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INCREASING THE FLOW OF STUDENTS IN BRAZILIAN PRIMARY EDUCATION

Project SUNY-AID/la-365

Annual Report

March 1967

A.I.D.
Reference Center
Room 1656 NS

PREFACE

The first annual report was presented to USAID/HRO by means of a flip chart and verbal commentary. A dittoed version of the flip chart in pamphlet form was submitted, as were verbal amplifications of the role of each of the academic areas included in the final frame (administration, supervision, curriculum, teacher-education and research).

Following the presentation and discussions which took the major part of two days, EATEP was requested to prepare a report which included the major aspects of the analysis it had made as basis for the visual.

The attached report is in response to that request and also includes some up-dating of data from the original presentation but does not include some of the data which has recently become available, simply because a cut-off date had to be established to permit duplication of the report. Additional data will be included in the second annual report.

While this report represents a team effort and concensus.special recognition should be given to Dr. Harry White who had the responsibility for consolidating diverse information of the team into the original draft and incorporating revisions following team review.

It should also be noted that a Portuguese version was presented to Dr. Carlos Mascaro, Director of INEP and later. a condensed Portuguese version was prepared for use with an overhead projector. It has been presented at the Brazilian Third Annual National Conference on Education, to the Minister of Education and to educational authorities of several states and INEP centers. The reactions have uniformly been positive and Dr. Mascaro has requested that it be prepared for printing and distribution.

Note: Through various other documents, particularly the monthly reports, USAID/HRO has been kept informed of the chronology of events, problems, work with states, etc.; therefore a repetition of these is not included in this report.

INCREASING THE FLOW OF STUDENTS IN BRAZILIAN PRIMARY EDUCATION

Statement of the Problem

Research and implementation. The problem is to identify the causes of drop-out and repetition in Brazil's primary schools (research) and develop plans to remove those causes (implementation).

Description of the Problem

Brazil's National Education Plan. Brazil's National Education Plan calls for 100% of the 7-11 age group to be enrolled through grade 4 by 1976. In 1964, only 6.2 out of a possible 9.4 million of this age group were enrolled. This represents 66% of the total age cohort or about two-thirds of each individual age group (see Item 1). Of this 6.2 million 3.7 million were in urban areas and 2.5 million in rural areas. This represents 81% of the eligible age group in the urban area and 51% in the rural area.

Item 1

Percent of Age Group 7-11

Enrolled in Primary Education, 1 9 6 4

Age	% of age group enrolled
7	47
8	66
9	72
10	73
11	75

Source: CEB, RP, Vol. I, p.2 (1)

Dropouts and repeaters. About 85% of the children who enter first grade drop out before completing fourth grade. Over 15% of the 10 million children aged 7-14 enrolled drop out during the year (1.5 million). At any one time about 27% of those enrolled are repeating a grade one or more times (see Items 2,3 & 4).

(1) Sources identified in Appendix A.

Item 2

Percentage of Dropout and Failure in Primary Education by Grades, 1962

	Grade 1	2	3	4
Dropout	18	14	13	11
Failure	34	16	23	17
TOTAL	52	26	33	25

Source: Doc. 1, p. 23

Problem in the first grade. The failure rate in the first grade is over one-third of the total enrollment (34%) and the dropout and failure rate combined rate combined is over half (52%, see item 2). This combined dropout and failure rate of 52% is twice that of grade 2 (26%).

Item 3

Dropout and Repetition in Brazilian Primary Education, 1954

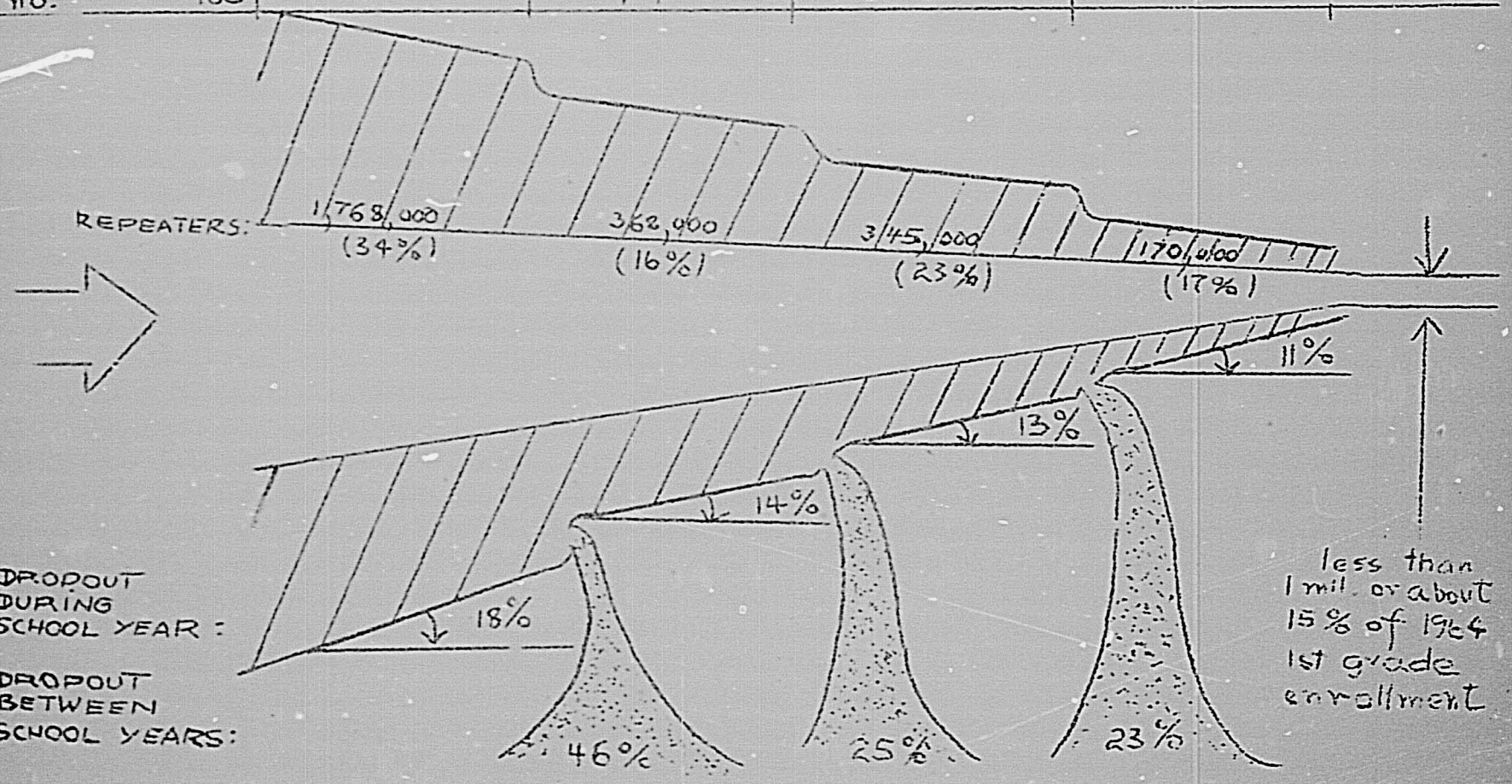
Grade	% of total enrollment	absolute number	dropout during the year* absolute no.	%	repeaters absolute no.	%
1	52	5,200,000	936,000	18	1,768,000	34
2	23	2,300,000	322,000	14	368,000	16
3	15	1,500,000	195,000	13	345,000	23
4	10	1,000,000	110,000	11	170,000	17
TOTAL	100	10,000,000	1,563,000	16	2,651,000	27

Source: Based on Doc. 1, p. 23 and CED, RP, Vol. I, p. 2

* Does not include droupout between years.

