors affecting access, efficiency and effectiveness of Egypt's Basic Education Program. These hypotheses are in the additional findings found in Volume I and are not reported here.

SECTION THREE
REARCH ISSUES DISCUSSION

INTRODUCTION

This section notes some of the problems that confronted the team during the course of the study. Some pertain to specific conditions existing in Egypt; others are theoretical and relate to the nature of the study we were expected to do. The discussion is included here in the hope that it might prove useful to future researchers.

I. BASELINE DATA

The first research design problem that faced the team was the fact that evaluation started after construction was well underway in the five phase I governorates. In addition, there was a narrow time frame in which to assess the impact of USAID contributions to the Basic Education Program. The design problem became one of how to draw baseline data against which impact could be measured. Selecting villages where new USAID-funded schools were already opened would provide a longer impact period but no pre-event data on parental attitudes about sending their children to school. Selecting villages before a school opened would provide these pre-event data but a shortened impact period. A compromise was reached by taking villages where schools had not yet opened and also villages where schools had recently opened.

As was later discovered, it would probably have been just as effective to use only sites where new AID-funded schools had already opened. This was because:

- parental attitudes and school sending plans proved to be highly unreliable predictors of behavior;
- anticipation of the opening of a new school may have had almost as much effect on raising enrollment rates as a new school actually opening.

In addition a way was developed to use historical data to provide a baseline. We developed the following techniques:

- For gross trends in educational participation, the educational profiles of older and younger generation members of households were compared.
- For recent trends in educational participation, the behavior of children from different age sets in the household sample were compared.
- For larger scale recent trends in the extensive sample, and new school impact, enrollment data for years back to 1978/79 were evaluated and through time-series analysis, it was possible to predict trends without the existence of new schools. The differences produced as a result of a new school opening were then determined.

- To put the impact of the new schools in perspective, enrollment changes in the intensive sites were compared with historical trends in regional city, and local related schools.

II. PROXIES

During the study we attempted to identify proxy measures that would substitute for difficult to obtain information or which would clarify rates of participation and wastage.

In lieu of local population figures of age-eligible children, we found that the ratio derived from girls' enrollment over boys' enrollment in first grade is a rough indicator of the percent of eligible-age girls enrolled. This proxy assumes a high level of boy's enrollment in grade one for accuracy. In all the intensive community sites after new schools opened, almost all six-year-old boys enrolled.

Girls' ratios of total enrollment in grade one are a good indicator of local trends in educational participation over the years. Under normal circumstances, these ratios rise from year to year until they approach the ceiling of 50 percent. If they begin to decline, then something is happening in the local school situation: either single-sex schools are opening nearby or crowding is preventing girls from enrolling.

To determine the sixth grade academic exam pass rate of most use in estimating "effectiveness," take the number of passes over the total of children who applied to sit the exam. To estimate "efficiency" use the number of children enrolled in grade six as the denominator.

A comparison of girls' ratio of grade six enrollment with girls' ratio of grade one enrollment usually gives a rough estimate of how long term and stable girls' enrollment and persistence has been.

Crowding in grade one can be determined by three measures: the number of children per class (over 45 children per class in one school year usually requires opening an additional grade one classroom the next); a decline in the absolute number of grade one children over the years with no apparent reason; and changes in the lower age limit permitted entrance to grade one classrooms by individual schools (six to eight years is the law; under six means that there is extra space; narrowing the legal age span means that there is not enough space).

III. RELIABILTY

Anyone monitoring changes in educational participation should automatically collect these statistics and analyze them in local areas where problems appear to be developing or where judgments are required about the need for increasing the capacity of educational opportunities. It should be noted that the level at which statistics are analyzed is also important. Governorate and district level statitics absorb variation to show smooth

trends. City level school statistics on enrollment vascillate from year to year, depending upon changes in the availability of classroom space in the nearby rural hinterland. Local schools, to an even greater degree, respond to variation in classroom space in nearby schools.

There were several ways we attempted to enhance the reliability of the information we gathered.

