

BIBLIOGRAPHIC DATA SHEET

1. CONTROL NUMBER
PN-AAH-1952. SUBJECT CLASSIFICATION (695)
JM20-0000-G355

3. TITLE AND SUBTITLE (240)

Educational television in El Salvador; final report

4. PERSONAL AUTHORS (100)

Cabrera, Rodrigo; Feild, William; Speagle, Richard; Mayo, John

5. CORPORATE AUTHORS (101)

Acad. for Educational Development

6. DOCUMENT DATE (110)

1979

7. NUMBER OF PAGES (120)

94p.

8. ARC NUMBER (170)

ES371.3358.C117

9. REFERENCE ORGANIZATION (130)

AED

10. SUPPLEMENTARY NOTES (500)

(In English and Spanish. Spanish, 115p.: PN-AAH-196)

11. ABSTRACT (950)

12. DESCRIPTORS (920)

El Salvador
 Educational television Teacher training
 Education, Elementary
 Education, Secondary
 Educational technology
 Instructional materials
 Project evaluation

13. PROJECT NUMBER (150)

519016800

14. CONTRACT NO.(140)

AID-519-196-T

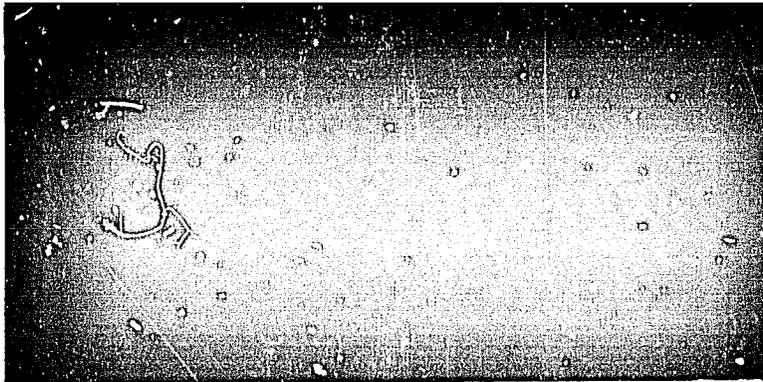
15. CONTRACT
TYPE (140)

16. TYPE OF DOCUMENT (160)

68

INSTRUCTIONS

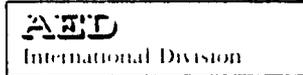
1. **Control Number** - Each document shall carry a unique alphanumeric identification number. Use uppercase letters, Arabic numerals, and hyphens **only**, as in the following example: PN-AAA-123.
2. **Subject Classification** - Each document shall carry a valid subject classification code used to classify the research/technical document under a general primary subject, secondary subject, and/or geographic index code. Use uppercase letters, Arabic numerals, and hyphens **only**, as in the following example: AA23-0000-G518.
3. **Title and Subtitle** - The title should indicate the main title of the document and subordinate subtitle (if any).
4. **Personal Authors** - Enter the author's name(s) in the following sequence, last name, first name (or initial), middle initial.
5. **Corporate Authors** - Enter the corporate author(s) name.
6. **Document Date** - Enter the document publication year(s) as follows: 1979 or 1978 - 1979.
7. **Number of Pages** - Enter the total number of pages followed by 'p' for pages and a period, i.e. 123p.
8. **ARC Number** - Enter the AID Reference Center catalog number.
9. **Reference Organization** - The reference organization must be a valid reference organization. Enter the name, acronym, or abbreviation.
10. **Supplementary Notes** - Enter any useful information about the document that is not included elsewhere. Each note should be enclosed in parentheses.
11. **Abstract** - Include a factual summary of the most significant information contained in the document.
12. **Descriptors** - Select the proper authorized terms that identify the major concept of the research/technical document and are sufficiently specific to be used as index entries for cataloging.
13. **Project Number** - This is a unique number(s) composed of the AID project number followed by a sub-project suffix.
14. **Contract Number** - Enter the AID contract number under which the document was produced.
15. **Contract Type** - Enter the type of AID contract which funded the research/technical activity responsible for producing the document.
16. **Type of Document** - Enter a valid code representing the document type.



AED

Academy for Educational Development, Inc.

Academy for
Educational
Development



EDUCATIONAL TELEVISION IN EL SALVADOR

FINAL REPORT

Prepared for
The U.S. Agency for International Development
El Salvador

by

Rodrigo Cabrera
William Feild
Richard Speagle
John Mayo

September 1979

This report was prepared by The Academy for Educational Development under
Contract No. AID-519-196.

1414 22nd Street, N.W.
Washington, D.C. 20037
(202) 862-1900
Cable: ACADED WSH 89660

TABLE OF CONTENTS

CHAPTER ONE

OVERVIEW

	<u>Page</u>
I. Background	1
II. Educational Television Between 1973 and 1979	2
A. Structure and Organization	2
B. Service Coverage	5
C. Budget Trends	5
CHAPTER TWO	
ANALYSIS OF THE EDUCATIONAL TV SYSTEM	
III. Instructional System	30
A. Background	30
B. TV Classes	30
C. Program Scheduling and Distribution	30
D. Curriculum	35
E. Teacher Training	37
F. Additional Printed Materials	37
G. Methodology Used in the Production of Materials	38
IV. Facilities	42
A. Introduction	42
B. Current Level of Operations	43
C. Facilities Overload and Equipment Deficiencies	43
V. Evaluation and Research	45
A. Introduction	45
B. Structure and Staffing of the Evaluation Section	46
C. Focus and Scope of Current Evaluation Activities	48
D. Utility of Evaluation Activities Within ETV System	49
VI. Effectiveness Aspects of ETV	50
VII. Unit Costs	51

..

CHAPTER THREE
RECOMMENDATIONS

	<u>Page</u>
VIII. Recommendations	58
A. Introduction	58
B. Instructional System	58
C. Evaluation and Research	62
D. Cost Accounting Recommendations	66
E. Recommendations for Upgrading Facilities	68
F. Facilitating Expansion to Cover Grades One to Nine	74
G. Cumulative Facilities Expansion	77
H. Additional Recommendations for Site and Facilities	78
I. Cost of Implementing Facilities	82
J. Target Population Considered in the Recommendations	87

OVERVIEW

I. BACKGROUND

The origins of educational television (ETV) in El Salvador are closely linked to the educational reform of 1967, which was introduced for the purpose of solving the following problems:

- High illiteracy rate.
- Lack of qualified teachers.
- Lack of a teacher training system.
- High unemployment rate.
- High dropout rate.
- Inability to maintain student enrollment.
- Insufficient classroom space and school equipment.
- Inadequate curriculum.
- Lack of teaching materials.
- Deficient administration.

The solution of priority problems--specifically, quality of instruction, teacher training, and extended coverage by educational services--represented the major innovation introduced by the reform. The quality of education was improved through the development of a new curriculum and the introduction of TV classes to support the teachers' classroom work; teacher training was centralized; and new teaching programs were designed. The programs included the teachers in grades 7 to 9 who, most likely, would use television as part of the new curriculum implementation. (Interestingly, 80 percent of the high school teachers included in the program were qualified to teach only at primary school level.) A new construction program provided adequate facilities for the extended services, and a center was established for the production of teaching materials (textbooks). In the final analysis, the reform became the basis for administrative reorganization in the educational sector.

Since its introduction, television has been a key factor in the success of the educational reform in El Salvador. The process of institutionalization, initiated in 1969, was completed in 1973. Since that time, many teachers and students have expressed their interest in ETV. Through the years, the work has concentrated on extended coverage and improved program quality. Several studies conducted to demonstrate the advantages of the system and the convenience of extended coverage were instrumental in the establishment of priorities.

II. EDUCATIONAL TELEVISION BETWEEN 1973 AND 1979

A. STRUCTURE AND ORGANIZATION

The ETV program operates under the supervision of the Ministry of Education. Its main objective is to contribute to the development and improvement of the quality of education through teleclasses. It also serves to stimulate the development and dissemination of information on different aspects of the national culture.

The ETV program is organized as follows:

- The Director's Office.
- Four administrative offices: management, production, technical operations (maintenance and operation of electronic equipment), and audiovisual aids.
- Special unit in charge of implementing the agreement with UNESCO/UNICEF-GOES.

These divisions include several service and operations units such as financial administration, personnel, educational services, coordination, programming, printing, graphic arts, transportation, maintenance, TV repair, documentation and library, movies, etc.

For purposes of financial control and operations, the ETV program has been divided into the following sub-programs:

<u>SUB-PROGRAMS</u>	<u>MAIN ACTIVITIES</u>
019 - Direction and administration	Plan, direct, and coordinate program activities in accordance with established objectives, making maximum use of human, financial, and physical resources.
	Supervise planning, organization, and implementation of new projects intended to reach all segments of the population through TV.
	Design new work methods and procedures.

Organize and direct plans to establish evaluation criteria which will serve to improve the technical quality of recorded classes and programs.

029 - TV program and movie
planning and production

Help to improve the quality of education offered to the Salvadoran people through the planning and production of cultural and educational TV classes and programs.

Produce educational movies for in-country and Central American distribution through the UNICEF-GOES project.

Design the teaching-learning process, and prepare quality teaching materials.

Maintain a continuous research system to update TV program design and pertinent teaching materials.

Produce educational TV programs, systematic and non-systematic cultural programs, and educational films for UNICEF.

Plan, design and produce TV classes for grades 1 and 2.

Plan and produce cultural programs for the general public, and advise teachers and continuing adult education programs.

039 - Audiovisual aids

Plan and produce audiovisual aids for use in program recording.

Conduct research on use of materials, production, classification, and filing or storage of audiovisual aids.

Produce 15-minute films for specific cultural programs.

049 - Operations and maintenance

Provide recording, editing, and broadcasting services for programs, and maintain recording equipment.

Record educational and cultural TV programs.

Improve service through personnel training.

Maintain broadcasting and reception equipment used in educational and cultural TV programs.

Broadcast cultural program modules.

Install and maintain TV sets.

Prepare stage sets for TV programs.

059 - Duplicating center

Establish a center where TV programs, recordings, and high quality films related to education and culture may be obtained, translated, duplicated, and distributed to OAS member countries in accordance with their interests and/or needs.

Obtain production rights.

Establish contacts with other countries producing movies and recordings.

Duplicate dubbed films for OAS member countries.

B. SERVICE COVERAGE

At present, El Salvador has 838 schools serviced by ETV. A total of 1,944 TV sets have been installed, and, on the average, 45 children per class attend the morning or afternoon sessions. In the aggregate, television reaches 223,350 students from grades 4 through 9.

C. BUDGET TRENDS

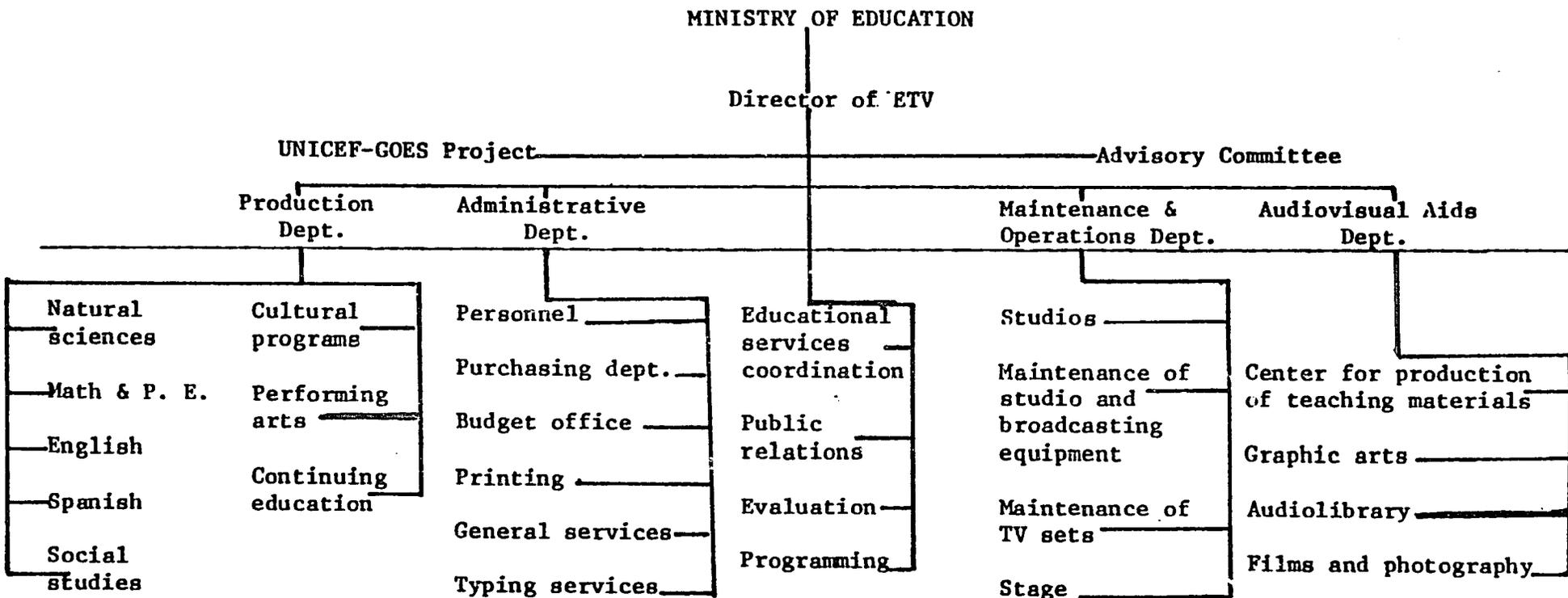
The cost history of ETV in El Salvador to date shows three features worth noting. First, the share of total expenditures of the ETV complex within the total budget of the Ministry of Education, of which ETV forms a part, continues to be quite small. The proportion has varied, except for the unusual year 1971, between 1.1 percent in 1969 and 2.9 percent in 1977 (Table 1). Lumpy, one-time investment outlays in certain years account for much of the variation.