HYPOTHESIS of the FLOW of STUDENTS in Braz Prim Ed., 1964-67

	beginning of year	1964 (GRADE 1) end of year	1965 (GRADE 2)	1966 (GRADE 3)	1967 (GRADE 4)	graduates
absolute no.	5,200,000	4,264,000	2,300,000 1,978,000	1,500,000 1,315,000	1,000,000 890,000	720,000
relative no.	100		44	29	19	14



Source: Based on source of items 2+3

Age-grade distribution of pupils

Over half of total primary enrollment is in the first grade (52% of 10 million) and about three quarters (75% of 10 million or 8.5 million) in the first two grades. Although first graders are supposed to be aged 7, in fact they range in age from 7 to 14 (see Item 5)

Item 5

Percentual Distribution of Ages in Grades 1-4, 1964

Grade	Age 7	8	9	10	11	12	13	14
1	19.0	23.2	17.2	14.6	9.5	7.9	5.1	3.5
2	2.1	12.5	19.7	20.9	16.0	3.8	8.9	5.8
3	-	1.7	11.1	21.8	20.8	20.1	14.5	9.9
4	-	-	1.6	13.5	22.8	25.7	20.7	15.5

Source: Doc. 1, p. 26

Range of individual differences within the classroom

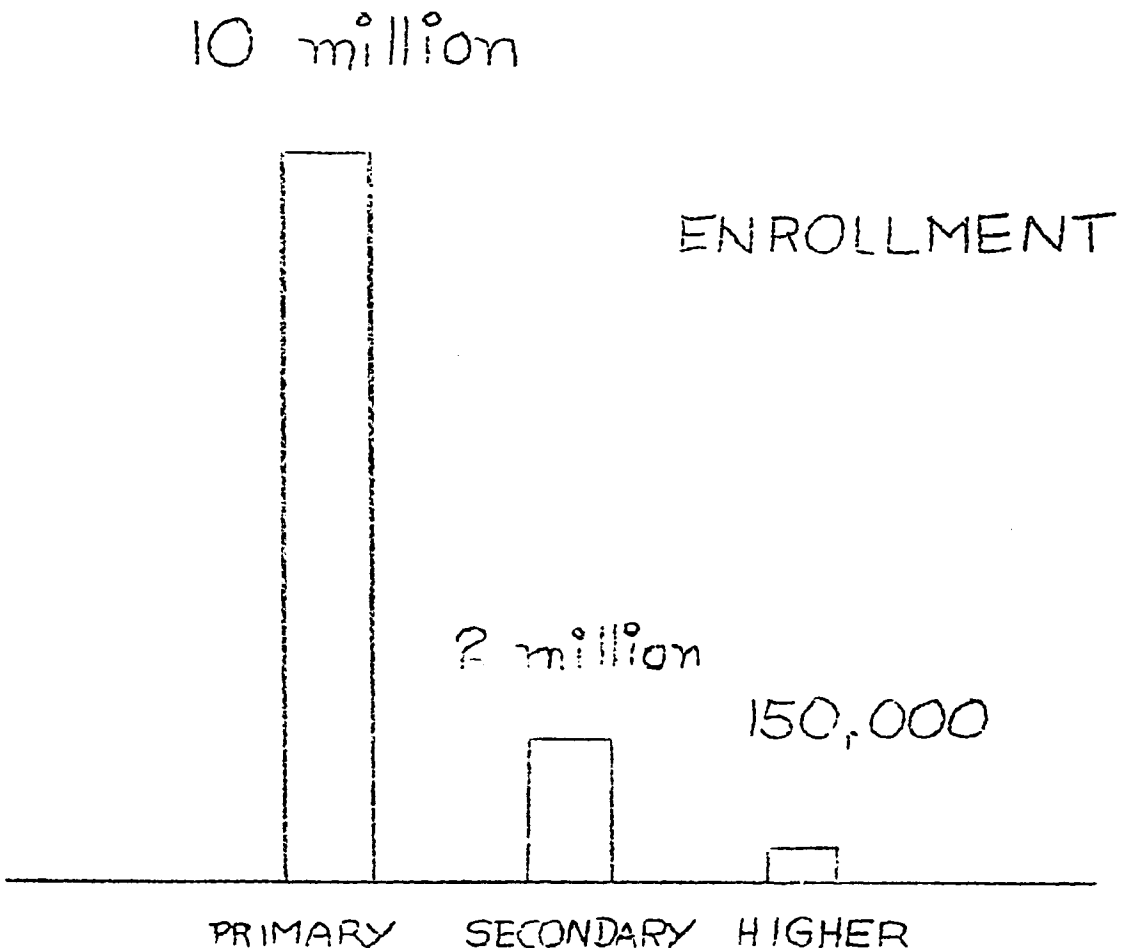
This range of individual differences makes difficult the teaching task of every grade level--but especially in first grade. If we assume that the range of individual differences within a single age is X, then the range of individual differences within the age cohort 7-14 is 8X. That is, since there are children aged 7-14 in the first grade the difficulty level of teaching the first grade is 8X. On the other hand, since ages 7 and 8 are not represented in grade 4, the difference level of teaching grade 4 is 6X.

This is particularly significant when we consider that the least qualified and the least experienced teachers are assigned to the first grade .(1)

(1) See Document 2, page 33

ITEM 6

SCHOOL ENROLLMENT IN BRAZIL, 1964



Source: See ITEM 7

From this point of view the task of teaching the first grade in Brazil is about 8 times as difficult as in the developed countries -- where teachers are better qualified and grade placement of pupils is more or less by age.

Other levels of education. The relative magnitude of the problem with respect to the other levels of education can be seen by comparing enrollment. In round numbers 10 million children are enrolled in primary education, 2 million in secondary education and 150,000 in higher education (see Item 6). This represents, respectively, 82%, 17% and 1% of the total enrollment in all levels of education (see Item 7). Taken together grades 1 and 2 represent about two-thirds of total enrollment in all levels of education (see Item 8).

Item 7

School Enrollment

in Brazil, 1964

Level	Absolute Number	% of total
Primary	10,747,584[a]	82
Secondary	1,892,724[b]	17
Higher	144,681[b]	1

[a] Public only (CED, RP, Vol. I, page 2)

[b] Private included (EPEA, Vol. II, page 103 or 157)

I t e m 8

Enrollment in Grades 1 and 2 Compared with all Other Grades, 1 9 6 4

Grade	Enrollment	% of total enrollment
1	5,200,000	43
2	[illegible]00,000	19
1 & 2	7,500,000	62
All other grades (primary through University)	4,537,000	38
TOTAL	12,037,000	100

Source: Previous items.

Geographical dispersion of the problem. The geographical dispersion of the problem represented by the three levels of education is best shown by a dot map (Item 9). Whereas secondary and higher educational institutions are relatively few and located in accessible urban areas, the primary schools are may and widely dispersed throughout both rural and urban areas. Yet in comparing resources distribution (Item 10) with enrollment (Item 6) we can see that expenditure are greatest for those levels of education that serve the fewest individuals. The proof of this contention is in the cost per student per year figures, which average $15, $105, and $943 respectively for primary, seconda y and higher education (item 11).

ITEM 9

GEOGRAPHICAL DISPERSION OF PHYSICAL FACILITIES BY EDUCATIONAL LEVELS, 1964

Higher

136 institutions located mainly in urban areas

9,196 institutions located mainly in urban areas

Secondary

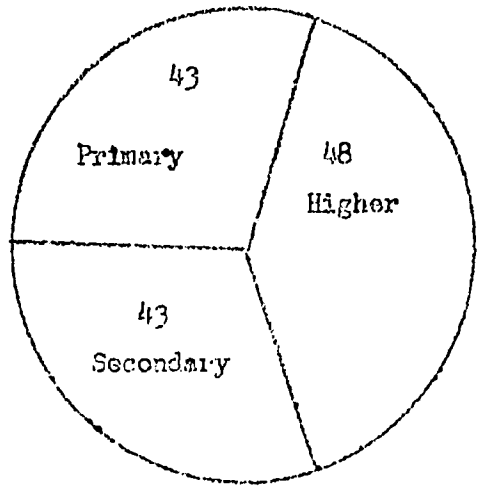
Primary

124,946 schools

Urban	Rural
34,667	90,279

Item 10

Federal Allocation of Resources to Education (billions of cruzeiros)



Source: A, page 29

Item 11

Cost per Student per Year

Level	US Dollars
Primary	15
Secondary	105
Higher	943

Source: EPEAI, page 126

High cost of dropout and repetition. What does this high dropout and repetition in the primary school mean in terms of costs? Every year Brazil has about 1 million graduates (10% of 10 million). That is, for every graduate of the fourth grade there is 1.5 dropouts. Another way of saying this is that, in terms of fourth grade completion, out of every dollar invested in Brazilian primary education $.60 is lost. Based on EPEA's figure of an annual investment of $15 per student and 10 million students, Brazil invests $150 million

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Item 12

STRATEGY FOR REDUCING DROPOUT AND REPETITION

	DIRECT	INDIRECT
DROPOUT	ENFORCE SCHOOL ATTENDANCE LAWS	ENCOURAGE VOLUNTARY SCHOOL ATTENDANCE
REPETITION	CHANGE PROMOTIONAL POLICIES	IMPROVE INSTRUCTIONAL PROGRAM
	QUANTITY	QUALITY

FOCUS OF TEAM EFFORT

Presently only 66% of the 7-14 year-olds are in school, or about two thirds of each age group from 7 to 14. However, the National Education Plan calls for 100% of the 7-11 year-olds to be enrolled through grade 4 by 1976. All children in Brazil presently 7-11 years old (about 10 million, see Item 13) could be accommodated in existing facilities providing the present number of shifts is maintained and they are grouped by age and attend school for only four years. In some areas, additional space could be made available by taking advantage of presently unused capacity and/or operating the schools on a year-round basis.