- In the intensive community study we used the same women interviewers throughout a year's data collection, and from year to year, as much as was possible given the necessity to make personnel changes occasionally over an extended research period. The same supervisor trainer of the interviewers was present during the last two years for the final complete collection of data.

- Pairs of researchers double checked coding which was then checked by the research supervisor.

- Local facilitators accompanied the all-women teams to gain the trust of those being interviewd and in some cases helped to correct the record, although most of the information was well known in the community.

- None of the information gathered was considered of a private or threatening nature.

- Key questions were sometimes asked in different ways to test the reliability of the response.

- The senior American researcher alternated in accompanying the researchers to see that standard procedures were used, questions were understood, and general assessments were calibrated.

- In the intensive school study, information about schools was confirmed whenever possible by direct observation or by cross checking questions.

- Dropout rates were confirmed by checking students against class lists, calling the roll in classrooms, and confirming a student's status with home interviews.

Nevertheless, it has been difficult to obtain complete accuracy in a number of areas.

Income and economic level of a household

We were expressly prevented from asking direct questions about income because government officials felt the subject was too sensitive. Information collected in this study on the socio-economic levels of households is subjective. They are estimates made by the interviewers according to criteria provided them. The criteria most useful in determining economic

level of a household are the number of income earners, the type of occupation, and the kind and quality of household furnishings. Ownership of land may be indicative but depends upon the size of the holding.

Age

Many of those over the ages of 20 or 25 do not know how old they are, especially if they have had no schooling. We estimate age by asking how old the person was at the age of marriage (usually fairly well known), how soon after marriage a child is born, and the age of the oldest child. Very elderly individuals, however, do not respond accurately to these questions because they usually do not know the ages of their oldest children.

The incidence of "twins" in Egypt is extremely high because in some villages it is common practice to wait and register the birth of consecutive children at the same time, making them twins for registration purposes. Schools recognize these "fraudulent" papers as accurate reflections of true birth dates, thus making some first graders naturally one or two years older than they their actual physical age.

Girls

Despite careful training of our researchers we sometimes were presented with community populations consisting of more boys than girls. This occurs for two reasons. First, parents are inclined to only give information about boys, unless specifically asked to include information about girls or about children by age sequence. Second, married female children who live away, usually in the home of their husbands, are often not included in an accounting of children, whereas married male children, who are more likely to live under or near a parent's roof, are.

Attitudes

Illiterate parents know very little about what kinds of academic programs their children engage in at school. A large proportion were not sure whether a food program existed in their local school at the time interviewed, though most felt the need to answer "yes" or "no." Most leave educational programs up to the experts and refuse to say what they should contain or how they might be modified. Their greatest concern is exams and degrees that reflect crucial milestones. They are reluctant to talk about any event that might take place in the future for religious and superstitious reasons. This reluctance includes discussions of future educational plans, occupational goals, and potential benefits for their children deriving from education. When asked to reflect on whether more children would participate in educational programs if certain specified conditions existed, many try to figure out either what answer the interviewer wants, or to give an answer that conforms with the middle-class values they see modeled on television shows, even though their answers may be unrelated to what they really feel or how they will eventually behave.

Attitude questions provoke more accurate answers when they ask about concrete events or about how other people react, such as: "Do most people in your village educate children to the end of primary level?" If the object is to find out if people are aware of the link between education and occupational opportunities it is better to ask a question like "Name a person in the village with a 'high' degree and his/her occupation," rather than an abstract question about the connection between education and occupation.

The problem in interviewing villagers is threefold. First, people reveal their true feelings to relatives and close acquaintances and not usually to strangers who pass through in the context of a rapid interview. Second, neither research nor the necessity to compile accurate information is well understood. Third, people do not see direct benefit coming to them as a result of the interview but suspect there may be some penalty involved like fines for not enrolling or withdrawing children from school. We have reported some attitude data but usually with reservation.

Dropout data

There are a number of incentives in the informal system to continue children on the record even after they have dropped out. These incentives include fines imposed on parents of dropouts, the requirement that school administrators report dropouts to police authorities and the obvious advantages of inflating enrollment figures. We found it necessary to call the classroll and ask other children the length of a missing child's absence and the reason for the absence. Nevertheless, in some cases, children were rounded up and brought back to school for us to count, or teachers coached children on answers they should give us. As long as the incentives to keep children on the books remain, the problems of innaccurate figures will continue.