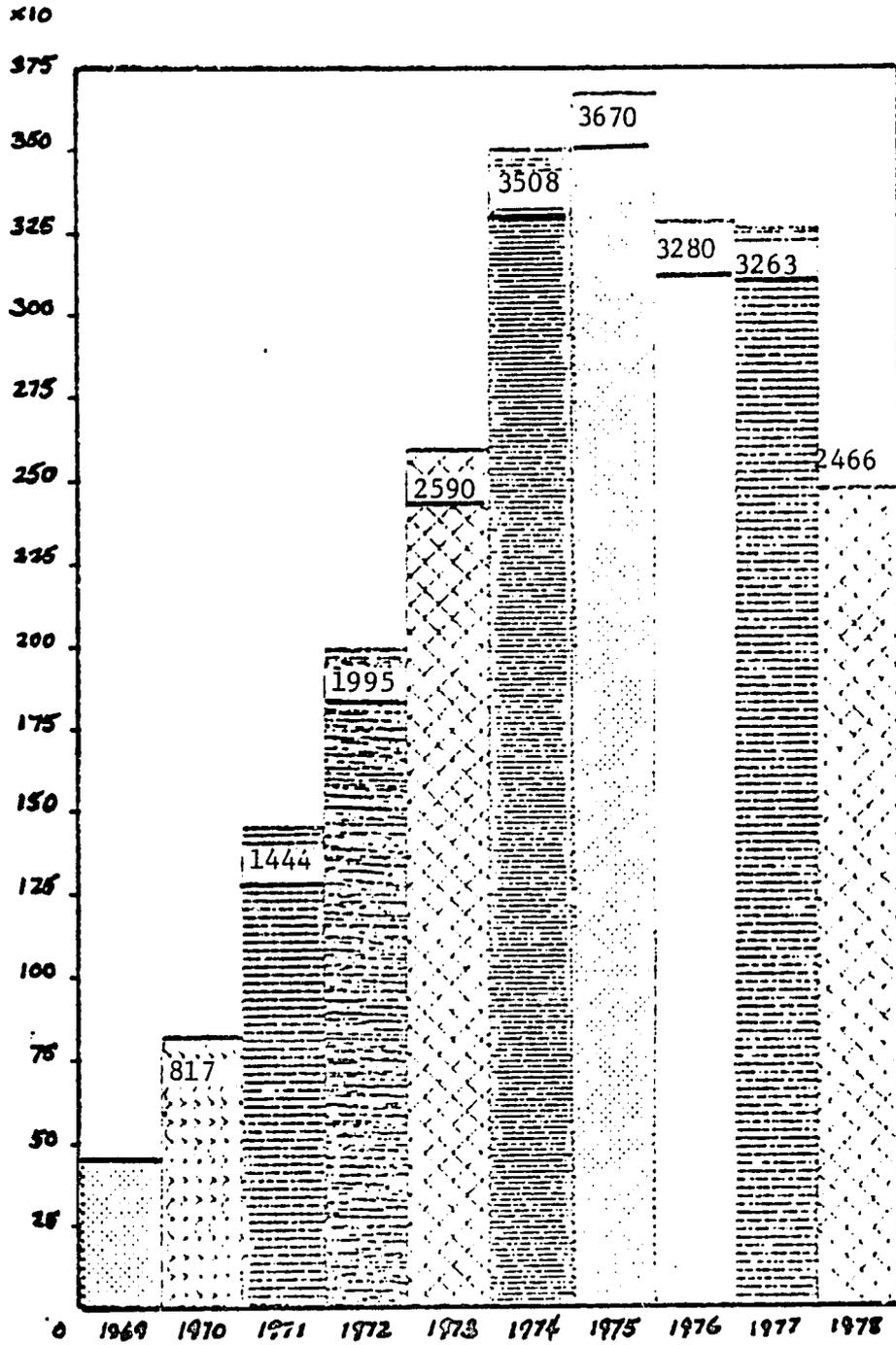
Second, El Salvador's own domestic funds as opposed to foreign grants and loans have financed the bulk of ETV expenditures, signifying the seriousness of purpose of the country in embracing this medium as part of the Educational Reform. Capital expenditures since 1972 have been quite small, but even in 1977, when they rose to over 4.4 million to purchase and install primary and secondary repeaters, the investment was met through domestic credits.

Third, operating costs, after rising during the start-up years, leveled off, and since 1976, after adjusting for the effects of inflation, have even declined in terms of money of constant purchasing power, or so-called "real dollars."

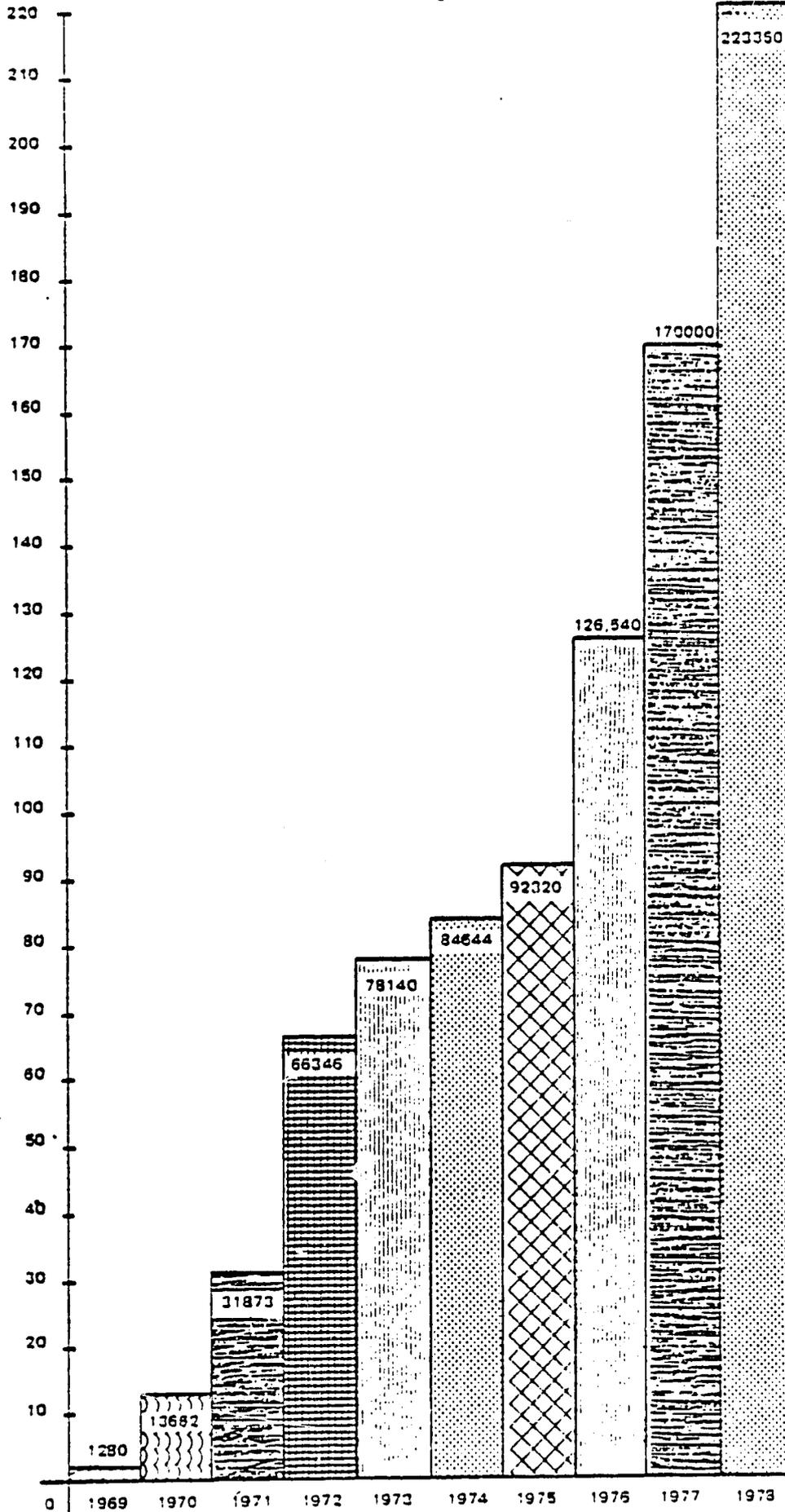
In this connection, the personnel history of ETV is of some interest. Between 1969 and 1979, total staff at the studio about tripled and stands currently at about 370 (Table 2). One would conclude, therefore, that capacity in manpower terms has expanded very considerably. The percentage must be taken with a grain of salt because, as noted below, the evaluation unit has come to be classified in the budget as part of administration.