Item 13

Children Aged 7-14 in Brazil, 1964

Age	No. of children	Sub-total
7	2,017,175	
8	1,981,111	
9	1,796,951	
10	1,954,188	
11	1,658,873	9,418,298
12	1,770,772	
13	1,483,051	
14	1,262,717	
TOTAL	13,934,838	

Source: CEB, RP, Vol. I, page 2

The indirect way to reduce do is to encourage voluntary school attendance. A promising way to do this is to offer a school lunch program. In the state of Minas Gerais it was found that 60% of all children attending school did so to receive a school lunch. This survey of 4,300 schools with 500,000 pupils

was done) by social workers under the auspices of the State Secretariat of Education.(1) A significant increase in school attendance was found when school lunches were offered through the USAID Food for Peace program (2).

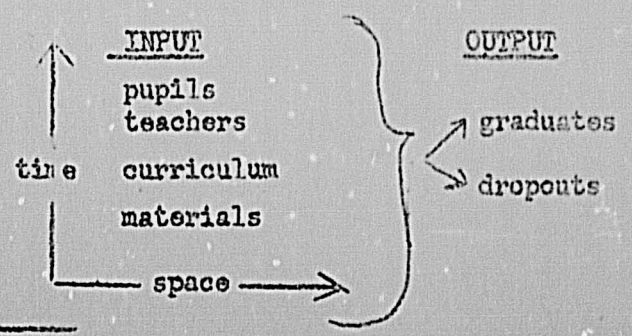
Repetition. The most direct way of reducing repetition is to change promotional policies. That is, if children, were allowed to proceed through four years of school with their own age group, the problem of repetition would be solved. The term "grade" would then indicate the year in school instead of an arbitrary achievement level. That is to say a child is in "grade 1" would then indicate that he is 7-years-old and is in school for his first year. To say a child is in "grade 2" would indicate that he is 8-years-old and has attended one year of school and is now in his second, and so on. It is clear that this procedure need not necessarily affect quality of the education the child receives. In fact, this procedure may lead to a worsening of the instructional situation unless certain other measures are taken. This brings us to the indirect way of reducing repetition.

The indirect way of reducing repetition is to improve the instructional program. Presumably children are promoted or not depending on whether or not they have achieved certain standards. First we must ask if these standards are realistic, adequately measured, and properly adhered to. Then we must ask how pupils can be assisted to achieve these standards? In the present report we will address ourselves to the latter of these questions. To answer this question we have to look at the elements of an instructional system.

Elements of an Instructional System. An instructional system has four components and two dimensions. The four components are: pupils, teachers, curriculum, and materials. The two dimensions are: time and space. These elements are the input. The output is either dropouts or graduates.

Input/output model.

This can be expressed in a visual model as follows:



(1) Reported in Jornal do Brasil, Jan. 8, 1967

(2) Reported in HRO contractors' conference, USAID-B,Rio, Feb. 1967

Theory of instructional system. The proposition which this model implies is as follows:

In any instructional system the achievement of the pupils varies with the readiness of the pupils to learn, the preparation of the teachers to teach, the appropriateness of the curriculum to the pupils, the availability of instructional materials, and the availability of time and space.

Let's examine each of these elements in the Brazilian context.

Pupils. Is there any evidence that Brazilian children are not prepared to learn? We know that children with lower socio-economic backgrounds are less prepared to learn than children with higher socio-economic backgrounds. In the 1964 School Census it was found that 94% of all the children aged 7-14 in Brazil have parents who are either illiterate or have only a primary school education(1). In the absence of studies yielding adequate data, and recognizing that many children from this level are unlikely to be required to attend school at all, it appears reasonable to estimate that roughly 80% of children attending the Brazilian primary schools are from low socio-economic levels. This figure is further substantiated by the opinion of Brazilians and by the relative size of the socio-economic classes in the Brazilian social structure.

We know that undernourished children are not prepared to learn. World Health Organization figures of 1957 and a 1963 survey indicate average caloric intakes of 1,500 to 2,000 and protein levels of 38 to 50 grams per day in the Brazilian Northeast(2) In this region it was found that one-third of a large sample of children had vitamin A deficiencies serious enough to cause eventual blindness(3)

Teachers. Is there any evidence to indicate that teachers are not prepared to teach? According to the 1964 School Census 44% of Brazil's 300,000 teachers had no professional training (Item 14). Yet Brazil graduates roughly 30,000 qualified teachers per year. Thus, if over the past 10 years, all of these graduates had gone into and been retained in teaching, Brazil would today have 100% of its teachers qualified. But the fact is that only about half of normal school graduates go into teaching. The reasons for this appear to be several.

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(1) Document 1, page 30

(2) IGNND Northeast Nutrition Survey (The IGNND is a U.S. Government interdepartmental committee).

(3) Daily caloric intake in Western Europe, the United States and Canada is about 3,000.

Item 14

Qualifications of Primary School Teachers

in Brazil, 1 9 6 4

	OVERALL		URBAN		RURAL	
	Absolute	%	Absolute	%	Absolute	%
Total	289,865	100,0	184,796	63.7	105,069	36.3
With professional training	161,986	55.8	133,597	45.9	28,389	9.9
Without professional training	127,879	44.2	51,199	17.6	76,680	26.6

Source: Doc. 1, page 21

Normal school entrants are not screened in any way to determine their aptitude for teaching. The normal schools are located in urban areas where qualified teachers are in excess. On the other hand, there are few normal schools in rural areas where qualified teachers are in demand. Graduates from normal schools are typically unwilling to leave their comfortable urban life for the hard life of the rural areas. Even if they were willing local politicians may be unwilling to hire them. Virtually 100% of normal school graduates are from the middle-class but roughly 80% of their pupils are from the lower classes. Yet the normal school curriculum seems based on the theory that the pupils are from the middle class. Hence, the methods of instruction taught to normal school student are not adapted to the pupils she will later face.

Lastly, teachers are not prepared to teach because they are not provided with the necessary instructional materials.

Instructional materials. Is there any evidence that instructional materials are not sufficiently available? [A survey of schools in Brazil reveals that insufficient funds are used for instructional materials.](1) In 1964 the rich state of Rio Grande do Sul spent less than 40 cents per pupil on non-salary items. This problem has two aspects: First, teachers are not exposed to appropriate materials in their training, and second, such materials are not provided later when the teacher begins to teach. When materials are found they are generally purchased privately by children and teachers. Even with textbooks, the policy is to have children buy their own. Those who cannot afford to do so may be assisted by a local charity.

Curriculum. Is there any evidence that the curriculum is not sufficiently appropriate to the pupils? Studies done by INEP in cooperation with Unesco showed that Brazil's primary school curriculum is inappropriate for 80% of the pupils. (1) The curriculum is geared to the middle class which is about 20% of matriculation. Hence, the curriculum is too difficult at every level. According to J. Roberto Moreira a 7-year program is being crowded into 5 years.

This is especially true in the first grade, where children are expected to learn to read. US experience with underprivileged children indicates that such children cannot learn to read in the normal classroom in one year (hence Head start). Therefore, it is reasonable to suppose that in the present state of Brazilian primary education (2) one year's time is not sufficient to learn to read.