Enrollment

Enrollment data is not available in many governorates for more than five years. In following up a cohort of students from one grade to the next in successive years, very large and unexplained variations are observed. Repeated questions about these variations usually do not help to correct discrepancies or lead to an understanding of the reasons behind them, often because governorate level officials are not familiar with local schools.

Other Basic Data

Some simple basic data (such as the year at which a school was established) are not available, either at the governorate level or at the school itself.

Record Keeping

No standard school record keeping prevails in all schools. Therefore, the availability of historical data in a school depends on how efficient the school's administration is (vice headmaster, school secretary, headmaster) and how long an efficient headmaster has been in charge. No simple system of pupil accounting is followed by the schools. All data about students,

financial, achievement, transfer, attendance, etc. are kept in one file, often on scraps of paper, and each administrator manages such records in his own way and time. Aggregated exam results are also not readily available.

IV. GENERALIZATIONS DRAWN FROM THE STUDY

All the samples used for the study reflect either the universe of the new-school sites where schools were opened or a selected range of the environments where new schools were located. The new-school sites as a whole are characteristically rural and educationally disadvantaged up to the advent of new-school construction. There is no reason to believe that they are any different from other sites with similar rural and educationally disadvantaged characteristics in the same or other governorates. For this reason the findings concerning the sites before new school construction are likely to represent the situation that will be found in other villages where USAID construction will be located and new schools will be apt to produce similar results.

The findings do not necessarily hold for all schools or school communities in Egypt because of the bias inherent in the new-school communities themselves, nor can they be confidently applied to other governorates with significantly different characteristics. Nevertheless, with some caution the reader can draw broader generalizations. Where certain trends appear again and again in different site contexts or different school contexts or show a strong relationship between a variable such as economic level and enrollment, it seems reasonable to assume that these relationships will be present across Egypt whenever these variables are found in a range of values.

Some of the data are naturally more reliable than others. Data on attitudes, as noted before, are much more suspect than verifiable data on behavior. This was particulary apparent in the different reasons articulated for dropout found in school and home visits. We have relied much more heavily on completed or observed activity and whenever possible have tried to find a behavioral analogue for attitudes.

The size of the data pool is also important. Though the sample size in the intensive studies has been kept small, within the community or school, the subject has been covered fairly exhaustively, given the limits of time and resources. Therefore, we feel confident that these microcosms are covered adaquately. In the course of such a study, however, sub-sets of data become small and difficult to disaggregate further. Those who enroll in the younger generation, for example, provide a much larger pool of subjects for disaggregation than the number of six-year-olds eligible for grade one. Conclusions drawn from the first material are certainly more reliable in the statistical sense than those drawn from the latter. In general, we have reported numerical frequencies in the tables to allow the reader to use his/her own confidence levels in evaluating the information.

It has been important to go beyond simple statistical analyses in the intensive studies to present our own explanations of why certain relationships

occur. These explanations reflect our impressions from discussions, interviews, and broader experience in the Middle East. We offer them in the hope that they provide a richer understanding of how educational decisions are made and educational programs carried out in a range of Egyptian villages.

A final caution about generalization requires us to note that change is occurring rapidly in these "disadvantaged" villages. What was articulated as a "conservative" attitude about girls' education three years ago has changed considerably with the advent of an accessible new school in the community. On the other hand, however, economic pressures appear to be gaining, with an emphasis that constrains boys' as well as girls' educational participation at the early primary stage. Whatever appears to be true today may be different from the condition tomorrow, and what was true at the beginning of the study may have shifted somewhat by the end. Nevertheless, these studies should provide a basis for more informed project development in the future.

V. FUTURE RESEARCH PRIORITIES

The team has garnered a great deal of experience with the Egyptian educational system during the four years of the study and would like to point out the areas where additional studies might be carried on in the future to assist the improvement of that system. The studies are divided into two types: general policy-related studies and small practical solution-oriented studies. Both should be expected to lay out recommendations for planners.