ORGANIZATION CHART OF EDUCATIONAL TELEVISION

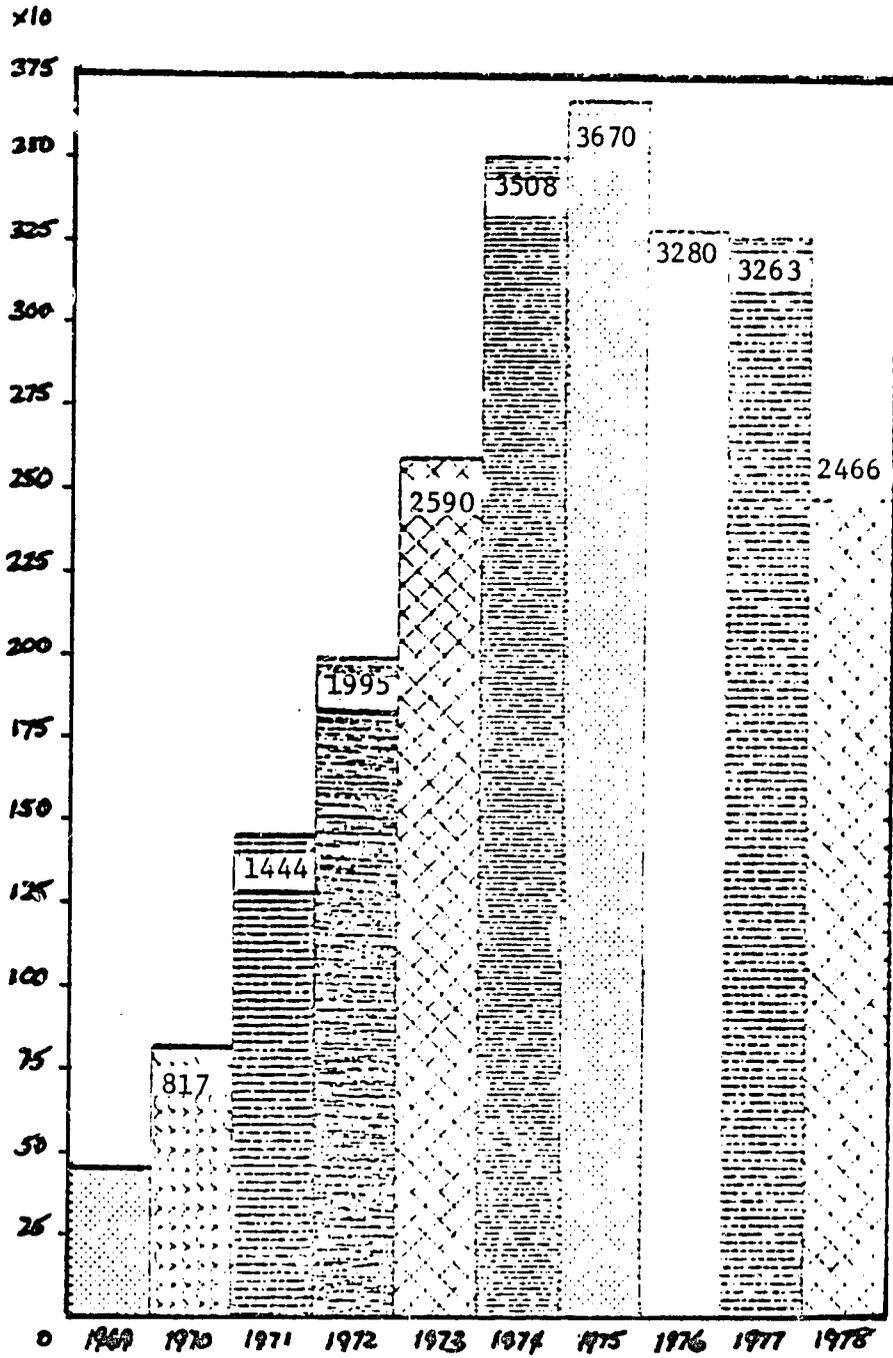




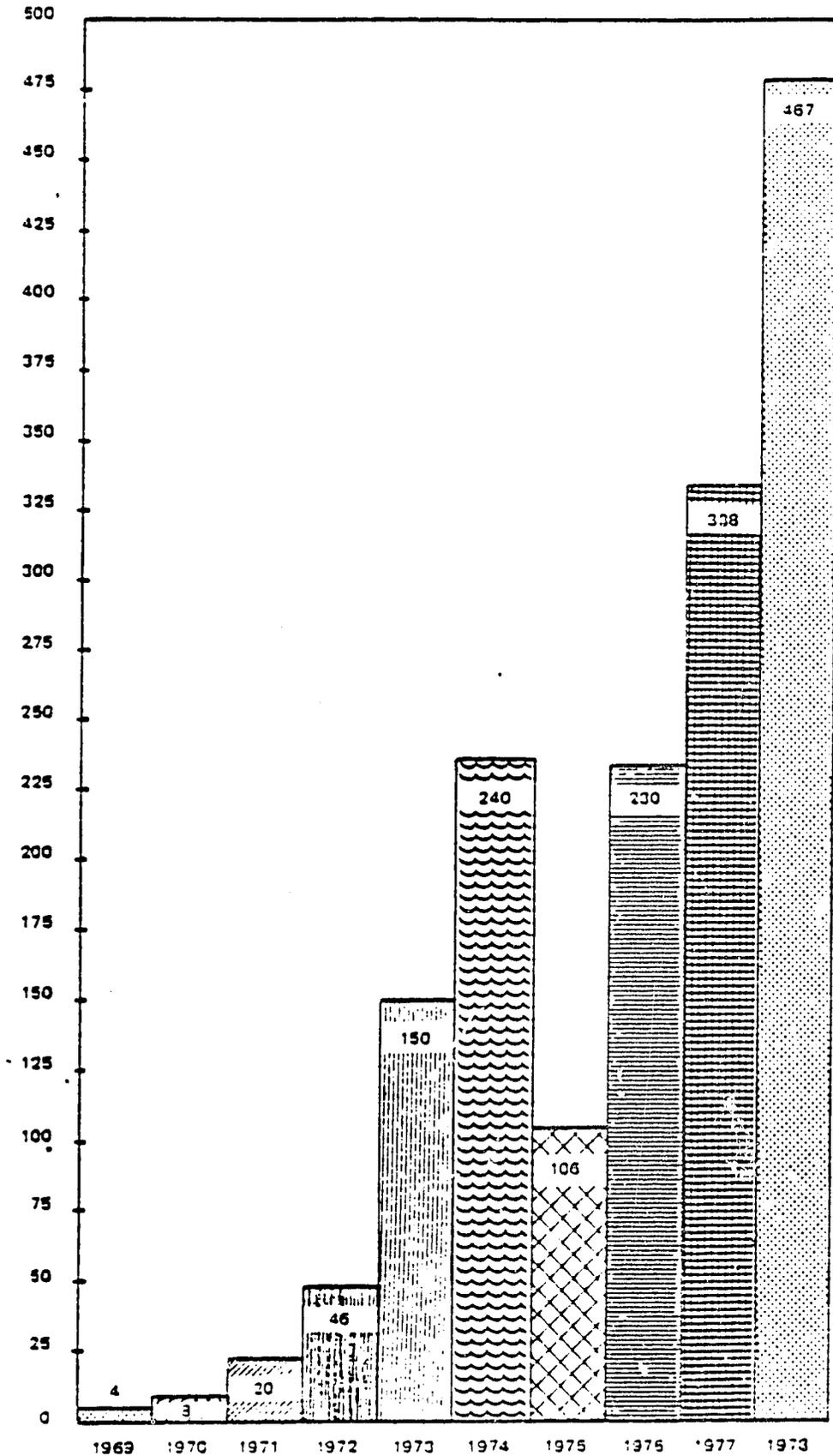
Number of TV classes broadcast for grades 2 and 3 of basic education.



Number of students serviced by educational television in grades 4 to 9.

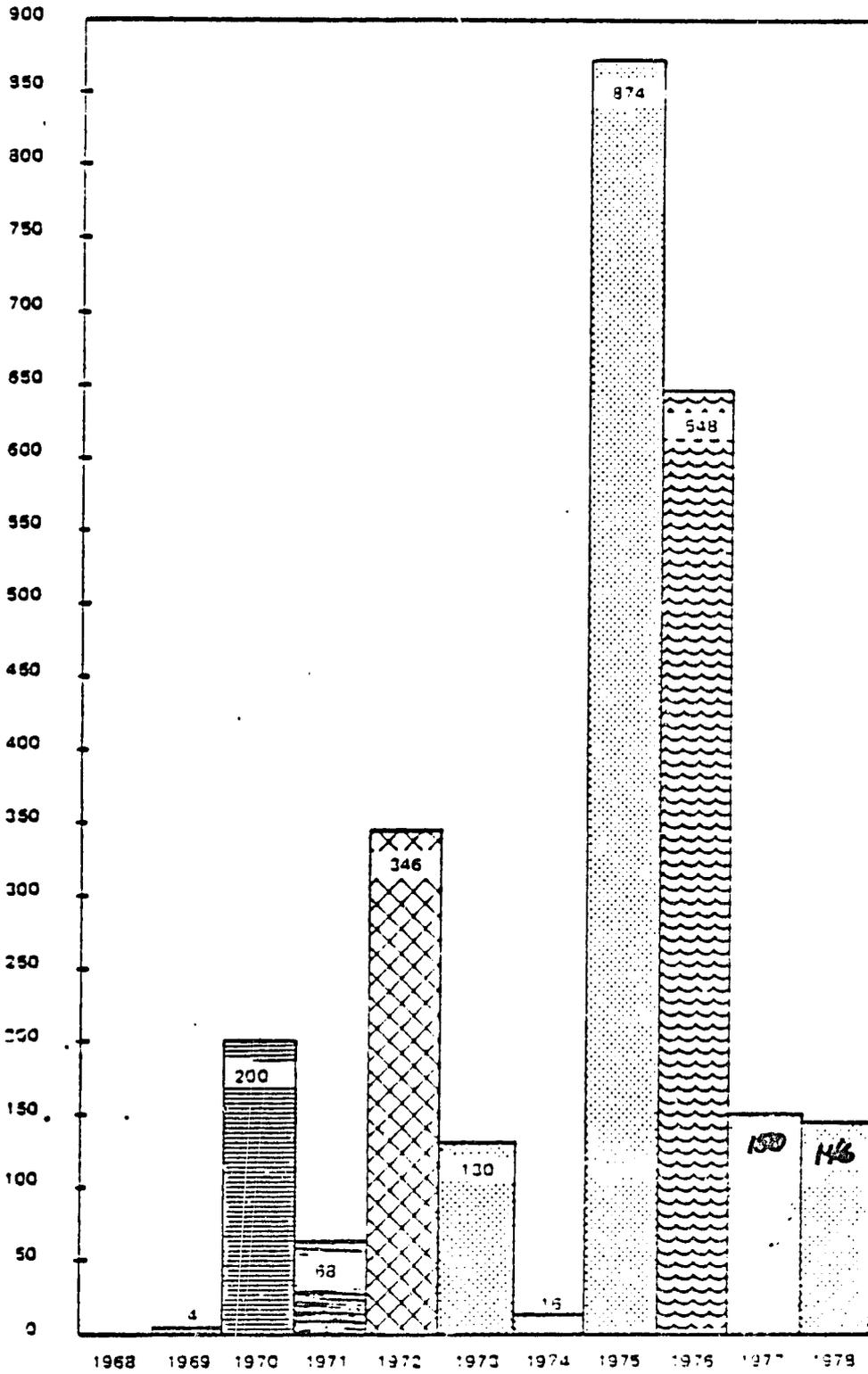


Number of TV classes broadcast for grades 2 and 3 of basic education.



Cultural programs broadcast for the general public

Note: The figures represent the number of programs per year. They must be multiplied by 10.



Number of TV sets installed in different educational centers around the country.

PRODUCTION OF TEACHING MATERIALS - WORKBOOKS

(SET OF FIVE BOOKS)

YEAR	7th GRADE	8th GRADE	9th GRADE
72	29.145	26.855	13.000
73	30.175	14.314	15.081
74	22.000	16.000	12.000
75	20.120	16.120	14.120
76	22.000	17.000	15.000
77	22.000	17.000	15.000
78	25.000	20.000	15.000
TOTAL .	170.440	127.289	99.201

PRODUCTION OF SUPPORT MATERIALS

Y E A R	TV CLASS GUIDES	JOURNALS/ PERIODICALS	NOTEBOOKS	OTHER MATERIALS	REFERENCE MATERIALS	PROGRAM CONTENT ANALYSIS	GRADES
69	250	250	—	—	—	—	7 ^o -
70	2.110	2.110	—	—	—	—	7 ^o - 8 ^o
71	5.056	5.056	—	—	—	—	7 ^o - 8 ^o -
72	7.157	7.157	—	<u>10.200</u>	—	—	7 ^o - 8 ^o -
73	20.700	20.700	—	20.700	—	—	7 ^o - 8 ^o -
74	20.600	20.600	32.500	20.700	—	—	4 ^o -7 ^o - 8 ^o -
75	40.575	40.575	25.000	—	—	—	4 ^o -5 ^o - 6 ^o 7 ^o - 8 ^o -
76	8.000	20.000	16.250	—	—	—	4 ^o -5 ^o - 6 ^o 7 ^o - 8 ^o -
77	16.000	15.150	—	—	20.400	38.000	1 D
78	51.000	51.000	9.000	51.000	—	—	1 D

PRODUCTION AND RECORDING OF TV CLASSES, EDUCATIONAL FILMS, AND
SPECIAL SERIES USED FOR TEACHER TRAINING

YEAR	TV CLASSES						NON-FORMAL EDUCATION					TOTAL
	4 ^o	5 ^o	6 ^o	7 ^o	8 ^o	9 ^o	CULTURAL PROGRAMS	VOCATIONAL EDUCATION	HIGHER EDUCATION	TRAINING PROGRAMS	SPECIAL PROGRAMS	
1983				226								226
1989				479							3	482
1990				427	415						7	849
1991				95	280	248		10			10	643
1992				100	115	180		17	16	342	13	783
1993	100			180	12	19		17		297	83	708
1994	29	161	15	161	165	21	15	20	17	200	17	821
1995	41	2	9	28	41	2	23			44	5	195
TOTAL	170	163	24	1696	1028	470	38	64	33	883	138	4.707

PRODUCTION AND RECORDING OF TV CLASSES

76 - 78

1976	1977	1978
344	253	78

PRODUCTION AND RECORDING OF PROGRAMS

NON-FORMAL EDUCATION 76-78

	SPECIAL PROGRAMS	CULTURAL PROGRAMS	NEWS BROADCASTS	16 MM FILMS	SLIDES	GENERATING NUCLEI
76	70	136		10	5	
77	81	166	47	17	16	
78	99	164	48	9	3	56
Total	250	466	95	36	29	56

TEACHERS TRAINED IN ETV USES AND TECHNIQUES

68 - 69

LEVEL	SUBTOTALS	COMMENTS
HIGH SCHOOL WITH TEACHING CERTIFICATION PLAN 2-3, 1977	566	The teachers' training school at Ciudad Normal is responsible for the courses. ETV broadcasts some of the courses in the curriculum.
SCHOOL OF HIGHER EDUCATION	97	
SPECIALIZATION	791	Specific studies during nine-month course included in the program.
SUMMER COURSES	990	
TOTAL	2.444	

ETV UTILIZATION BY TEACHERS, SCHOOLS,
AND BASIC EDUCATION IN THE
DIFFERENT DISTRICTS AND ADMINISTRATIVE AREAS

DIS- TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
004	271	111	89	22	19.21	160	62	98	61.25	26	7	19	73.07
006	121	40	5	35	87.51	81	81			19	13	6	31.57
007	103	85	71	14	16.47	18	9	9	50.00	20	6	14	70.60
018	172	111	91	20	18.01	61	21	40	67.21	50	40	10	20.00
019	118	77	24	53	68.23	41	8	33	80.48	35	21	14	40.00
021	318	193	173	20	10.36	125	84	41	32.08	58	49	9	18.75
023	58	39	12	27	69.23	19	3	16	84.21	34	24	10	29.41
057	58	46	33	13	27.65	11	6	5	45.45	32	23	9	28.12
071	57	41	31	10	24.89	16	2	14	87.5	33	28	5	15.15
073	78	62	29	33	53.22	16	2	14	87.5	37	34	3	8.10
	1435	806	558	247	55.69	548	278	270	49.27	344	245	99	28.77

Area 1

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
005	186	100	85	15	15.00	86	34	52	60.46	32	18	14	43.75
011	167	74	58	16	21.62	93	93			22	18	3	13.63
012	130	37		37	100	93	93			13	7	6	43.15
013	101	57	31	26	45.61	44	3	41	93.18	13	7	6	43.15
014	113	91	59	32	35.16	22	2	20	90.90	19	3	16	84.21
020	59	40	9	31	77.5	19	7	12	63.15	27	15	12	44.44
058	95	62	37	25	40.32	33	10	23	69.69	36	27	9	25.00
059	73	50	12	38	16.00	23	6	17	73.91	33	21	12	36.36
060	45	26	11	15	57.69	19	4	15	78.94	30	25	5	16.66
062	45	33	22	11	33.33	12	2	10	83.33	40	36	4	10.00

1014 570 324 246 43.15 444 254 190 42.79 265 177 87 32.83

Area 2

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								TOTAL	SCHOOLS		
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%		NO TV	TV	%
008	346	. 91	82	9	9.89	255	112	143	56.07	53	43	10	18.86
009	170	82	77	5	6.09	88	80	8	9.09	36	31	5	13.88
010	121	68	62	6	8.82	53	46	7	13.20	20	15	5	25.00
015	99	71	51	20	28.16	28	6	22	78.57	32	22	10	31.25
016	175	113	86	27	31.39	62	20	42	67.74	40	23	17	42.5
017	157	115	100	15	13.04	42	30	12	28.57	38	2	12	31.57
022	99	60	58	2	3.33	39	7	32	82.05	49	40	9	18.36
061	36	25	23	2	8.00	11	4	7	63.63				
063	62	39	14	25	64.10	23	6	17	73.91	35	26	9	25.71
064	33	25	19	6	24.00	8		8	100.00	35	28	7	20.00
	1298	689	572	117	16.98	609	311	298	48.93	338	230	84	24.85

Area 3

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
001	237	153	153			84	82	2	2.38	34	20	14	41.17
002	183	106	96	10	9.43	77	60	17	22.07	26	21	5	19.23
003	119	60	57	3	5.00	59	45	14	23.72	35	23	12	34.28
043	243	113	72	41	56.94	180	140	40	22.22	41	25	16	39.02
044	91	52	41	11	21.15	39	15	24	61.53	43	36	7	16.27
045	83	49	21	28	57.14	34	4	30	88.23	33	17	16	48.48
046	116	72	43	29	40.27	44	9	35	79.54	32	15	17	53.12
047	74	48	14	34	70.83	26	3	23	88.46	26	11	15	57.69
049	66	45	35	10	22.22	21	12	9	42.85	45	38	7	15.15
072	67	50	18	32	64.00	17		17	100.00	36	29	7	19.44
	1329	748	550	198	26.47	581	370	211	36.31	351	235	116	33.04