Time. Is there any evidence that the time available for instruction is insufficient? Most Brazilian primary schools are on split sessions averaging 2 to 4 hours per session. This gives the average Brazilian child about half the daily instructional time as the average Western European child. The Brazilian school year is 160 days. If we figure an average of 3 hours per day, this gives the average Brazilian child 480 instructional hours per year or 1,920 instruction hours in the four year primary course. In most of the developed countries the school day is 6 hours and the school year 180 days or 1,080 instructional hours yearly and 4,320 instructional hours in 4 years. This represents over twice the instructional time received by the Brazilian child (3). In spite of this the standard required for fourth-grade graduation in Brazil is not less than that of the developed nations.(3)

Space. Is there any evidence that there is insufficient space for instruction? There are about 125,000 primary schools in Brazil (See Item 9). They average about 2 classrooms per school or 250,000 classrooms. There are 10 million pupils. This means (if uniform distribution were possible) that all the children presently attending school could be accommodated on a full-time basis in classes of 40 or on a two-shift basis in classes of 25.

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(1) Reported in R & M, p. 206 and verified by EATEP.

(2) See discussion of teacher preparation availability of materials, and time-space limitation in other parts of this report.

(3) See Document 2, page 5

Actually, however, most urban schools are on three shifts with classes which average about 35 pupils(1) With 10 million pupils and 300,000 teachers there should be not more than 35 pupils per class on a full-time basis. How can we explain this discrepancy?

A logical explanation is that the schools are not located where the children are. There are too few schools in urban areas where the school population is most dense. On the other hand rural schools are often not filled to capacity. Some rural schools operate on a part-time basis. Of the 125,000 schools in Brazil only about 30% are in urban areas whereas 70% are in rural areas. However, school enrollment is about evenly divided --50% urban and 50% rural.

Measures to Improve the System

What measures can be taken to make the Brazilian primary education system work better?

Increase space/time. Instructional time and space can be increased by several measures. The elimination of repetition will increase the flow of students through the system. This will reduce the space taken up by unsuccessful students. The schools can be run on a year-round basis, thus utilizing the building for an additional three months (an increase in space of 25%). Unused capacity might be utilized by redistributing students from three-shift schools to one-shift schools through use of buses. Lastly, of course, new schools can be constructed. However, schools should only be constructed in areas where the demand for enrollment cannot be met in any other way.

Upgrade teachers. In view of the fact that 44% of the teachers have had no professional training, an in-service training program should be provided. In-service training takes precedence over pre-service training for two reasons: first, in service training has the greatest possibilities for immediate impact

(1) A pupil/teacher ratio of 35 on a two shift basis is recommended in the National Education Plan.

and second, only about half of the students in pre-service training (normal schools) ever in fact teach. However, this does not preclude attempts to improve normal schools. For in the long run normal school, must more realistically prepare teachers for the tasks they face. The geographical distribution of such schools should more precisely relate to local demand for teachers. The curriculum of the schools and the training which students receive should be better adjusted to the local needs of the children to be taught.

Regroup by age. At the same time the skill of teachers is being increased (by on-the-job-training), the difficulty of the teaching task should be reduced. This can be done in a number of ways. First of all, pupils can be grouped by age. This will reduce the range of individual differences within the classroom.

Differentiate the curriculum. Second, the curriculum should be differentiated by ability levels within the same age group. This will make it easier for the teacher to meet the needs of individuals within the class.

Provide instruction materials. Third, all necessary instruction material should be provided to both pupils and teacher. This will make it easier for the teacher to implement the curriculum.

Revise policies toward pupils. To insure that pupils will come to school and stay long enough to benefit several policies should be revised. A serious attempt should be made to enforce existing school attendance laws ("the stick behind"). This had best be implemented gradually and on a scheduled basis. It will require accurate attendance taking and truancy measures. At the same time voluntary school attendance should be encouraged ("the carrot in front"). This can be done by offering an attractive

school lunch and medical-dental services. The corollary of grouping pupils by age is a policy of keeping them grouped that way throughout their primary school course. This does not mean to say they cannot be grouped by ability for instruction in some subjects (i.e. reading and mathematics) but merely requires that they proceed through the primary course (4 year) by age group. Whether called "automatic promotion","progressive promotion," "age-grade grouping," or by some other lable, this will require that children proceed through school with their own age group. For if non-promotion is allowed, a wide span in each grade will reestablish itself--making difficult the the teaching task at every grade level. These several measures are summarized in Item 15.

Planning to Implement these Measures

How can these measures be programmed over a period of time? To answer this question we must examine the process of planning. Planning is a process of going by steps from the actual to the ideal over a period of time (see Item 16)

Actual and Ideal Situation. What then is the actual and ideal situation in Brazilian primary education? We can best describe this in terms of an input/output relationship. Actually, 10 million pupils aged 7-14 attend primary school. They are distributed by grades as follows: 52% in first grade, 23% in second grade, 15% in third grade and 10% in fourth grade (see Item 3). Yearly, 1 million pupils graduate and 1.5 million drop out.

Ideally, the 10 million children presently attending primary school would be aged 7-11 (no over-aged pupils). These pupils would be distributed more or less evenly among grades 1-4 (25% in each grade)* There would be negligible dropout or

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* This is a simplified model to be further developed in later reports.

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repetition. Consequently, there would be 2.5 million graduates

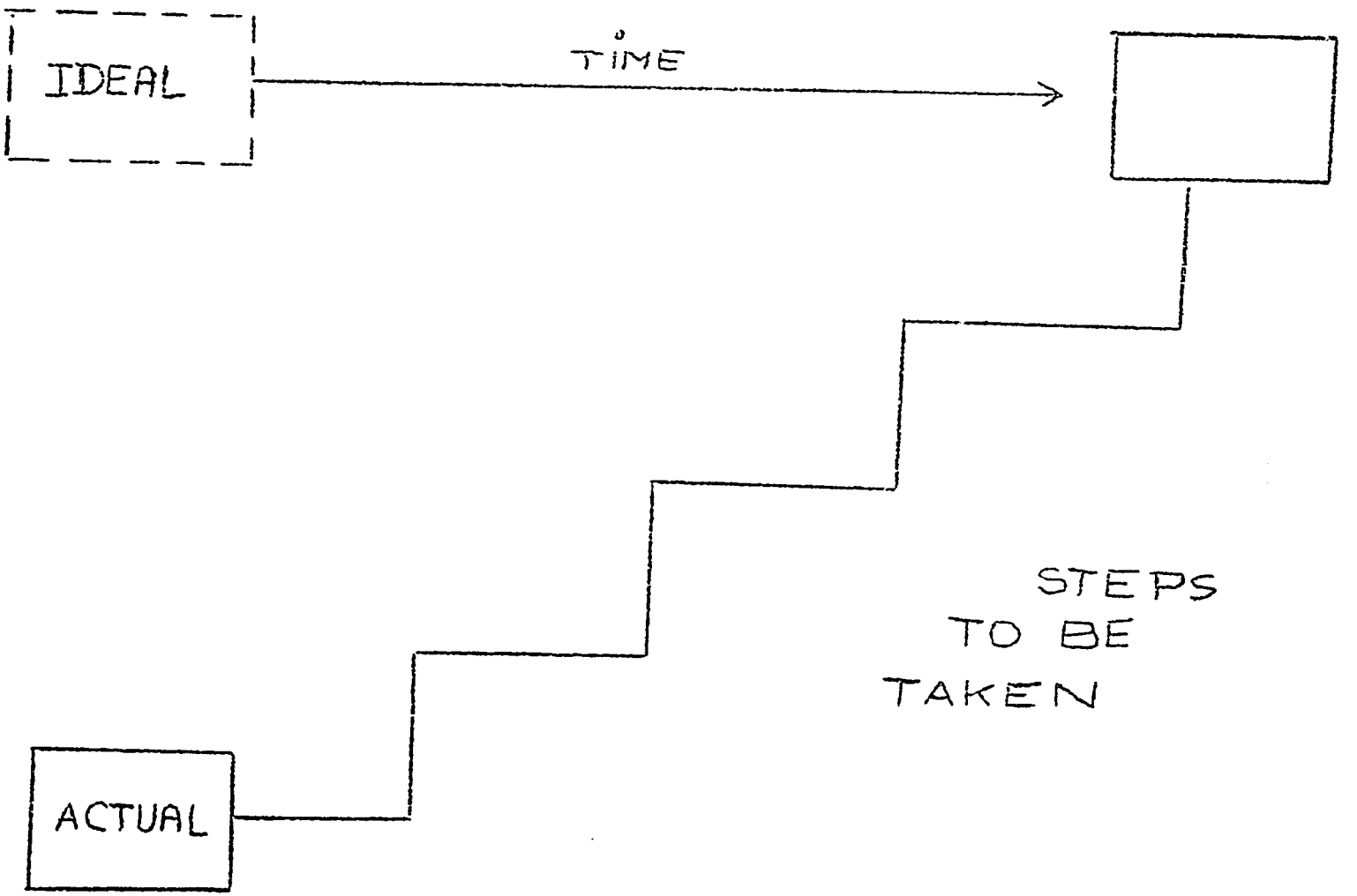
(Item 15)

Measures to Improve the Brazilian Primary Education System

Time/Space	Materials	Curriculum	Teachers	Pupils
Increase time and space by:	Redistribute the budget to:	Make the curriculum more teachable by:	Reduce the difficulty of the teaching task by:	Keep the pupils in school to ensure success by:
				(1) Establishing a progressive promotion policy.
				(2) Enforcing school attendance laws.
			(3) Providing a teacher self-improvement program.	(3)
		(4) Regrouping pupils by age	(4)	(4)
		(5) Differentiating the curriculum by ability levels.	(5)	(5)
	(6) Provide instructional materials to implement curriculum	(6)	(6)	(6)
(7) Eliminating repetition.			(7)	(7)
(8) Expand school year to include vacations.				(8)
(9) Redistribute population to fill unused capacity.				(9)
				(10)

ITEM 16

THE PLANNING PROCESS



Source: Rosson Cardwell, Dir. of the HRO of USAID-B

annually (see Item 17).