General Policy Related Studies

Dropouts

Studies in two governorate sub-sets showed considerable differences in dropout rates. With the information available from the present study or previous studies, it is difficult to know the extent of wastage through dropout in all of Egypt. The present study sample was selected to show a range of new-school sites, and therefore is not representative of schools in Egypt generally. If accurate information about the dropout problem is to be assembled, a representative sample of Egyptian schools should be drawn and information from school records gathered and verified according to the methods we have found appropriate. In addition to home interviews, a systematic study of the classroom problems that discourage children and cause them to drop out should be conducted to identify in detal where children are facing difficulties in the schooling environment. The emphasis of such studies should be to discover the factors amenable to policy changes that can correct problems. The results of such a study would have important implications for the extent of human resource wastage, the causes of the problem, the identification of "schools at risk," and for the planning of school improvement and future facilities needs.

Enrollment

Statistics at different levels, national, governorate, and district, should be routinely disaggregated to discover the areas of the country which show particularly low levels of age-appropriate boys and girls in school.

Where possible, contexts with differential enrollment rates (cities, urban villages, rural villages, and large regions) should be assessed to find where the educationally disadvantaged can be located. The school location maps are a good start, but more routine and comparative analyses of these data could be carried out to prioritize the use of construction resources.

Primary school programs

Studies of the determinants of effective schools and effective teaching actually going on at the present time would provide Egyptian models for school improvement within the framework of a systematically organized outcome-based educational program.

Preparatory school programs

The vital issue that requires study at the preparatory stage is the question of the external validity of training at that level. If practical education is desirable, then the current neglect of practical courses in favor of academic courses should be reversed. Review should be made of the objectives of the preparatory stage to ensure that they meet national goals for manpower requirements. In addition, our study was unable to determine highly reliable enrollment trends for the preparatory level because of the extent to which individuals in a cohort shifted from school to school during recent years as new schools became available closer to home. It was thus difficult to predict the full extent of the rapidity with which preparatory enrollments are growing. For planning purposes it is important to work out ways to monitor local enrollment trends at the preparatory level, to know where to locate facilities to best advantage.

Girls' educational participation

Girls still constitute the group which is less likely to enroll and less likely to persist to levels of functional literacy, although once girls are in school they tend to achieve at higher levels and use fewer resources in repetition. It is important to know the factors that encourage their participation in school. From the present study we know the impact of distance and household economic level on girls' participation. We have preliminary evidence suggesting that the trend of building single-sex schools does not necessarily lead to increased primary school enrollment. The source of girls' unique participation problems is to be found in family perceptions of the benefits which accrue to their daughters from education, and the extent to which these benefits offset the costs to the family of allowing them to attend or continue on in school. Studies need to be conducted to determine what problems exist in the schooling environment to constrain the enrollment and persistence of girls and what inducements might be offered to encourage girls to enter and persist longer. It is likely that these inducements might also encourage the attendance of the few remaining undereducated boys. These studies should focus on the interaction between home and school with emphasis upon factors that can be influenced by policy changes.

General monitoring studies and analyses

Much data is already routinely available that would provide specialized detailed information to policy planners. As soon as this information is

available on computer discs it can be used for regular monitoring of the educational system. It would be useful at this stage for educators and planners to sit down with those gathering statistics to map out the areas and types of information that could usefully be analyzed to provide empirical evidence for future planning. A simple questionnaire might then be developed and circulated to local schools to provide basic information at annual intervals.

Small practical solution-oriented studies

The team recommends that the MOE conduct small practical, solution-oriented field studies to uncover remedies for small but nonetheless significant problems in the educational system. Three topics are especially suitable for study but there are many more that Egyptian educators could suggest. The studies could be carried out by one or two investigators using available information or working in the field to carefully define a problem's dimensions, and through interviews to elicit possible solutions to the problem. Available empirical evidence would be assembled to support alternative policy options and then presented in brief written and oral form to policy makers for their review. The cost of such small-scale studies should be minimal, and might even be considered as within the routine responsibility of specified persons within the Department of Planning and Followup.