Area 4

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
024	139	89	15	74	83.14	50	22	28	56.	27	10	17	62.90
025	181	78	42	36	46.15	103	14	89	86.	28	13	15	53.57
026	163	90	59	31	34.44	73	46	27	36.98	27	13	14	51.85
027	84	66	53	13	19.69	18	8	10	55.55	37	23	14	37.83
028	93	67	30	37	40.29	26	4	22	84.61	48	34	14	29.16
029	116	78	50	28	35.89	38	2	32	84.21	40	25	15	37.50
030	69	44	21	23	52.27	25	9	16	64.	62	50	12	19.35
031	78	54	27	27	50.	24	7	17	70.83	47	36	11	23.40
032	24	9		9	100.	15		15	100.	37	26	11	29.72
035	76	50	50		100.	26	5	21	86.76	33	28	5	15.15

Area 5

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
033	131	64	61	3	4.68	67	64	3	4.47	23	21	2	8.69
034	52	37	37			15	15			23	20	3	13.04
036	130	73	45	28	38.35	57	29	28	49.12	26	7	19	73.07
037	58	42	21	21	50.00	16		16	100.00	28	19	9	32.14
038	56	53	47	6	11.32	3		3	100.00	35	27	8	22.85
039	67	39	28	11	28.20	28	3	25	89.28	41	30	11	26.82
040	50	31	23	8	25.80	19	2	17	89.47	35	26	9	25.71
041	74	46	46			28	22	6	21.42	33	27	6	18.18
042	36	24	23	1	4.16	12	7	5	41.66	25	21	4	16.
	654	409	331	78	19.07	245	142	103	42.04	269	198	71	

Area 6

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
050	90	52	5	47	90.38	38	4	34	89.47	27	15	12	44.44
051	50	38	25	13	46.42	12		12	100.00	42	36	6	14.28
052	38	24	4	20	83.33	14	2	12	85.71	30	23	7	23.33
053	48	29	5	24	82.75	19	4	15	78.94	36	29	9	23.68
055	109	54	12	42	77.77	55	40	15	27.27	29	8	21	72.41
056	159	129	77	52	40.31	30		30	100.	31	20	11	35.48
065	61	45	14	31	69.88	16	8	8	50.	60	54	6	10.
066	41	33	27	6	18.18	8	4	4	50.	56	53	3	5.35
067	69	51	10	41	80.39	18		18	100.	42	32	10	23.80
068	32	23	16	7	30.43	9	3	6	66.66	51	45	6	11.76

697

478

195

283

219

65

154

406

315

91

Area 7

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
054	63	43	43			20	17	3	15.00				
069	102	53	24	29	54.71	49	7	42	85.71				
070	49	33	18	15	45.45	16		16	100.				
074	167	86	61	25	40.98	81	64	17	20.98				
075	71	52	40	12	23.07	19	3	16	84.21				
076	79	50	46	4	8.00	29	20	9	31.03				
077	52	32	11	21	65.62	20		20	100.				
079	45	26	9	17	65.38	19	3	16	84.21				
081	62	36	17	19	52.77	26		26	100.00				
082	65	40	31	9	22.50	25	9	16	64.00				
	755	451	300	151	33.48	304	123	181	59.53				

Area 8

DIS-TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
083	126	63	39	24	38.09	63	32	31	49.20				
084	114	72	66	6	8.33	42	38	4	9.52				
085	66	51	40	11	21.56	15	7	8	53.33				
088	42	32	12	20	62.50	10		10	100.00				
089	47	26	6	20	76.92	21	3	18	85.71				
090	51	34	26	8	23.52	17	12	5	29.41				
091	34	28	28			6	6						
092	39	21	13	8	38.09	18	3	15	83.33				
093	52	39	18	21	53.84	13	2	11	84.61				
094	26	19	13	6	31.57	7	2	5	71.42				
	597	385	261	124	32.26	212	105	107	50.47				

Area 9

DIS- TRICT	TOTAL NUMBER OF TEACHERS	UTILIZATION								SCHOOLS			
		2nd GRADE	NO TV	TV	%	3rd GRADE	NO TV	TV	%	TOTAL	NO TV	TV	%
078	86	46	43	3	6.52	40	30	10	25.00	40	36	4	10.
080	98	64	39	23	35.93	34	9	25	73.52	43	30	13	30.23
086	43	27	16	11	40.74	16	10	6	37.50	50	45	5	10.
087	113	81	61	20	24.69	32	20	12	37.50	43	36	7	16.27
095	66	41	41			25	25			28	27	1	3.57
096	80	76	75	1	1.31	4	2	2	50.00	37	36	1	2.70
097	30	20	20			10	10			42			
098	90	60	44	16	26.66	30	26	4	13.33	55	52	3	5.45
099	51	39	11	28	71.79	12	6	6	50.00	42	39	3	7.14
100	17	11	11			6	6			19			
674		462	360	102	22.07	209	144	65	31.10				

Area 10

TABLE 1

BUDGETS OF ETV AND MINISTRY OF EDUCATION, 1969-79

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
ETV Budgets (£ thousands)											
Operating Expenditures	640	897	1,060	1,053	1,271	2,798	2,946	4,156	4,266	4,649	4,649
Capital Expenditures	110	600	4,400	1,100	1,700	700	363	-	4,400	237	480
Total	750	1,497	5,460	2,153	2,971	3,498	3,309	4,156	8,666	4,886	5,129
<u>Ministry of Education</u> <u>(Millions of £)</u>											
Operating Expenditures	64.8	70.2	80.1	91.1	97.3	129.4	141.5	180.6	210.9	248.5	263.0
Total Budget	66.8	74.9	111.3	126.8	126.6	170.8	191.9	250.9	303.0	337.5	293.5
<u>Ratios: Total ETV to</u> <u>Total MinEd Budget</u>	1.12	2.00	4.91	1.69	2.34	2.04	1.72	1.65	2.85	1.44	1.74

TABLE 2

STAFFING PATTERNS OF ETV, SELECTED YEARS

	<u>1969</u>	<u>1974</u>	<u>1979</u>	<u>1969</u>	<u>1974</u>	<u>1979</u>
<u>Personnel Classification:</u>						
Administraton	16	40	116	14	16	32
Production	99	215	252	86	84	68
TOTALS	115	255	368	100	100	100

ANALYSIS OF THE EDUCATIONAL TV SYSTEM

III. INSTRUCTIONAL SYSTEM

A. BACKGROUND

Educational television was established with the objective of providing adequate instruction for grades 2 to 3 (basic cycle). For the purpose of program analysis, education has been considered as an integrated system consisting of (a) TV classes, (b) curriculum, (c) teaching materials, and (d) teachers and supervisors.

B. TV CLASSES

TV classes are part of a general education program aimed at supporting classroom work and curriculum development in grades 4 through 9. The basic courses broadcast for grades 4 to 6 include natural sciences, Spanish, mathematics, and social studies; for grades 7 to 9, English is added to the above. TV classes are produced by teams of specialized teachers who are experienced in TV production techniques.

C. PROGRAM SCHEDULING AND DISTRIBUTION

This section includes comparative tables which contain information on program scheduling and distribution in the different ETV channels. The tables show an almost mathematical program arrangement which overlooks the difficulties encountered in curriculum development for grades 2 to 3. Obviously, the curriculum contains areas more or less difficult for both teachers and students, and those areas should be dealt with accordingly in TV classes.

The present program schedule is closely related to the origins of ETV (educational reform and curriculum). In the planning stages, it was believed that, regardless of the grade, each course included in the program should be given equal time. In addition, the teachers were neither acquainted with the new curriculum nor sufficiently qualified to implement it. By considering each course individually, TV programs made classroom work easier and introduced uniformity in the quality of instruction of all courses, guaranteeing, at the same time, the curriculum implementation within specific deadlines.

After nine years of broadcasting teleclasses, no modifications have been introduced except for the generating nuclei, which are presently being used on an experimental basis. The continuous use of the same model for TV classes has created a negative factor which affects the interest of teachers in

1979 WEEKLY BROADCASTS FOR 4th GRADE - Channel 8

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS	20'		20'			40'	1280'
SPANISH	20'			20'		40'	1280'
NATURAL SCIENCES		20'			20'	40'	1280'
SOCIAL STUDIES			20'		20'	40'	1280'
TOTAL	40'	20'	40'	20'	40'	160'	4 120

1979 WEEKLY BROADCASTS FOR 5th GRADE - Channel 8

(32)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS		20'		20'		40'	1280'
SPANISH		20'			20'	40'	1280'
NATURAL SCIENCES			20'		20'	40'	1280'
SOCIAL STUDIES		20'		20'		40'	1280'
TOTAL		60'	20'	40'	40'	160'	4 120

1979 WEEKLY BROADCASTS FOR 6th GRADE - Channel 8

(32)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS	20'		20'			40'	1280'
SPANISH			20'		20'	40'	1280'
NATURAL SCIENCES		20'		20'		40'	1280'
SOCIAL STUDIES	20'			20'		40'	1280'
TOTAL	40'	20'	40'	40'	20'	160'	4 120

1979 WEEKLY BROADCASTS FOR 7th GRADE - Channel 10

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS				20		20'	640
SPANISH		20'			20'	40'	1280'
NATURAL SCIENCES		20'			20'	40'	1280'
SOCIAL STUDIES		20'		20'		40'	1280'
TOTAL	20'		20'			40'	1280'
TOTAL	20'	60'	20'	40'	40'	180'	5760'

1979 WEEKLY BROADCASTS FOR 7th GRADE - Channel 10

(32)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS	20'					20'	640
SPANISH			20'		20'	40'	1280'
NATURAL SCIENCES		20'		20'		40'	1280'
SOCIAL STUDIES	20'			20'		40'	1280'
TOTAL		20'	20'			40'	1280'
TOTAL	40'	40'	40'	40'	20'	180'	5760'

1979 WEEKLY BROADCASTS FOR 9th GRADE - Channels 8 and 10

(32)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SUBTOTAL	SCHOOL YEAR
MATHEMATICS					20'	20'	640
SPANISH	20'			20'		40'	1280'
NATURAL SCIENCES			20'		20	40'	1280'
SOCIAL STUDIES	20'		20'			40'	1280'
TOTAL	20'					20'	640
TOTAL	60'		40'	20'	40'	160'	5120'

TV utilization for curriculum development. In general, ETV users complain that classes are repetitious year after year, that there is little variation, and that some teachers are manipulating the curriculum.

The teachers' complaint against the use of TV classes is greatly significant in that it serves to indicate that TV classes are considered an external element, which is helpful in general curriculum implementation, but of little value in dealing with particularly difficult parts of the curriculum or in improving the quality of education.

The preceding paragraphs serve to illustrate the main reason for including TV classes in most of the curricula for each course and each area. By modifying the curriculum for grades 2 to 3 and establishing an evaluation system, the makeup, scheduling, and basic contents of the TV class would change periodically in order to meet the ever-changing requirements of teachers and students.

The evaluation of ETV activities conducted by the Academy for Educational Development between 1969 and 1972 was conclusive and allowed the development of an evaluation system which includes all the necessary elements. This system, designed for the benefit of TV class programmers, became the responsibility of national technicians. ETV's research and evaluation division has encountered many difficulties in the development of an efficient evaluation system, mainly because the basic aspects of the questions involved have not been handled scientifically. All of these factors have affected the quality and upgrading of TV classes.

The lack of TV class evaluation and quality control systems has caused stagnation and has influenced the degree of acceptance by the teachers. The changes introduced are merely theoretical in that no reliable feedback mechanism has been established within the system, and, therefore, the programmers simply assume the advantages of the model, and the adjustments introduced only respond to curricular changes and/or to evident methodological deficiencies. The elements needed for class modification can only come from a sound and thorough evaluation. This has not yet been undertaken in El Salvador's ETV.

The introduction of generating nuclei as substitutes and/or supporting features for TV classes is the result of assumptions and evaluation models introduced by programmers without systematic planning. The generating nuclei consist of a group of promotional courses broadcast several times a day in support of curriculum development. The first difficulty encountered with their

SPANISH

AREAS	AREAS	AREAS
6	6	6
GN 4-5	GN 4-5	GN 4-5

AREAS	AREAS	AREAS
5	5	5
GN 4-5	GN 4-5	GN 4-5

SOCIAL STUDIES

AREAS	AREAS	AREAS
4	4	4
GN 4-5	GN 4-5	GN 4-5

AREAS	AREAS	AREAS
4	4	4
GN 4-5	GN 4-5	GN 4-5

NATURAL SCIENCES

AREAS	AREAS	AREAS
5	5	5
GN 4-5	GN 4-5	GN 4-5

AREAS	AREAS	AREAS
5	5	5
GN 4-5	GN 4-5	GN 4-5

MATHEMATICS

AREAS	AREAS	AREAS
5	5	5
GN 4-5	GN 4-5	GN 4-5

AREAS	AREAS	AREAS
5	5	5
GN 4-5	GN 4-5	GN 4-5

4th GRADE 5th GRADE 6th GRADE

ENGLISH

AREAS	AREAS	AREAS
6	6	6
GN 4-5	GN 4-5	GN 4-5

N/9 lasts 30 minutes.

7th GRADE 8th GRADE 9th GRADE

introduction is their failure to meet the needs and desires of the students; and, the second is the promotional nature of the system itself. In general, TV classes have been designed to support the formal education system for grades 2 to 3. The introduction of promotional elements changes the objectives of the system, thus demanding its complete revision.

D. CURRICULUM

Educational television is used in the official programs of the Ministry of Education for grades 2 to 3. The difficulties encountered in the implementation of the present ETV curriculum are the same pointed out by previous analyses. This study does not call for an analysis of the official curriculum, and, therefore, only the most relevant issues related to curriculum development through TV will be discussed.

The Ministry of Education has designed a so-called "concentrical" curriculum which will enable the students to develop an analytical ability through the joint study of courses or areas. In other words, the curriculum or a particular course may be developed during one or more cycles at a degree of intensity adjusted to the learning ability of the students. Thus, the subject under study is continuously analyzed in increasing depth throughout the sessions of different periods.