Steps to be taken. What steps must be taken to achieve this ideal? Logically, it could be done in five years (see Item 18). In the first year plans would be made to implement a policy of continuous progress at the end of that year. This should move most of the pupils who are in the first grade in one year (5 million) into the second grade the following year. Also during the first year a first grade program would be developed commensurate with the characteristics and abilities of 7-year-olds. Teachers and supervisors would be trained to implement this program. The plan would be explained to all other teachers to gain their support and acceptance. Later in the year (October, November) a campaign would be initiated encouraging parents to enroll their children at the age of 7 instead of later. At this time it should be widely publicized that parents not enrolling their children at age 7 will be subject to fines (or other appropriate penalties).

In second year an attempt would be made to fulfill the compulsory attendance laws for 7-year-olds. At the same time--to encourage voluntary school attendance--the following actions would be advised: offer a school lunch and medical-dental care, and offer a realistic program taught by properly oriented teachers having instructional materials for themselves and their pupils.

During 1968 an extension of this program would be developed for second graders to be initiated in 1969. Toward the end of the year a campaign would be launched encouraging parents to enroll their 7-year-olds and keep their 8-year-olds in school. At this time it should be advertized that parents not enrolling their children at age 7 or permitting 8-year-olds to drop out will be subject to fines (or other penalties). Teachers and supervisors would be trained to implement the new second-grade program.

This reform would continue in age "waves" until 1971 at which time: all pupils would be grouped by age, a new curriculum would be in effect, all teachers would be trained in the implementation of this curriculum, a policy of continuous progress would be enforced.

Item 17

Actual and Ideal Input/Output Relation

Actual

Input

10 million pupils
(66% of the
7-14 year olds)

Grade	Age	% of total Enrollment
1	7-14	52
2	8-14	23
3	9-14	15
4	10-14	10

Output

1 million graduates

1.5 million dropouts

Ideal

Input

10 million pupils
(100% of the
7-10 year olds)

Grade	Age	% of total Enrollment
1	7	25
2	8	25
3	9	25
4	10	25

Output

2.5 million graduates

ITEM 18

Five Year Plan

Step 1 (1967)

- Establish automatic promotion.
- Revise program for Gr. 1
- Orient first grade teachers to program.

Step 2 (1968)

- Enforce attendance - 7 yr. olds
- Revise program for Gr. 2.
- Orient second grade teachers to program.

Step 3 (1969)

- Enforce attendance - 8 yr. olds
- Revise program for Gr. 3
- Orient third grade teachers to program.

Step 4 (1970)

- Enforce attendance - 9 yrs
- Revise program for Gr. 4.
- Orient fourth grade teachers to program.

Step 5 (1971)

- Enforce attendance of 10 yr. olds.

- Automatic promotion
- Age-grade regularization
- Attendance enforcement
- Curriculum revision
- Teacher retraining

A "bulge" in the pipeline? When all the present first graders move into second grade in 1968 won't this cause a problem (a "bulge" in the pipeline)? Presently, pupils are distributed as follows (see Item 3):

1967

Grade	Enrollment	Graduating
1	5,200,000	
2	2,300,000	
3	1,500,000	
4	1,000,000	
	10,000,000	1,000,000

This present enrollment includes only about half of the 7-year-olds (see Item 1). In 1968 it is planned to include all of the 7-year-olds. There are about 2 million 7-year-olds (see Item 13). Hence, in 1968 there will be an additional 1 million pupils due to enrollment of all 7-year-olds instead of the usual 50%. This additional matriculation will be offset by the fact that 1 million pupils will graduate and leave the system. However, the children over 7 who enroll every year will increase 1968 enrollment by 1.5 million. These children will be grouped by age giving a 1968 enrollment as follows (dividing the 1.5 million evenly among grades 2, 3, and 4):

1968

Grade	Enrollment	Graduating
1	2,000,000	
2	5,700,000	
3	2,800,000	
4	2,000,000	
	13,000,000	2,000,000

This is a maximum enrollment figure. The reason for this is

that ordinarily a dropout of 50% occurs between the first and second grades (see Item 4). However, under a policy of continuous promotion dropout rates are not yet determined. Therefore, to be safe, we assume that 100% of the 1967 first graders will return to school in 1968. Likewise we assume that the children in the other grades will return the following year. We do this recognizing the fact that our plan calls for enforcement of school attendance only for 7-year-olds, in 1968. This gives us a maximum 1968 enrollment of 13 million.

Could present facilities accommodate 13 million pupils? Assuming two shifts and 35 pupils per class the present facilities (250,000 classrooms) could accommodate 13.5 million pupils. However, although there would appear to be sufficient space to accommodate the "bulge", it is clear that there will be other problems. Presently there are 5.2 million first graders and 2.3 million second graders. In 1968 there would be 2 million first graders and 5.7 million second graders. Presently, there are two first grades and two first grade teachers for every one second grade and one second grade teacher. In 1968 the situation would be reversed. This will call for orienting about half of the present first grade teachers to teach second grade in 1968. This problem will follow the "bulge". In 1969 the enrollment picture would be as follows:

1 9 6 9

Grade	Enrollment	Graduating
1	2,000,000	
2	2,000,000	
3	5,700,000	
4	2,800,000	
	12,500,000	2,800,000

In 1970 the enrollment picture would be as follows:

1970

Grade	Enrollment	Graduating
1	2,000,000	
2	2,000,000	
3	2,000,000	
4	5,700,000	
TOTAL	11,700,000	5,700,000

1971

Grade	Enrollment	Graduating
1	2,000,000	
2	2,000,000	
3	2,000,000	
4	2,000,000	
TOTAL	8,000,000	2,000,000

Finally, in 1971 the "bulge" would have worked its way through the system. At this time there would appear to be an actual decrease in the demand for physical facilities. However, this is a function of the fact that, to simplify our discussion, we did not take account of demographic growth. Actually, the number of 7-year-olds entering the system would not remain constant at 2 million but would tend to increase. If we take this factor into account then by 1971 the physical capacity of the present system should more or less perfectly accommodate 100% of the 7-11 year olds (on a two-shift basis with 35 pupils per classroom and no additional teachers) That is, at that time there should be 13.5 million children in Brazil aged 7-11 and present facilities can accommodate 13.5 million pupils (see Item 19).

Item 19

Estimate of the Brazilian Population

Aged 7-11, 1966 - 1970

Year	Number of children
1966	12,024,418
1967	12,383,678
1968	12,753,730
1969	13,134,858
1970	13,527,204

Source: Document 1, Table X

Phase-out-program. What happens to the children who are in the old program while the new program is being implemented (those ahead of the "bulge", see Item 20). A minimum program would call for their continuing exactly as before. However, the new factor affecting all the children in the system---the new promotional policy--would cause distortions.

To illustrate: In 1967 some pupils would normally be promoted (66%) and some retained (34%, see Item 2). Thus in 1968 only those promoted (66%) would normally go on to second grade. However, under the new system all children who were in the first grade in 1967 would be expected to go on to second grade in 1968.

This will create instructional problems for the second grade teachers. That is why a special orientation program will have to be conducted for teachers in the "old" program. A further recommended adjustment is to group these children by ability for instruction in the basic subjects (reading and arithmetic). Special materials can then be provided to work with these groups.