The three studies noted here are suggestions of the type of study that might be conducted:

Record-keeping systems:

Accurate data for policy planning is difficult to obtain at present because of the variation that exists in record keeping at the school level. A study should be conducted into existing practices and ways to improve the record keeping system that would provide consistent reliable statistics. New forms may need to be developed with clear definitions of the various categories, clear instructions on how to fill them out, and a modest training program carried out for those responsible in local schools for data recording and management.

Tutoring:

A major problem at present is the extent to which student achievement in major exams is felt to depend on extra classroom tutoring. A field study should be conducted to determine the dimensions of the problem, including the extent to which teachers and schools may depend upon revenues generated through tutoring. Ideas and examples of ways communities have coped with this problem should be collected and possible solutions suggested to policymakers. One of these solutions might be to make changes in the examination system to preclude major terminal exams, substituting smaller more frequent exams in their place and more remedial work in the classroom on a daily basis.

Examination appropriateness:

A small scale office-based study should be conducted into the extent to which grades six and nine exams are linked to present general objectives of the educational system, and to the curriculum materials utilized in

classrooms. These exams should also be analyzed using a taxonomy of learning levels, from simple to complex, as in the sequence: knowledge, understanding, application, analysis, synthesis, and evaluation. In this way the present outcomes of the system would become more apparent and easier to review with respect to improving the school program.

A companion effort to this would be comparing achievement levels in math, science, reading and writing at the sixth and ninth grade levels with international standards for these levels obtained by other nations. In this way the Egyptian government would have an objective rating of the effectiveness of its schools in these most basic skill areas and could therefore base instructional and curriculum planning on a more reliable base than is currently used.

APPENDIX I

PRODUCTS DELIVERED

LIST OF DELIVERABLES

1. Workplan Indicating the Anticipated Timing of All Major Evaluation Events.

First Plan	Delivered February 1983
Revision 1	Delivered May 1983
Revision 2	Delivered November 1983
Revision 3	Delivered March 1984
Revision 4	Delivered May 1984

2. Report Detailing the Initial Impact Hypotheses To Be Tested and The Rationale Underlying Their Choice.

First Report	Delivered February 1983
Revision 1	Delivered March 1984

3. Report Detailing the Research Methodology and Analytical Program To Be Used.

First Report	Delivered February 1983
Revision 1	Delivered May 1983
Revision 2	Delivered March 1984
Revision 3	Delivered May 1984
Evaluation of Scope of Work	Delivered May 1984

4. Baseline Data Report Describing Conditions with Respect to Relevant Variables at the Beginning of Project Activities. Delivered as Part of First Annual Report, August 1984.

5. Annual Reports to Summarize Evaluation Activities and Present the Results of Interim Impact Analyses.

First Annual Report	September 1984
Second Annual Report	September 1985
Significant Findings of Impact	October 1985
Third Annual Report	October 1986
Fourth and Final Annual Report	September 1987

6. Quarterly Reports (not required by contract, but requested by project officer).

Delivered March 30, 1984
Delivered June 30, 1984
Delivered December 31, 1984
Delivered March 30, 1985
Delivered June 30, 1985
Delivered December 30, 1985
Delivered January 30, 1986

7. Technical Reports.

Technical Report Intensive Study of the Uses of New Equipment in Basic Education	Delivered February 1984 (to His Excellency, Mansur Hussain, Vice Minister of MOE)
Technical Paper Preliminary Analysis of Data from the Extensive Study of New Schools	Delivered March 1984
Policy Memo #1	Delivered January 1984
Brief Highlights of Preliminary Results Qena	Delivered March 1984 (to Under Secretary of Education, Qena Governorate)
Egyptian Basic Education Textbooks, Topical Outlines of Texts for Grades 5-8 and Observations on Practical Components and Local Relevance	Delivered September 1984
Comments on the Issues Raised by USAID/Cairo Concept Paper for Continuation of Basic Education Agreement with G.O.E.	Delivered 1985