The successful development of a model for concentrical curricula depends on the ability of the teachers and the efficiency of the teaching materials used; otherwise, the curriculum becomes repetitious and the students are forced to study exactly the same topic during courses lasting two or more years.

For the purpose of helping school teachers to develop the curriculum and to understand the concentrical system, the ETV programmers analyzed the objectives of the courses contained in the curriculum, in a horizontal organization model, which allowed immediate identification of each course in relation to former or future grades. The analysis helped to avoid repetition of contents by the teachers.

Finally, it should be noted that ETV must follow the official curriculum of the Ministry, and that any changes introduced are beyond the control of the programmers and/or evaluators of the ETV system.

SEQUENTIAL DEVELOPMENT OF AN OBJECTIVE IN THE
CURRICULUM FOR SOCIAL STUDIES

<u>4th GRADE</u>	Establishment of the basis for understanding the concepts of nationality and Central American unity.
<u>5th GRADE</u>	Nationality and international understanding.
<u>6th GRADE</u>	Nationality, worldwide understanding and cooperation.
<u>7th GRADE</u>	Intensification of concepts of nationality and Central American unity.
<u>8th GRADE</u>	Intensification of concepts of nationality, Central American unity, and inter-American understanding.
<u>9th GRADE</u>	Reaffirmation of the concepts of nationality, Central American unity, and worldwide cooperation.

E. TEACHER TRAINING

Teacher training through TV is jointly accomplished with the official teachers' training school at Ciudad Normal. The programs for which ETV is directly responsible are broadcast free of charge, and have been divided as follows:

- Teaching of natural sciences (15 programs).
- Use of voice in teaching (9 programs).
- Solution of school problems (15 programs).

ETV participates in the training programs offered in Ciudad Normal, through orientation and information sessions on the courses broadcast on channels 8 and 10. This is classified as indirect training in view of the fact that the organization of the training program is the responsibility of the school operating at Ciudad Normal.

ETV's cultural programming includes several broadcasts on teacher training which are not specifically planned, and, therefore, their impact and audience are unknown.

In summary, the systematic training of teachers in TV techniques and uses is not ETV's responsibility and the programs broadcast especially for the teachers are not geared to a specific training plan.

F. ADDITIONAL PRINTED MATERIALS

The books available through the program have been specifically prepared for both teachers and students. The books intended for the teachers contain sufficient up-to-date information on the contents of the study programs for each grade, and provide orientation on the methodology used in teaching different courses.

The students use workbooks which contain current information on the courses studied, and enough drills and essays to practice what has been previously learned.

The books used by the teachers are distributed free of charge to the schools. Once entered in the inventory of each institution, they are made available to educators. The workbooks used by the students are sold at the Tax Administration Office in the different state capitals. Each set of five books costs ¢ 13.00 (equivalent to \$5.20). These books have been widely accepted because:

- They are inexpensive and distributed free of charge. (A large number of teachers travel from distant places to buy them.)
- They contain current information on the different study programs. About 80 percent of the programs are included in these books.
- There has been a lack of adequate books to support the teachers' work. In the last two years, private enterprises have started to produce books similar to those published by ETV.

G. METHODOLOGY USED IN THE PRODUCTION OF MATERIALS

1. Knowledge Of Objectives

A thorough study of the documents defining the philosophy of the educational system is followed by an interpretation of the general objectives of education, the practical educational level at which teachers work, the courses taught, and the cycle, grade, area, and series of general and specific courses, in that order. The theory of this pyramid allows each specialist to:

- Plan the development of each course in accordance with accepted methodology.
- Establish correlations with other courses.
- Develop those aspects of each course which are most appropriate for the achievement of the objectives.

2. Preparation Of Reference Tables

a. Table I

Table I is intended to provide an overall view of the course contents in order to learn:

- The background of a course, for a specific grade, which may serve later as an indicator of the student's degree of knowledge.
- The intensity of a course in a specific grade, to make it correspond with former studies, and to establish a gradual teaching system.

- The scope of the courses in all grades in order to avoid repetition.
- The scope of the course for sequential analysis in terms of areas and grades.
- The diachronic aspects, handled on a daily basis, which must be developed or reinforced throughout a series of TV programs.
- The courses not developed in a logical sequence which may constitute the basis for modification of study programs with the approval of the Technical Teaching Services Division.

Table I consists of the following parts:

<u>1ST GRADE</u>	<u>2ND GRADE</u>	<u>9TH GRADE</u>	<u>DIACHRONIC ASPECTS</u>	<u>COMMENTS</u>
------------------	------------------	------------------	---------------------------	-----------------

The same format will be used for all areas in each course. The first two columns contain information relative to each grade. This will allow for horizontal distribution of the courses in the same sub-area. The last column contains comments and/or observations regarding the scheduling of the course within the program, notes and comments for future use, and bibliographical references.

b. Table II

Table II contains basically the same information as Table I, but considered from the standpoint of objectives and teaching suggestions. The table reads as follows:

SUBJECT: _____ GRADE: _____ AREA: _____

<u>TOPIC</u>	<u>OBJECTIVES</u>	<u>SUGGESTIONS</u>	<u>CORRELATION WITH OTHER COURSES</u>	<u>COMMENTS</u>
--------------	-------------------	--------------------	---------------------------------------	-----------------

As in Table I, the first column lists the program contents for each area. The objectives refer to the achievements expected from each student. In some cases, habits must be created; in others, the student must be trained to make

decisions, to develop abilities, or to acquire knowledge. This objective must be expressed clearly and accurately because it will serve as the basis for orientation of subsequent activities. Codes are entered for classification of each objective within the national education system (this includes course, cycle, grade, and area covered by objectives; attitudes desirable in Salvadoran citizens, and pertinent taxonomic classification (affective, cognoscitive, or psychomotor).

The next column lists the suggestions best suited to the achievement of the proposed objectives. General ideas are expressed for the development of a specific course (in the classroom or through TV) following an appropriate sequences.

The next column contains other courses with which a correlation can be established. They are listed as prerequisites or as related courses. Correlation may refer to areas covered by other courses. In establishing differences, special attention should be paid to situations in which:

- Previous knowledge of a subject matter is necessary for the development of specific information on an apparently unrelated topic.
- The degree of importance of a course requires its inclusion in others.
- The development of specific information on a course allows use of examples from others.
- Focus on the same subject by two courses makes it possible to reinforce one course with examples drawn from another.

The column allowed for comments should contain information useful in the preparation of future documents.

c. Table III

The main objective of Table III is to establish:

- The number of promotional TV classes in the area or a basis for their justification. Promotional classes refer to those portions of TV programs used in obtaining support for the solution of either national problems (ecological problems, family education), or school-related problems (oral and written communication, habits of personal hygiene, etc.).

- The series derived from the contents of courses to be broadcast and their justification.

A series is a group of interrelated TV classes broadcast in sequential order. The justification of a particular series will include a study of the objectives and suggestions stated in Table II, the recommendations of the Technical Teaching Services Division, the opinions of the school teachers, and the policy of the Ministry of Education.

- The diachronic aspects to be covered during one or more series (example: the use of the decimal system, the use of accents, etc.).

The justification of these aspects and their distribution within the series are also included.

Table III contains the following:

GRADE: _____ SUBJECT: _____ AREA: _____ NO. WEEKS: _____

<u>SERIES</u>	<u>TV CLASSES</u>	<u>DIACHRONIC ASPECTS</u>	<u>JUSTIFICATION</u>	<u>SERIES</u>	<u>DIACHRONIC ASPECTS</u>
---------------	-------------------	---------------------------	----------------------	---------------	---------------------------

3. Establishment Of Criteria For Book Writing

For purposes of standardization of criteria among book writers, the following concepts are established:

- Book design: cover, foreword, chapters, contents, bibliography.
- Page layout: text printed in one or two columns, type of print for titles, place of graphs and illustrations, etc.
- Use of printing resources to emphasize contents: tables, underlining, summaries, questionnaires, explanation of tasks and activities, use of cartoons, crossword puzzles, games, etc.
- Use of abbreviations, specific vocabulary for each

lesson, reference signs, etc.

- Approach used in developing topics: topics should be attractively presented and be useful to the life of each students.

4. Book Writing

Each writer must prepare two lessons per week (Monday through Friday) under previously established requirements. The fact that the book is written by a teacher guarantees, to a large extent, the use of the right approach in course presentation. Each original is reviewed by another teacher who is also a specialist in the subject matter. The author will be responsible for entering the corrections or modifications made by the reviewer.

The graphic arts division has the responsibility of producing all the illustrations for the texts. Once completed, the original will be sent for printing. When the texts are assembled, the specialist reviews them for quality control. These books will be sent to teachers and students all over the country.

Production and distribution of materials are some of ETV's most successful activities. The materials produced are used by all the schools affiliated to the ETV system. In addition, most of the non-member public and private schools also use them. The large demand for materials renders printing efforts inadequate at the present time, and does not allow timely delivery of materials to the different schools. In the future, therefore, printing must be planned at least six months prior to the expected delivery date.

IV. FACILITIES

A. INTRODUCTION

The Educational Television Center is located in Santa Tecla on a site which is about 7416 square meters. The facility, built in 1968 and added to in 1972 and 1977, is essentially a two-story complex surrounded by a one-story service and office quadrangle. Loziers and open patios and gardens provide for interior circulation. Construction is mainly concrete-column grid-systems with concrete block fill-in for water and/or interior walls. Floors are concrete. Construction techniques and design are modern, and workmanship is relatively good. Maintenance is adequate.

The facilities house a number of quite different, though interdependent,

functions. Thus, there occur in close proximity clusters of private offices, open general offices, studios, warehouse, carpentry shop, mobile unit garage, etc.

The main flow of work originates in the Production Department, where specialists in eight different subject areas (or clusters) produce shooting scripts for programs. These scripts are then taken to the Department of Audio-visual Resources where graphic backup, selection and taping of music, design and construction of flats and scenery, and illumination diagrams take place. The program is then scheduled for shooting or recording in one of two studios, or is scheduled for movie or photography in the Department of Cinema and Photography. The Department of Operations and Maintenance edits, completes schedules, and transmits finished programs over one of two possible channels. These channels transmit country-wide, except for the extreme eastern and western regions, which will soon be covered when relay stations designed for that purpose are completed. Maintenance of school television sets is provided by the Department of Operations and Maintenance. A printing press provides numerous short, supportive materials in color for all schools.

There are other functions and relationships, but these are the important ones affecting decisions about the facilities.

B. CURRENT LEVEL OF OPERATIONS (Grades 4-9)

This section is concerned with problems in the facilities and equipment, and solutions to them at the current level of operation. Although this is in effect an evaluation of present facilities, the recommended changes would be included in any subsequently recommended level of operation.

We are concerned here with three types of problems: (1) facilities overload caused by the magnitude of current operations; (2) equipment depreciation and deficiency; and (3) basic design or construction faults in the building which militate against optimum operation, regardless of level of functioning. Facilities overload and equipment deficiency are inseparable in the present context; design and construction faults will be treated separately. Equipment lists occur at the end of section VIII.

C. FACILITIES OVERLOAD AND EQUIPMENT DEFICIENCIES

The studios operate from 6:00 a.m. until 9:00 p.m. Monday through

Friday, with two forty-minute breaks daily and a two-hour maintenance block on Tuesday. Since law established workdays of seven and one-half hours for public employees, this schedule provides employment for two shifts of studio crews, each with sixteen technicians and assistants. On the average, 25 recording sessions are scheduled per week. This should result in about 50 completed programs per month, since some programs require more than one session to shoot. The average number of programs completed per month this year is 32, with a low month of 25 and a high month of 39. In May, 11 of the 50 scheduled programs were not completed. Sometimes the incompletions are due to external sources, such as holidays or transportation schedules which result in delay or inaccessibility of actors and employees; they are not due to a failure of administration or a failure by production department personnel to produce shooting scripts, or audiovisual resource department personnel to provide graphic and audio support. The failure, sometimes daily, occurs at the audio level.

Until now only two or three studios have possessed cameras or other equipment for recording. Studio One has RCA equipment which is five years old. The equipment has been discontinued, and parts must be pirated from junk sets in the U.S. Although these cameras are dependable, when they must be repaired, repair costs and time are extraordinary. The smaller studio is equipped with discontinued Sylvania equipment which has been functioning for 11 years. As one might suspect, dependability of these units is low and down-time in Studio Two is nearly double that of Studio One. Quality of transmission is marginal much of the time when this equipment is functioning. Loss of one out of two studios reduces production ability by more than one-half because of setup and illumination time required between shootings. Between shootings the scenario and lighting technicians usually move back and forth between studios. The schedules provide for this interface which may run two hours or more and which must be scheduled somewhat in advance of the designated shooting day. Long-sequence or multi-set programs are usually shot in the large studio. If one breaks down, all shooting for that studio may be suspended, and it may be necessary to dismantle several sets and reassemble them in sequence in Studio Two, making new illumination setups necessary. Thus, not only is production cut by more than one-half, but the service time of a number of employees is wasted. Since this involves scheduling, it also misuses the time of production and support people in other departments.

A third studio has had no equipment until now. Cameras from the new mobile unit, which will no longer provide recording services for the studios or for cinematography section, will be used there. The use of this studio will provide little more than maintenance of current production levels, since the older equipment is frequently down, and there will be no increase in personnel for recording.

Obviously the solution to this problem is not space but rather the replacement of the Sylvania and RCA equipment in Studios One and Two. Studio Three could then serve as a backup facility to speed up the schedule and to offset loss of time in other studios when the equipment is down; the mobile unit could then retrieve its equipment and operate as before. (Note: Additional analysis of ETV facilities appears in the recommendation section.)