Extension of plan. Can this plan be extended? Yes, any one step can take one or more years without substantially altering the structure of the plan. This would then provide plans of 6 years, 7 years, and so on.

Achievement levels. What is the implication of this plan for achievement levels? Presently, all children regardless of age or ability are expected to learn to read in the first grade. In this sense the first grade is the most difficult of all grades. The achievement expectation in the other grades is less than that of the first grade. This is true in terms of the child's readiness and the difficulty level of the subject matter. This expectation consists of rigid requirements leading up to (see Item 21) the standard required for fourth grade graduation. In order to fit this unknown achievement level into our later discussion we will assign an arbitrary achievement score of 60 to this level (x=60).

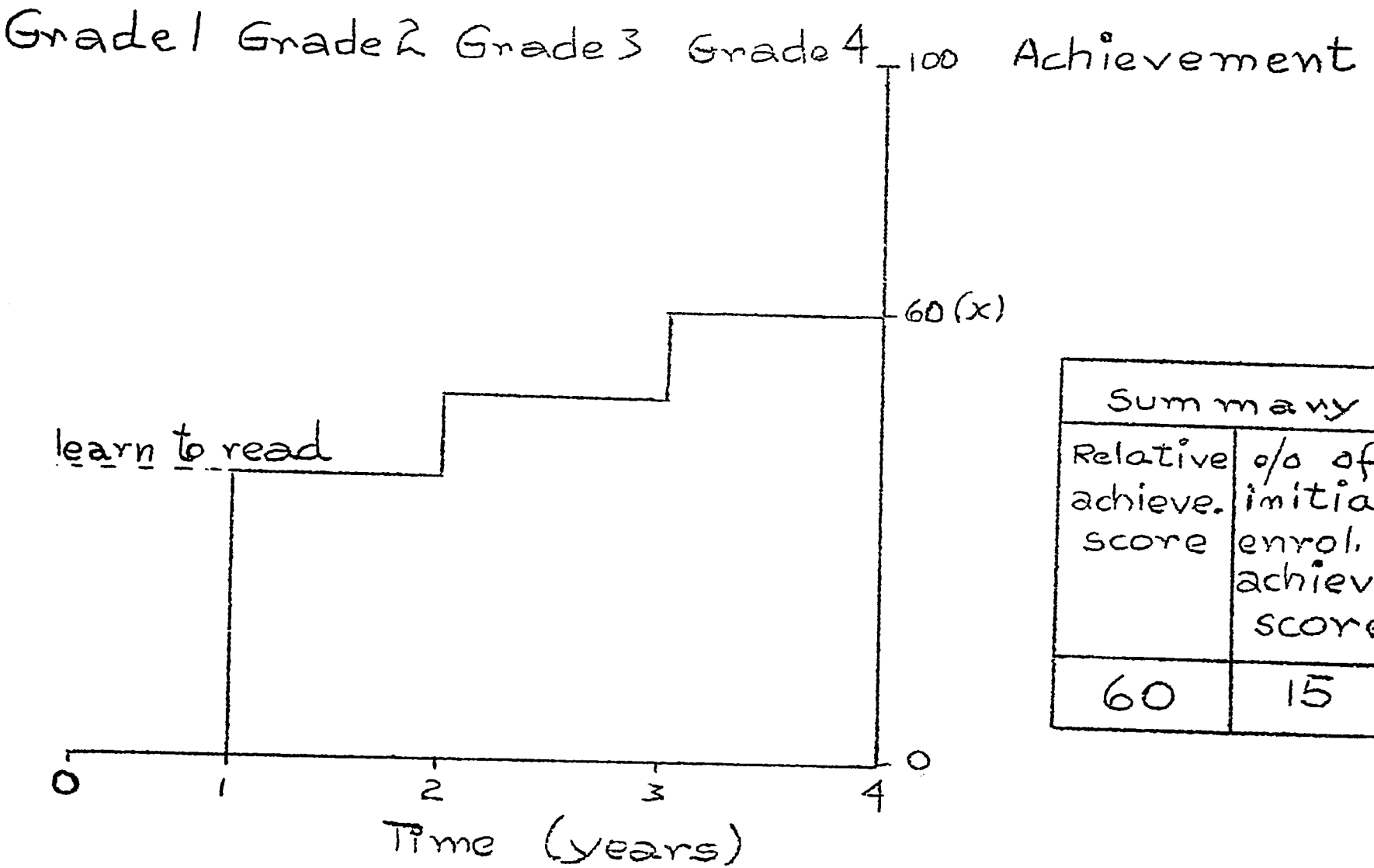
Item 20

PHASE OUT PROGRAM FOR FIVE YEAR PLAN

GRADE	AGE OF PUPILS			
	1968	1969	1970	1971
4	10-14	10-14	10-14	10
3	9-14	9-14	9	9
2	8-14	8	8	8
1	7	7	7	7

I T E M 21

A C T U A L T I M E/A C H I E V E M E N T C U R V E



Summary	
Relative achieve. score	o/o of initial enrol. to achieve score
60	15

Presently, since less than 15% of school starters complete fourth grade, less than 15% reach an achievement level of 60.

Ideally, if children were allowed to learn according to their ability their achievement scores would fall on a normal distribution curve. That is, 64% would achieve a medium amount, 16% less than this amount, and 16% more than this amount. Thus if children were grouped by ability levels for instruction in the basic subjects (reading and arithmetic) and by age level for everything else, we would then have four parallel courses.* This system would meet

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A four-track system was recommended by J. Roberto Moreira in his advice to EPEA, "Subsectoral Goals of Education" August 1966 unpublished paper.

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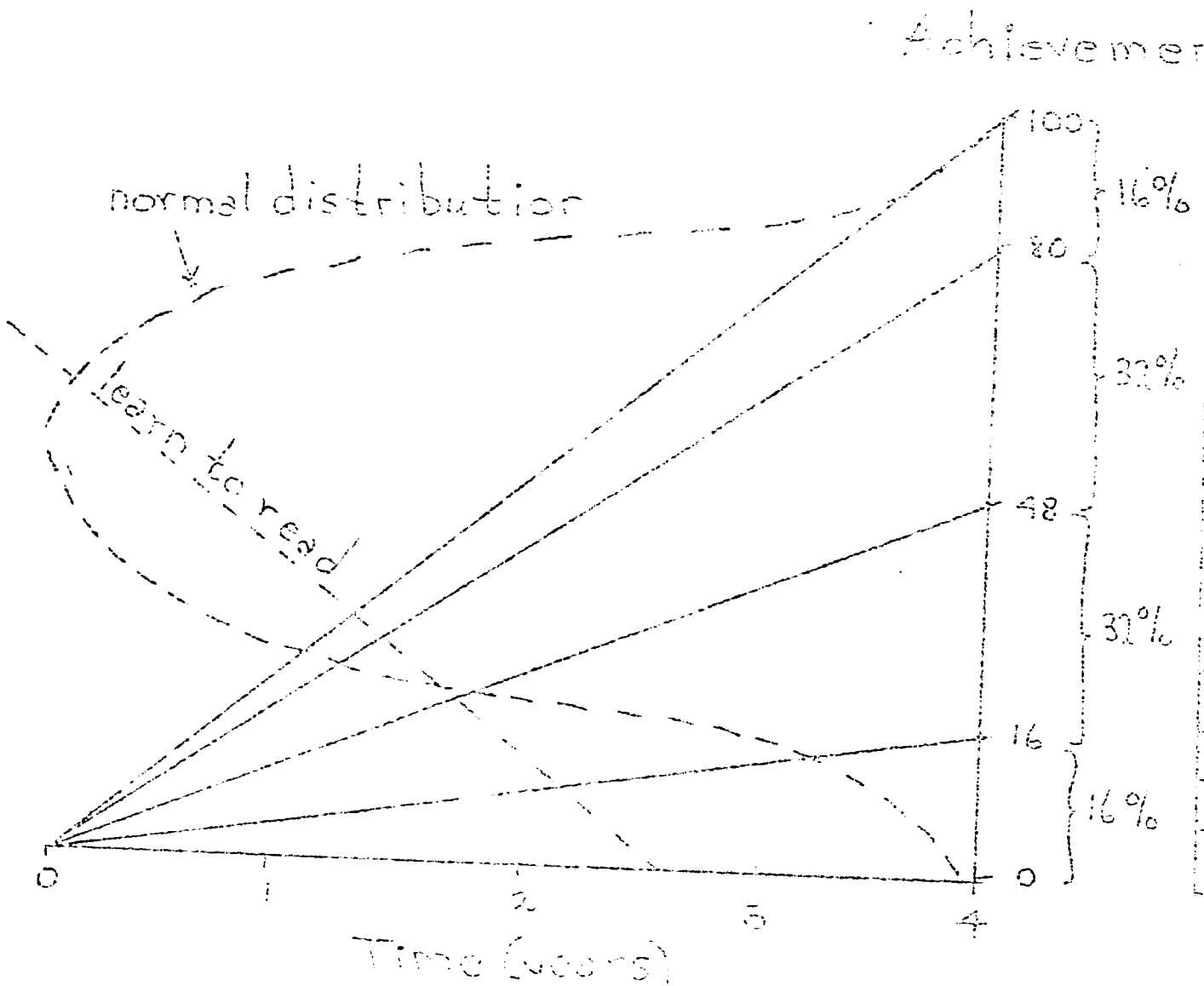
the instructional efficiency goal of ability grouping while at the same time meeting the social goals of age grouping.