V. EVALUATION AND RESEARCH

A. INTRODUCTION

El Salvador's ETV system is undoubtedly the most thoroughly studied educational technology project in the world. Shortly after the project's initiation in 1968, a team of communication researchers from Stanford University (working in conjunction with a counterpart team from El Salvador's Ministry of Education), launched a multi-year study of the role of television in educational reform. The study was undertaken for three reasons: (1) to evaluate the effects of television and the other reform elements (e.g., new curricula, teacher retraining, classroom guides and workbooks, etc.) on students, teachers, and school administrators; (2) to derive general conclusions that might help other nations interested in applying ETV or some other communication technology to education; and (3) to contribute data collected from this research to the future development of El Salvador's own programs.

In their analysis of ETV in El Salvador, the Stanford team concentrated on questions concerning system impact as opposed to improvement. Because a major goal of ETV was to improve the quality of students' learning, both in basic skills and achievement, a massive testing program was instituted. The performance of three successive generations of seventh grade students was analyzed, and background information on the students' families, their schools, and communities was collected. Measures of student and teacher attitudes toward television and the Educational Reform were also made repeatedly during the four-year study. In

addition, special studies of costs, of classroom teaching methods, and of a wide range of other topics were carried out. All these studies are summarized in research reports published by Stanford and by the Academy for Educational Development, as well as in a single volume published by the Stanford University Press (cf. John K. Mayo et al., Educational Reform with Television: The El Salvador Experience, 1976).

Since the conclusion of the Stanford team's formal association with the project, evaluation and research activities have been carried on by the ETV system's evaluation section. Most of the studies conducted by ETV have been built upon the foundation laid by Stanford, although numerous refinements and additions have been made through the years. Such additions and refinements have been necessitated by two basic factors: (1) the massive growth and diversification of the ETV system itself in the last six years, and (2) the concomitant desire of the evaluation section to respond more directly to the internal, formative research and evaluation needs of the system.

It was evident to the Stanford team that the growth and diversification of El Salvador's television projects has created substantial quality control and management problems for the system's planners and administrators. To relieve such problems, it was also clear that evaluation must continue to play an instrumental role in diagnosing and reporting the performance of various programs, both in and out of school. For these same reasons, it is imperative that the concerns and capacities of ETV's evaluation section be broadened. However, before it is possible to recommend ways to broaden or strengthen evaluation activity within the ETV division, a fuller examination of the evaluation section's current structure, staffing, and priority is required.

B. STRUCTURE AND STAFFING OF THE EVALUATION SECTION

ETV's evaluation section is located within the Director's office. Reports and recommendations prepared by the section's leader, Sr. Soriano, are presented to the Director for distribution to appropriate section leaders in other parts of the system. Occasionally, research findings are reported directly to interested parties at the mid-management level by Sr. Soriano in both written and verbal forms. It was unclear what role, if any, Sr. Soriano plays in overall ETV system planning, or how much attention is paid to evaluation activities by persons working at that level.

The 21-member staff of the evaluation section is divided in the following

manner:

- 1 - Director
- 2 - Sub-Directors
- 3 - Subject-Matter Specialists
- 2 - Data Analysts
- 8 - Test Administrators/Coders
- 9 - Secretaries

The emphasis placed on experienced subject-matter specialists, a priority that has been present since the founding of the ETV project, has exerted a large influence on the work of the evaluation section. The specialists, most of whom have had classroom teaching experience, are responsible for designing the learning tests that are annually distributed to samples of students in grades four through six. The results of these tests are tabulated according to the specific learning objectives established by the production teams and are subsequently presented by the evaluation section to the production teams, as evidence of the latter's performance in teaching students with television. The majority of the evaluation section's staff time is consumed by this achievement testing program. It is an enormous clerical job.

Although the evaluation staff has now accumulated substantial experience in test construction and administration through practical experience, only the section director, Sr. Soriano, and one area specialist have received any formal training in the area. Furthermore, Sr. Soriano is the only person to have received training in questionnaire design, although a number of other members of his staff have gained a great deal of practical experience administering field surveys and related instruments through their work with the Stanford staff.

The limited training of the evaluation staff places a disproportionate burden on the evaluation section's director. He is responsible not only for the section's administration, but also for the design and reporting of a vast majority of research studies. He personally must prepare the bulk of reports and recommendations flowing from his section. It is little wonder then that so many of these documents contain relatively little text and instead are replete with tables of uninterpreted results.

The recruitment and training of research and evaluation personnel is a problem that has plagued most educational technology projects in the Third World, and El Salvador is no exception. As mentioned previously, Sr. Soriano

is the only member of the ETV evaluation section who has received some academic training in evaluation, which was limited to half a year's work of courses sponsored by the OAS in Buenos Aires. Other members of the staff have accumulated valuable field experience, but they lack the sustained formal training necessary to qualify them as competent study designers and report writers. Furthermore, were they to receive such training, there is no assurance that they would remain with the system. For example, the two best trained persons in evaluation who worked on the project are now employed by the U.S. Embassy and Catholic University, respectively. The relatively low wages which the Ministry of Education currently pays to members of the evaluation section, and other ETV sections, virtually rules out the recruitment of fully qualified research personnel, even if such personnel could be identified.

C. FOCUS AND SCOPE OF CURRENT EVALUATION ACTIVITIES

Conversations with staff members, a review of reports and memorandums presented over the past three years, and a brief inspection of sample tests and questionnaires all attest to the broad scope of work currently conducted by ETV's evaluation section. Such work can be broken down into the following four categories: (1) achievement and ability testing; (2) attitude surveys of teachers and students; (3) classroom observations; and (4) special studies.

Given the volume of administrative and clerical work involved in evaluating the testing program, the evaluation section staff has found it necessary to concentrate on two--or at the most three--grades at a time. For the remainder of this year, for example, they will be administering 19 different achievement tests in 30 fourth and fifth grade classrooms. In addition, reading and general ability tests will be administered in the same classrooms, and also to a sample of 30 fifth grade classrooms (15 with TV, 15 without TV).

In the second half of the 1978 school year, which was the last time regular opinion surveys were administered by the evaluation staff to teachers and students, approximately 2,500 forms were returned. These surveys constitute a regular monitoring device which system leaders have based some of their most important policy decisions on such as limiting the number of curricular concepts that could be covered in a single teleclass.

Classroom observations, the third major activity of the evaluation section, were begun by the Stanford team in 1970. They are designed to provide first-hand

feedback from the field regarding teacher performance with television. Such instruments are customarily used to uncover utilization problems with TV. Occasionally production personnel have found it worthwhile to participate in such observation activities. They gain insights into how best to revise their programs and accompanying materials.

The fourth and last category of evaluation activities currently pursued within ETV (e.g., special studies) is really a residual one; it includes everything that is not part of the year-to-year program. Since 1977, two special studies have been undertaken. The first, completed in 1977, involved a complete census of TV schools to determine how many sets had been installed, how many were operating properly, and what was the teacher and student utilization rate of television within the schools. The second major study, undertaken this school year, is an analysis of the learning effectiveness and acceptance level of the 'nucleos generadores' programs which have been instituted at the ninth grade level on a pilot basis. Testing related to this program is currently underway in four schools, supplemented by feedback questionnaires and teacher observations. The combined results of these activities should help administrators determine whether or not the 'nucleo generado' concept should be expanded to other grades and, if so, at what rate in the coming years.

D. UTILITY OF EVALUATION ACTIVITIES WITHIN ETV SYSTEM

Despite the impressive volume of work currently being conducted by the evaluation section, and the responsible manner in which field data is being collected and tabulated, doubts still remain concerning both the validity and utility of such efforts. In the final analysis, the evaluation section seems to predominantly function as monitors as opposed to analysts within the ETV system. It was unclear what production or administrative concerns guide the evaluation program, or what decisions, if any, are actually being affected by the various studies reviewed above. In some cases, there even appear to be troubling and puzzling contradictions between what ETV's administrators believe and what the field data suggests. For example, virtually everyone the team interviewed called attention to the difficulties teachers are experiencing and expressing in the schools. These include the volume of material covered in the teleclasses; the repetitive nature of the curriculum (the so-called 'curriculum concentrica'); scheduling problems related to the spread of double sessions;

and miscellaneous complaints related to the different program series. At the same time, survey questionnaires administered on a regular basis in the schools suggest the teachers are generally satisfied with the TV system and such innovations as the 'nucleos generadores'. Such contradictions can perhaps be explained in one or more of the following ways: (1) the impressions of ETV's leaders are misguided (i.e., there are no major quality control problems) or (2) the classroom teachers are unwilling or afraid to express their true feelings on the subject (i.e., there is a positive response bias), and thus the questionnaire is not a valid instrument for tapping the true sentiments of the teachers. Whatever the explanation, it is clear that steps must be taken by ETV's administrators and evaluators to target their evaluation concerns more successfully.

In multidimensional learning systems such as ETV, the quality of performance is affected by many factors: curriculum, written materials, teacher preparation, supervision, and television are a few. No one study or evaluation instrument can possibly address all these areas. Before problems can be properly diagnosed or treated, it is necessary for the system's administrators to decide what are the most likely sources of difficulty. With such guidance, a well-trained evaluation unit, working in conjunction with those responsible for different components of the system, can begin to identify the exact cause and extent of the problem and, ideally, over time take appropriate corrective measures. The forging of better defined and more purposeful relationships between evaluators, producers, and administrators constitutes one of the most important challenges facing El Salvador's ETV system at the present time.

VI. EFFECTIVENESS ASPECTS OF ETV

One standard way to measure effectiveness is by measuring what a given expenditure will produce. Among the various dimensions by which the output of the ETV complex can be appraised, tapings and program transmissions seem the most significant. Budget data on these production activities reflect the objectives which planners are pursuing, thus yielding important insights into management policy. Data on actual performance derived from other sources will be found in another section of the team's report.

In crude quantitative terms, budgeted tapings reached a peak of over 1200 in 1973-74, declining sharply by about two-thirds in 1977, and numbering only

235 in the 1979 budget (Table 4). One's attention is particularly called to the drop in planned tape output aimed at basic education. It would appear that with the rise of both budget and staff over the years, commented on above, the ETV complex has considerable spare, under-utilized studio capacity to take on additional programming. In physical terms, one could certainly begin thinking about an expansion into grades 1 through 3, the first cycle of basic education.

Since a decline in teleclass production might logically be attributed to the fact that the needed tapes were on hand from previous years, it is the trend in transmissions that must carry the weight of the evidence. This second major output reveals a somewhat different picture. The number of budgeted transmissions has doubled from about 2600 in 1973 to about 6300, but has since leveled off to about 5100 planned for 1979 (Table 5).

More eye-catching than these totals is their composition. Most dramatic perhaps is the turnabout in broadcasting mix between 1976 and 1979. In the former year about two-thirds of transmission activity was budgeted for basic education and one-third for purposes summarized as cultural. In 1979, the pattern was reversed. Less than one-third of transmissions were beamed to the classroom; the bulk of planned transmissions came under the rubric of culture. This would seem to reflect a deliberate turning away from the original charter of ETV to serve, and be an integral part of, formal schooling. The present plan seems to substitute general education of the populace for instruction in the classroom.

VII. UNIT COSTS

Considerable interest lies in following the behavior of unit operating costs. Most convenient is using the measure preferred by the ETV staff, and hence most readily available without lengthy computations; that is, ETV operating costs divided by student viewers. This unit cost dropped from close to ¢ 600 per student to ¢ 16 between 1969 to 1973 (Table 3), then rose to ¢ 33 with the broadcasting of second-cycle material in 1974, subsequently falling back in 1979 to an estimated figure of ¢ 16. After adjusting for the impact of inflation on costs, these figures decline, as would be expected, to a per-viewer cost of only ¢ 7.

Several comments are in order here: the numerator of the ratio includes all costs budgeted for the ETV program, whereas the denominator, students,

TABLE 3

OPERATING UNIT COST PER STUDENT VIEWER, 1969-79

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Operating Costs, ETV (£ thousands)	640	897	1,060	1,053	1,271	2,798	2,946	4,156	4,266	4,649	4,649
Number of Student Viewers (thousands)	1	14	31	66	78	85	92	127	170	220	290
Unit Cost (£)	586	67	33	16	16	33	32	33	25	23	16
Inflation Index (Public Administration)	100	103	103	105	112	130	148	166	186	209	230
Unit Cost, Adjusted for Inflation (£)	586	65	32	15	14	25	22	20	13	11	7

TABLE 4

BUDGETED PROGRAM PRODUCTION, 1972-1979

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Basic Education	600	1,100	483	n.a.	330	270	142	30
Teacher Training	120	60	-	-	652	160	49	200
Adult Programs	100	-	540	-		-	-	-
Cultural Programs	-	30	168	-	-	-	-	-
Other Programs	-	50	67	-	18	-	2	5
Totals	820	1,240	1,258	1,160	1,000	370	193	235

TABLE 5

BUDGETED TRANSMISSIONS OF ETV STUDIO, 1972-1979

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Basic Education	2,500	1,961	n.a.	4,176	3,505	3,505	1,400
Teacher Training	60	-	-	-	-	-	-
Adult Programs	-	540	-	-	-	-	-
Cultural Programs	30	168	-	2,138	2,450	2,450	3,741
Other Transmissions	50	-	-	-	-	-	-
Totals	2,640	2,669	5,025	6,314	5,955	5,955	5,141

excludes other viewers like those watching programs of teacher training and cultural programs. In other words, the unit cost figures as shown reflect an upward bias, even after inflation is adjusted for.

Certain cost allocations between studio output directed at schools and at a non-school audience are needed as a minimum to arrive at more acceptable unit costs. The outcome of such calculations is bound to result in a considerable reduction in unit costs, and ETV would show a distinctly more favorable longitudinal cost profile.

There is very little question that the prediction of falling unit costs has been borne out by experience, despite two possible negative elements. For one, the number of student viewers may well have been inflated during census procedures, but if such reporting bias can be assumed constant during the years, the trend of unit costs would remain unaffected. Second, as noted above, both the budget and the staff of ETV have expanded considerably, a development that must be viewed against a background of declining program production for schoolroom use. Obviously, unit costs of a capital intensive or high fixed-overhead operation require full utilization of rated capacity in order to be reduced to their minimum level.

In support of the above conclusion, the budget presentations submitted by ETV's management show a significant change between 1977 and 1978. Previously, the listing of objectives required in the program budget document always included as a principal item the expansion or improvement of student coverage in basic education. For example, in 1977 this objective called for the production of 25 percent of the teleclass tapes needed in the second and third cycles of basic education, and that was the last time this goal was specified. In both 1978 and 1979, the program budget dropped from its list of objectives any widening or strengthening of basic education. What remained among output goals included:

- Cultural programs on literature, science, popular arts, folklore, etc.
- Orientation programs for teachers.
- Educational reports.
- Orientation programs for youngsters.
- Technical tapes for diverse population sectors.
- Documentaries.
- News.

One possible indication of economic effectiveness is the ratio of administrative overhead to total outlays. In 1971 and 1972, when ETV started settling down to business, the ratio stood at 16 percent and 17 percent respectively, dropping to 11 percent in 1974. Thereafter it rose steadily and has stabilized at about 25 percent. Before concluding that this increase in administrative burden is a negative factor in effectiveness, account must be taken of possible redefinition of functional categories. Several reorganizations were noted in passing, but of particular importance is the budgetary location of the evaluation section, which is presently a part of administration. In reality one would consider evaluation, as a combination of quality control and research and development, a line rather than an administrative or supervisory activity. It appears that at least in 1973 and 1974 evaluation had a separate budgetary identity.

It may be noted in passing that the organizational structure of ETV has undergone, at least in budgetary terms, functional division and expansion. Up to 1972, there was only a twofold division between administration and production. By 1976, the present structure of five separate accounting centers had developed. Audiovisual activities and maintenance split off from both program production and the film reproduction center to serve the needs of OEA, and UNICEF made its appearance as a new entity. Such a reshuffling of functions within the ETV system makes longitudinal cost comparisons difficult, if not impossible, without further work.

The writer did not verify underlying data or perform procedures he would consider necessary to review the budget data in accordance with accepted principles of financial auditing and analysis. An examination of the data base is normally a prerequisite for such a review, and the writer has not made such an examination.

RECOMMENDATIONS

VIII. RECOMMENDATIONS

A. INTRODUCTION

The recommendations contained in this study are based on a qualitative analysis of the educational TV system and its impact during 10 years of operation. The analysis covered the four basic components of the system:

- Instruction,
- Research and evaluation,
- Equipment,
- Financial structure and costs.

The analysis concluded that actions for expansion should only be recommended when the present system is properly adjusted. For that reason, the recommendations have been divided into two phases:

Phase I: Recommended actions for the improvement of the basic components of the ETV system.

Phase II: Program expansion and coverage aimed at the rural areas. The new programs will cover the first grade of basic education and non-formal education.

It is suggested that the extended coverage be divided into two periods:

- Attention will be focused on county (rural) schools that have adequate electrification and are located within the range of the four new repeaters, presently under construction, of the signals of channels 8 and 10.
- Attention will be focused on county (rural) schools with adequate electrification, located across the nation.

B. INSTRUCTIONAL SYSTEM

1. Teleclasses

The preceding chapter on system analysis contains detailed information on the coverage of teleclasses across the country and the ETV's achievement of objectives in the past ten years. This last point has caused complaints among those teachers who would like to independently implement the curriculum.

a. Phase I

Teleclasses must respond directly to the development of critical areas of the curriculum. For the purpose of complying with this point, it is recommended that the evaluation division conduct a survey, on an annual basis, in the schools using and not using TV to determine the critical areas of the curriculum. The result of the survey may be used by area programmers in redesigning programs.

The (motivational) generating nuclei will be introduced at the beginning and the end of each subject of study as a means of supporting teleclasses. This will allow achievement of the motivational and supportive objective, leaving the instructional aspects to the teleclass itself.

b. Phase II

The first grade of basic education will require the production of teleclasses geared to the new student population. These teleclasses will be different from those produced to date. Their production will require training of new human resources, and adequate laboratory and studio facilities.

Phase II will introduce adult education programs structured in such a way that allow their use for other programs developed by the Ministry of Education (basic and occupational skills training). This will require the training of human resources in production, and the establishment of a division responsible for non-formal programming.

The production of programs for first grade and non-formal education must be supported by the evaluation division, which will have the responsibility of following up on the effect and quality of the programs, from time to time, in order to introduce the necessary changes, based on the division's recommendations.

c. Coverage A & B

The programs intended for coverage will not be directly related to the production of teleclasses. However, the teleclass evaluation system will have to be designed taking this new group of users into consideration.

2. Curriculum

The curriculum recommendations and the analysis outlined in

section II C. are directly related to teleclasses. Some of the recommendations on the curriculum of basic education will have to be made through studies directly performed on the study plan.

a. Phase I

The recommended teleclasses must cover basic aspects of the curriculum and the specific areas covered will be the responsibility of the programmers associated with ETV's evaluation group.

The critical areas will differ from year to year because of the concentrical nature of the curriculum. For that reason, production will take into account periodical content renewal. Another variable determining the handling of the curriculum will be the degree of knowledge attained by the students in previous grades.

To attain the motivational objective and avoid the simple introduction of methodological variations in teleclasses, as is the present case, the design of the generating nuclei must give special attention to the different curriculum phases.

b. Phase II

This phase will require the design of first grade (basic cycle) and adult education programs. The design of teleclasses must take into account an analysis of the total curriculum in order to identify critical areas which must become the objectives of new programs.

The production of adult education programs must be based on the curriculum supported by ETV. This will require coordination with personnel responsible for the programs in different institutions such as the ministries of Education, Agriculture, Health, etc.

c. Coverage A & B

The attention given to rural areas, which face some of the most serious educational problems (i.e., dropout), will require the adjustment of the study plan to the characteristics of the student population and their environment. For this reason, it would be impossible to make a difference between broadcasts intended for the urban areas and those intended for the rural areas; however, depending on the needs of urban and rural students, the

teachers should receive guidance in handling specific areas of the curriculum.

3. Teacher Training

The training program, which ETV must support as a priority, is accomplished through broadcasts aimed at organized groups and/or at an open audience. The programs offered at Ciudad Normal use TV during regular classes, and this is a practice that falls short of meeting the teachers' needs.

a. Phase I

The programs (TV broadcasts) aimed at the teachers must be structured in such a way which allows for the coordination with other divisions in the Ministry of Education to achieve maximum utilization and adequate design.

Program production must meet the needs arising from curriculum development and serve as a training tool for the teachers in technical, pedagogical, and administrative needs. In order to determine these needs, a special program must be structured within ETV using programmers and producers who will have direct responsibility for the program.

Broadcast reception must be as informal as possible in order to allow for the evaluation of its impact on the class, in particular, and the school, in general. The Office of Basic Education within the Ministry of Education has information on the favorable results obtained in teacher training through broadcasts.

b. Phase II

The expansion of services must be coupled with a systematic action for teacher training. Supporting evidence indicates that the training program presently broadcast in Ciudad Normal is inadequate.

In addition to the ongoing program at Ciudad Normal, training can be extended to presently employed first grade teachers; to new, second grade teachers; and to instructors in the adult education program, by organizing special sessions once or twice a week.

c. Coverage A & B

In rural areas, teacher training would be best served through open broadcasts to make up for the geographical distance.

4. Printed Material

The model, based on the production of education materials, has been well designed, and, therefore, no modifications are recommended.

a. Phase I

The development of phase I will include an increase in production capacity which will serve to solve the needs faces by the schools affiliated with the ETV system.

b. Phase II

It is recommended that support materials be systematically produced for non-formal programs. Production should be coordinated with the technicians directly responsible for the programs supported by ETV.

c. Coverage A & B

It is recommended that an adequate distribution system be designed to include the rural component of the new schools.

C. EVALUATION AND RESEARCH

As previously discussed, El Salvador's educational sector and its ETV system have been the subjects of intensive evaluation. AID has fully participated in these studies; first through its sponsorship of the Stanford evaluation of the ETV system (1969-1973) and; subsequently, in its close collaboration with ODEPOR on the four-year education sector analysis. Data from these studies are now widely available for use by appropriate planning and administrative offices. Indeed, the challenge facing these groups in the years ahead is as much one of utilizing existing information as it is of generating new data from the field.

At the same time, the television system will continually require close monitoring and adjustment to improve the quality of services. In the team's judgment, many of the studies currently sponsored by ETV's evaluation section are not sufficiently related to the real problems and alternatives occupying the system's program producers and administrators. Part of this can be traced to the legacy of the Stanford research work which was fundamentally summative in character; that is, concerned with long-term, cost-effectiveness issues. While still important, these concerns do not provide the day-to-day guidance or

formative evaluation which the system now needs. In order to reinforce and renew the ETV system in its tenth anniversary year and provide a stronger platform for the possible expansion of services, evaluation concerns must be expanded to include better targeted studies of system components (television, curriculum, ancillary written materials, teacher training, and supervision), with particular emphasis on their interrelationships and relative contributions to overall system performance.

1. Phase I: Consolidation And Improvement Of ETV'S Evaluation Section

The first step toward strengthening the evaluation section would be an acknowledgment by the system's leaders that future evaluative activities will be guided by the important decisions and problems confronting ETV itself. For example, if the major problem is program quality control, administrators must be prepared to define the possible dimensions of this problem with the evaluators to the greatest extent possible, in order for the latter's subsequent field work to address the issue(s) in ways which will enhance the decision makers' understanding and promote options. This implies a closer integration of evaluation and management activities within the existing system.

Integration must also be strengthened between evaluation and production. As presently conducted, evaluation studies provide only general feedback from the field to program producers. The data is able to identify problem areas (e.g., "the programs in 'x' series contain too many concepts") and chart the students' learning levels across the system, but it is relatively weak in specifying the exact reasons why particular programs or program series either succeeded or failed in realizing their objectives. The lesson here is the same: Evaluation and production teams need to develop a much more intimate, day-to-day relationship, which is based on the programming alternatives and scheduling constraints of the producers. It makes no sense to provide a production team with detailed feedback on a particular program if that program is not scheduled to be revised for a year or two.

The emergence of an integrated and participatory evaluation strategy will not be easy, as the experience of numerous other educational technology projects has shown. The Children's Television Workshop, who produce Sesame Street, have perhaps attained the greatest success in merging these historically different

perspectives (e.g., evaluation and production) through a variety of means which include: joint planning of evaluation studies, verbal as opposed to written reporting of results, full and immediate review of field data, and, to the extent possible, participation of production personnel in the actual conduct of some field investigations. In these ways the punitive nature of evaluation activities is sharply reduced, and, ideally, producers come not only to tolerate evaluation results but avidly seek them for the guidance and security they provide.

The value of integrating evaluation, production, and system planning within the ETV system could never be realized through administrative fiat alone. The historical and administrative precedents working against such a policy are simply too pervasive. Only through careful guidance, training, and experimentation could El Salvador's system be expected to move in such a direction. For that reason, the following kinds of training, technical assistance, and limited-commodity investments are recommended at this time.

2. Participant Training Of Evaluation And Production Personnel

The emergence of a better integrated evaluation program is a desirable objective. Training activities should include evaluation personnel, producers, and administrators. As a first step, a four to six-person delegation should be introduced to the pedagogical principles and activities associated with a successful formative feedback operation (e.g., Children's Television Workshop in the U.S. and the Radio Mathematics Project in Nicaragua). This introduction would involve a two to three week trip to the U.S. to observe and discuss the benefits and problems of integrating evaluation into both project planning and production, at an estimated cost of \$6,000-\$9,000.

3. Technical Assistance In Formative Evaluation

The visit to a successful formative evaluation unit in the U.S. or elsewhere would be only introductory and motivational in intent. It would not provide the specific or long-term guidance sufficient for ETV's staff to proceed on their own. For this to occur, a sustained relationship with a resident expert would be required. This person, in addition to being an experienced formative evaluator, must also be able to diagnose the training experience

and competencies of ETV's evaluation and production units, and organize a wide range of training exercises and experiences. To do this, a Spanish-speaking ability (minimum three on the FS scale) would be essential and cross-cultural experience is highly desirable. The person should spend a minimum of 12 months (preferably 18) working on a day-to-day basis with ETV's evaluation section. On a limited basis, this person would be expected to coordinate his/her activities with the technical assistants scheduled to work on the Rural Primary School Expansion Project. It must be emphasized, however, that the evaluation advisor's work would be a functioning formative evaluation unit within ETV and a deeper appreciation and commitment to formative evaluation within the system. (Approximate cost: \$80,000 - \$120,000, depending on length of tour.)

a. Evaluation Commodity Investments

One of the major handicaps limiting the performance of ETV's evaluation section is its access to the schools. Evaluation personnel are not provided sufficient transportation to administer the thousand of tests and surveys required each year. Occasionally, major disruptions occur in the administration of the tests for this reason. These disruptions, along with the frequently cited need to concentrate evaluation activities in close physical proximity to one another, unquestionably introduce biases into the study design and administrative procedures. To minimize such biases in the future and to enhance the efficiency of the entire evaluation program (including classroom observations, census activities, etc.), a full-time vehicle is required. If such a vehicle cannot be provided by the ETV division, it should be purchased with AID funds at an approximate cost of \$10,000. It is estimated that all other capital and recurrent costs associated with the upgrading of the evaluation section would be borne by ETV.

4. Expansion Of Evaluation Activities

In the team's judgment, the main challenges facing the current system are in the areas of quality control and system maintenance. Accordingly, the recommendations presented thus far have been for improving the diagnostic and feedback utilization skills with ETV's evaluation section. Expansion, in whatever direction, will require research based on the issues of planning and resources allocation. In addition to feedback and related quality strategies,

most of the statistical work upon which possible expansion programs could be based has already been completed, but the data resides in different ministry offices. It has not been aggregated in a manner which decision makers can readily use. The first step toward expansion (only begun in this report), therefore, would be to bring together the results of studies completed in recent years to identify the whereabouts and specific educational needs of the potential target audiences.