According with the normal distribution curve the first(lowest) course children would achieve scores between 0 + 16 at the end of four year's work. In the second course achievement scores would range from 17 to 48; in the third course 49 to 80 and in the fourth course 81 to 100 (see Item 22). Thus, in the proposed system, if we take 100 school starters at random, at the end of 4 years all of them will achieve an average score of 50. Multiplying the number of children by the average score (100x50) we obtain a productivity index of 5000 (in pupil-score units).

On the other hand, since only 15 out of 100 school starters complete the fourth grade in the old system, we multiply 15 by the achievement score required for fourth grade completion (60) to get a productivity index of 900. It is admitted that those who do not complete fourth grade in the old system must nevertheless learn something. However, it seems reasonable to suppose that this additional amount would not be more than that learned by those who graduate. Hence, if we add an additional 900 to the productivity

Ideal Time/Achievement Curve



Summary	
Relative achieve. score	% of initial enrol. to achieve score
0-16	16
17-48	32
49-80	32
81-100	16

index of the graduates we can contrast an index of productivity of 1,800 for the old system with an index of 5,000 for the proposed system. Another interesting observation is that after 4 years of schooling in the proposed system (when all the necessary conditions described above have been met), 40% of the pupils achieve a level higher than that presently required for fourth grade graduation in the old system (see Item 23).

Limitations. It is recognized that a four-track system will apply only to large schools in urban areas. However, the principle of curricular differentiation by ability levels can be applied to all schools. Clearly, too, the proposed system has implications for any extension of primary education beyond the fourth grade (proposed fifth and sixth grade program).

Where to Work?

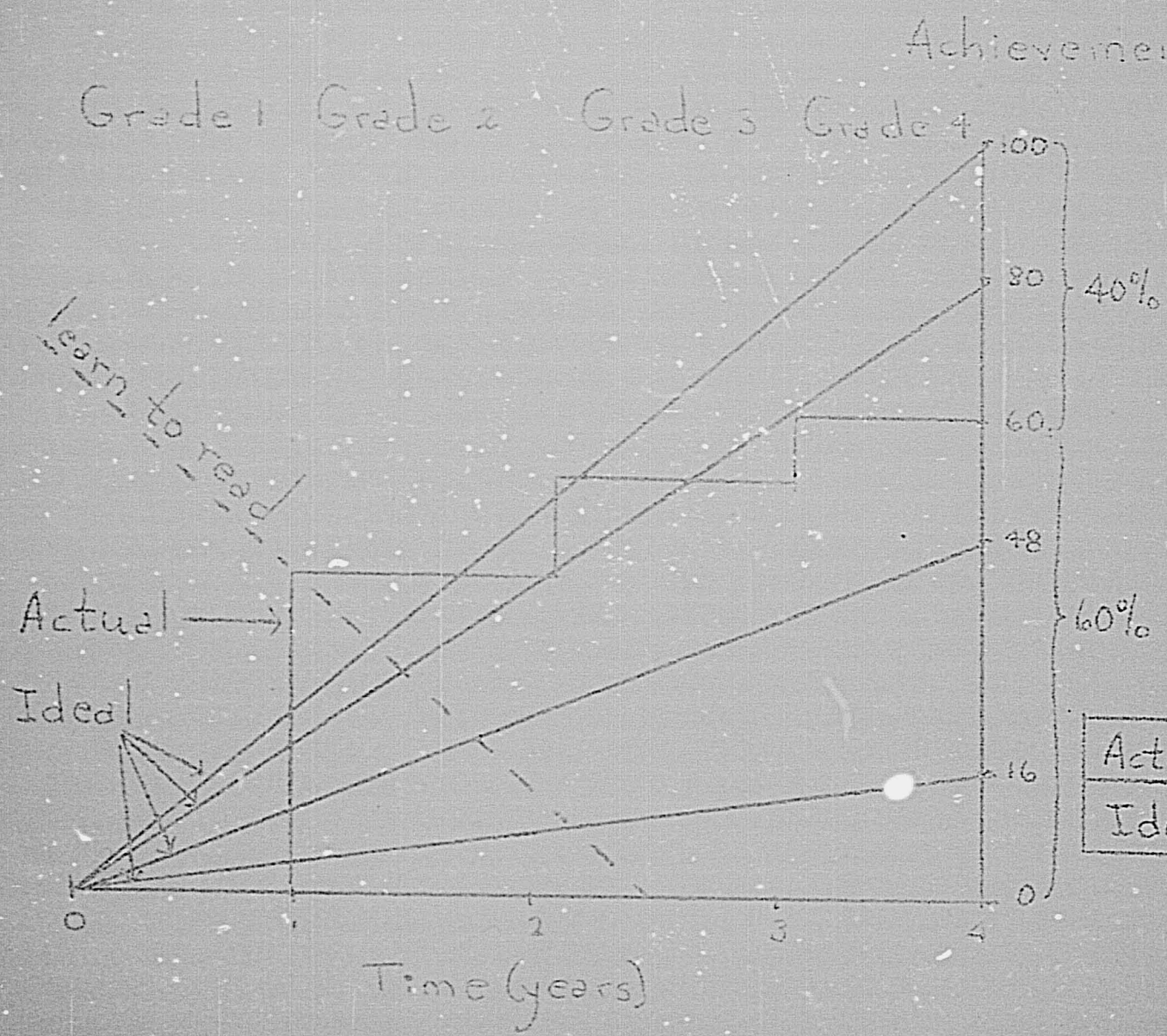
Where does EATEP propose to test this plan? If we multiply the potential enrollment in the ten most populous states by the dropout rate we arrive at the order of priority indicated in Item 24. Of these ten states EATEP has chosen to work with three: Rio Grande do Sul, Minas Gerais, and Pernambuco. (see Item 25).

The reasons include: the willingness of the state work with EATEP, the resources the state might contribute to the task, the possibilities this state offers to spread its influence regionally, and the recommendations of USAID/NE.

Adapting the plan. Will the basic plan have to be adapted to meet the needs of these states? Yes, it is expected that an adaptation will have to be made in each state. The plan calls for EATEP to proceed in accordance with the readiness of states to implement it; that is, first with Rio Grande do Sul, secondly with Minas Gerais, and thirdly with Pernambuco.

A first step in each state would be to describe the basic plan and collect the data necessary to adapt the plan to the state. A next step would be to get the state to agree to try the plan in some part of the state (probably an urban area).

Actual and Ideal Time/Achievement Curves



Summary		
	Relative achieve. score	% of initial enrol. to achieve score
Actual	60	15
Ideal	50	100

I t e m 24

Priority Rating of States for Attack on Flow Problem

Priority	S t a t e	Region	A Children Aged 7-11 (000)	B Do in 4-year course	A x B / 1000
1	Minas Gerais	E	1,373	84	115
2	Sao Paulo	S	1,736	61	106
3	Bahia	E	819	92	75
4	Paraná	S	653	85	56
5	Rio Grande do Sul	S	750	65	49
6	Pernambuco	Ne	523	91	48
7	Ceará	Ne	433	96	42
8	Rio de Janeiro	E	486	85	41
9	Maranhão	E	324	94	30
10	Sta. Catarina	Ne	350	78	27

Source: Based on 1964 School Census data presented in Document 1.

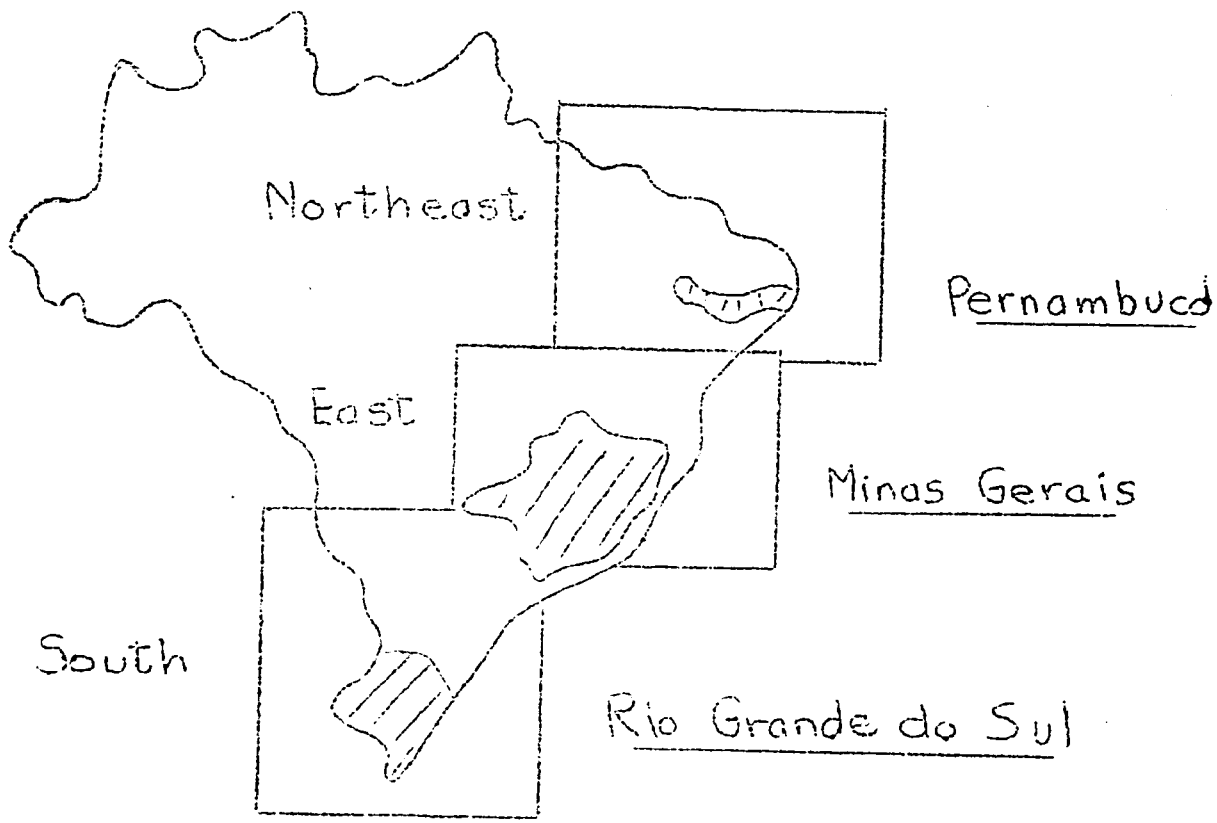
At the same time it would be necessary to secure a commitment to regularize the age-grade distribution starting with a campaign to enroll all 7-year-olds in 1968. This campaign should advertize a school lunch and medical-dental-program designed to encourage voluntary attendance as well as truancy measures to enforce the school attendance law.

Then it would be necessary to begin the curriculum revision for the new program, make provisions for supplying the necessary instructional materials, train the needed teachers (in-service) to implement the new program, and orient other teachers to phase out the old program. All other things being equal it can be reasonably expected that the time needed to implement this plan will diminish in successive states. The experience gained in one state can be applied to the next. For a summary of this implementation schedule see Item. 26

ITEM 25

Where does EATEP propose to test this plan?

- In three states
- In three regions

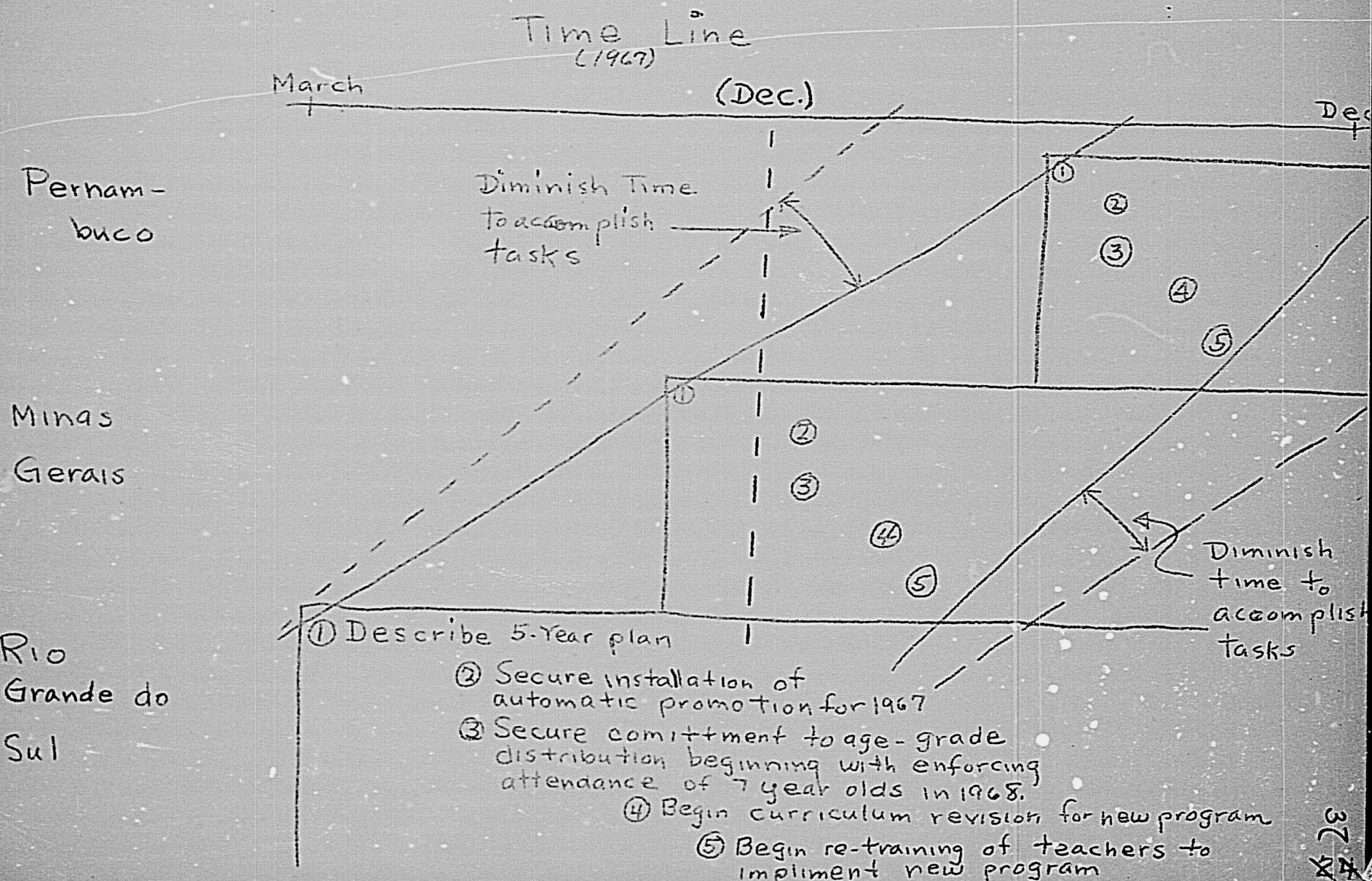


Because:

- These states have large primary school enrollments.
- These states have serious dropout and repetition problems.
- These states are ready and willing to work with EATEP.

ITEM 26

Schedule for Main Tasks



Elasticity of schedule. The schedule presented in Item 26 is the target schedule. Admittedly, this is a minimum schedule. That is, assuming complete cooperation, we expect to carry out all five steps in all three states by the end of December 1967. A maximum schedule would call for completion of all steps in all three states by December 1968. In this case the perpendicular dotted line indicates the work that would be done in 1967.

HW/dcd
July 3, 1967

Appendix A

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