Coordination of existing evaluation and research units would facilitate the data aggregation process and thereby strengthen the overall planning process. ODEPOR's education sector analysis paid relatively little attention to the ETV system, and as a result the recommendations from this enormous effort virtually ignore the future of one of El Salvador's educational resources. The lack of coordination between ETV and other ministry offices can only be prevented in the future by ensuring that evaluation priorities and competencies are shared whenever possible. For this reason, the special studies and data management activities envisioned under the Rural Primary School Expansion Project should be planned with an eye toward the possible incorporation of ETV in the future. By the same token, the training and data collection methods undertaken with ETV's evaluation section should be broad enough in scope to strengthen the leaders' ability to objectively weigh expansion alternatives.

D. COST ACCOUNTING RECOMMENDATIONS

1. Suggested Activities

Cost accounting can be simple but becomes more complex as the organization grows and the mix of its activities proliferates. The latter description would seem to apply to ETV/ES to a considerable extent.

A principal purpose of cost accounting is to derive average or standard costs per unit of output as a vital management tool. It needs emphasizing, however, that unit cost figures needed by ETV administrators for operational purposes differ from other unit costs such as those required for choices among educational media at the ministerial policy level. Still other types of unit costs, often subject to restrictive or theoretical assumptions, must be computed if ETV/ES is to be compared internationally with other instructional television systems.

a. For internal management purposes at the studio level, operating unit costs per activity are useful, and ETV/ES has begun moving in that direction. The ETV group should:

- 1) Decide what are the basic functions or divisions of their enterprise.
- 2) Identify, breakout, and recombine activities between, say, 1972 and 1979 according to uniform criteria.
- 3) Distribute salaries and other cost elements of operation in line with the results of (2). Certain costs will need to be allocated according to some prorating scheme.
- 4) Determine what output units are most useful: number of tapings, tape revisions, one minute of taping, one hour of transmission, one teacher's guide, etc.
- 5) Divide costs allocated to each activity by the corresponding appropriate output, as noted in (4).

b. To determine total unit costs at the studio level, overhead costs (inclusive of administration) and capital costs must be added to the operating costs established in (a) above. This involves determining depreciation expenses.

c. For unit costs at a system level (units being classrooms, sections, students, or student-hours [preferred for international comparisons]), one needs to identify additional operating and capital costs in the schools involved with ETV.

d. Systemwide per-student unit costs should be computed based on actual expenditures rather than the more easily obtainable budget proposals. Also, present calculations by ETV/ES treat capital expenditures as one-time current outlays, following the typical treatment by educational institutions all over the world which do not recognize depreciation in their accounting.

e. In periods of inflation, it helps the interpretation if cost figures are adjusted by a suitable price index to show changes and trends of costs in terms of monetary units of constant purchasing power.

f. More sophisticated devices could be applied to costs, such as discounting future expenditures to present values using a "social rate of discount", typically being the interest rate yield on long-term government bonds. These procedures, while theoretically sound for the most part (if not carried to extremes), are of questionable value to ordinary, day-to-day management. They should be undertaken only if requested by (or to impress) international leading agencies.

g. For optimum utilization of resources and minimum unit costs, data are needed on the reasonable output capacities of the various functional divisions of ETV. This data would permit analytic comparisons to be made between actual production and both budgeted and capacity output. Such "variance analysis" helps to identify and remove deficiencies in operations.

2. Technical Assistance

The ETV operation would benefit from technical assistance by an educational budget planner/cost specialist to work at the studio and school levels for two months. He/she would review and improve the information-gathering system and install managerial cost accounting tools in support of the above specified activities. The training of Salvadoreans in these techniques would be an integral part of his/her scope of work.

E. RECOMMENDATIONS FOR UPGRADING FACILITIES

1. Department Of Operation

A number of design or construction details cause difficulties in the normal functioning. These will be explored below. The item numbers correspond to numbers on the building floor plans which are presented later.

● Studio One

* The door is too small to permit entry of scenes, flats-equipment, etc. Dismantling of such items is time consuming, difficult, and occurs twice for each program. It is suggested that a new sliding door, three meters in width and height, be installed in the center panel of the north wall.

- * Sound control is very difficult and sometimes impossible in this studio. A main cause is the low ceiling, which unfortunately cannot be remedied without considerable expense. It is recommended that an accoustical study be made to determine the feasibility of developing a system of baffles and/or absorbing or protecting materials as required.
- * The room labeled Locutor, south of Studio One and west of Control One, has never functioned as a commentator's or announcer's room because of the difficulty with sound reverberation produced in Studio One. This room should be isolated accoustically from the studio so that it may function according to plan.
- * The storage section (Archivo, located at the north end of "Videotape") has become filled. New storage space is required. It is recommended that the office between Locutor and Videotape be taken over for this purpose and opened into the Archivo. This office is used by the scheduling typists who could very well be moved to the west side of the double offices in servicios generales (south building) or to the north building.
- * The space south of Videotape labeled variously taller, or bodega, or sala de reparacion is the maintenance or repair room for all the equipment in the studio complexes. The space is used constantly; it is also too small. We suggest that it be expanded about 4.5 meters to the south between the last two columns on the southwest corner of the complex, producing a new space of 20 square meters.
- Studios Two and Three
 - * Accoustical studies and control of reverberation are needed in both of these studios.
 - * The door problems in these two studios are even more acute than in Studio One because of the narrow sound traps which precede them into the studio. It is

suggested that a sliding door (9M x 9M) be installed in the north wall of Studio Three and in the wall between the two studios. (See also the section below dealing with alternate solutions to problems.)

- Carpentry Shop

The carpentry shop is loud and open and thus interferes seriously with the work of scores of people on the second and third floors of the Department of Production. The windows of the areas facing the carpentry shop must be left open for air circulation. For this reason (and for other reasons to be discussed later), it is recommended that this carpentry shop and its outbuilding be razed. It is cheaply constructed. Its functions may be relocated in several ways and will be dealt with under the alternatives developed later in this report which deal with questions about this entire end of the site.

- Printing Shop

Air circulation in the press room is bad even with the fans. A reworking of sound control, relocation of this shop and the carpentry shop for better air circulation, etc., will be dealt with later.

2. Department Of Programming

The Department of Programming contains a director and 21 teams of subject-matter program producers. Each team consists of the following:

- The specialist, who researches, plans, and designs the lessons.
- The producer, who coordinates the work of the groups and directs recording.
- The script master and telecaster, who reviews and edits scripts and presents them before the camera.
- The assistant to the producer who manages details and chores for the group.

Each production requires some 17 steps prior to recording. Most of these steps are of the following types:

- Desk work.
- Discussions with the group.
- Rewrite.
- Solicitation of graphics, photography, or background music from the Department of Resources.
- Selection review.

Each four member team has its own office, containing desks, chairs, and telephones. It would appear that the 1500M² space allotted to this department on two floors is more than adequate for the teams to perform their functions; however, some thought should be given to redistribute this space to create a room for recording review, and a second room to house groups of up to 20 (i.e., chorus or athletic groups, large groups of foreign professors, etc.). The former room would contain a television monitor and up to eight chairs. This closed sound-controlled room of about 10M² would ideally be located among the office cubicles, but if cable extensions are prohibited, it may be located near the recording room. The present auditorium, connected by a bridge to the second floor offices, might be used in this capacity. The latter room with tables, chairs, and projection facilities would require about 30M² and would also be sound-controlled. It would also be located among the present offices. This department is housed in the second and third levels of the new addition (north of Studio One). Since it is not air-conditioned, it uses the customary tropical methods for air circulation, being two windows running the length of the facility. One side opens to a junk-filled patio which services the scenery and flat-producing studio occupying the first floor and the carpentry shop. The noise factor is extremely high and negatively affects the work of some 85 to 90 people. Because the construction of the carpentry shop and its allied out-building is not sophisticated or expensive, it might be feasible to raze the structures and relocate them. (This relocation will be treated in a later section of this report dealing with site-use and possible expansion.) The concrete slab could be saved and could serve as the foundation for other purposes.

3. Department Of Resources

The Department of Resources contains the materials center, library graphic and animated arts, and audio-technology. In addition to

providing graphics and the research and sound for video productions, the department also translates and dubs new sound tracks for foreign films; provides the sound for motion films and for cassette slide productions; and the graphics for all printed materials (most of which are back-up materials for the television programs which are printed here for distribution to the schools). Filmstrips, films, photos, and cassette tapes produced by this department are also distributed to the teachers in television classes. Employees of other ministries are often trained in this department.

Forty-three persons are employed in this department; 20 in the library and materials center; 20 in graphic arts, and three in audio. The Department of Resources, though it is meeting its obligations to both the Production Department and the Department of Operations, is operating at marginal or submarginal quality levels, with extreme difficulty by their admission. Once again, the problems are a result of the lack of required facilities and equipment. They are dependent upon the TV studios for recording time and suffer from the ailment previously mentioned.

There is no audio studio other than the rudimentary recording equipment. The small space provided in the west end of the General Services building (at the south end of the site) is not a studio, and acoustical treatment is practically worthless. The most obvious solution to this problem would be the acquisition of all space to the west of the programming office and movie group (including the corridor) and its conversion into an audio studio. The building can be expanded another eight meters to the west.

The recording studio and its ancillary facilities would approximately encompass the following space requirements:

<u>Facility</u>	<u>Area M²</u>
Recording Studio	70
Control Cabin	20
Auxiliary Recreation Cabin	15
Tape Library	<u>15</u>
<u>TOTAL</u>	<u>120 M²</u>

The library has averaged 2035 users per month during the first five months of 1979. This translates to 12.7 users per hour during that time. The

library collection now includes 6000 volumes. The size of the library appears to be adequate, but acoustical control and furnishings are inadequate.

The materials distribution center is about 270M². It is packed with films, tapes, graphics, and desks for some 20 people. Because there is so little space available for storage, many of the original materials are given to teachers for use in their classes, even though these materials will have to be reproduced. There is an obvious need to expand the area (30M² at least) for this reason and also to provide another film review room at 15M². An average of 21 films are reviewed here daily. Although some expansion to the east could take place, it would be a shame to encroach upon the trees which buffer the buildings from the sounds of traffic and pollution. About 50 square meters of space could be gained from what is now an entrance patio to the south, and the garden area at the extreme southern end of the site might be used. This possibility will be discussed later under the general description of site utilization.

The graphic arts room, south of Studio One, is adequate for its current purposes; however, the failure to provide proper storage cabinets and work counters reduces the space efficiency. Any additional demand for space on this section could be met without remodeling.

The production area for flats and scenery, located north of Studio One, suffers from the same deficiencies in size and storage space. Storage space for large flats; bulky, irregular materials; medium-sized household items; decorations, etc.; small hand tools, paints, brushes, etc., must be provided. In addition, more sink and counter space and saw-horses, to support the preparation of flats, are needed. The expansion of this area should be westerly, in order to conserve the land lying to the north (for the reasons cited later). From seven to nine meters (or more) can be gained to the west across the length of the building.

There are excellent reasons to move the materials center to the General Services building; move the graphic arts studio to what is now the materials center; and to move the offices and functions of the General Services building to what is now the graphics lab and also to portions of the north building. These reasons will be given later. The cinematography section needs an office which could be created within the center section of the materials center's west wall.

F. FACILITATING EXPANSION TO COVER GRADES ONE TO NINE (Level I)

This section is concerned with the facilities and equipment requirements which would be imposed by increasing the present television coverage from sixth to ninth grades, nationwide. These requirements will be in addition to those outlined above.

1. Department Of Operations

The Department of Operations justifiably maintains that the addition of three more grades will add 50 percent to their current demands, which they are experiencing difficulties in meeting now, even though the department is operating at full capacity. This requirement demands a full-sized studio complex of the size and capabilities of Studio One, and some additional storage space. Because of ceiling heights, AC runs, the need for closeness among studios, and prop or flat preparation and storage areas, we see no other feasible area to locate this studio except the space north of the current scenery studio and west of the printshop--extending to site boundaries in both instances if necessary.

Because the open time on ETV's channels 8 and 10 is neither convenient nor sufficient for the primary grade broadcasts, the station would either have to acquire use of open channel 11, which seems highly improbable now, or rent time from channel 6, whose open time luckily corresponds to primary school hours. At any rate, no increase in broadcast facilities is foreseen.

2. Department Of Production

The addition of grades one to three would add three four-member teams to the department. This would allow for a concentration of effort which could produce over a three-year period a base-core of materials for the three new grades, and the teams would continue to have work after that. More teams could produce faster, but they would have to be let go after the basic materials were completed.

The department is allotted about 1500M² of space on two floors. Given the general requirements of all the teams for office space, we can say that 16M² - 20M² per team would support their basic requirements. This is derived from the following:

● Desk - 1M x 1 1/2M x 4 per	= 4 - 6M ²
● Chair Movement - 1M x 1 1/2M x 4 per	= 4 - 6M ²
● Files - 1M x 1/2M x 2 per	= 1 - 1M ²
● File Excess - 1M x 1/2M x 2 per	= 1 - 1M ²
● Storage Cabinet - 1M x 1M x 2 per	= 2 - 2M ²
● Cabinet Excess - 1M x 1M x 2 per	= 2 - 2M ²
● Corridor Space - 1/2M x 4M	= 2 - 2M ²
<u>TOTAL PER TEAM</u>	<u>16 - 20M²</u>

Thus, 24 teams will require from 384M² to 480M². Beyond the basic office space needs are these following requirements:

● Bathrooms (2C - 4M ² each)	= 8M ²
● Offices - Aguilar & Aldana	= 30M ²
● Reception/Secretary Room	= 30M ²
● Conference Room	= 15M ²
● Review Room	= 10M ²
	<u>93M²*</u>

Additional 10% circulation	<u>10M²</u>
<u>TOTAL SPACE</u>	<u>103M²</u>

Thus, the entire department would require a total of 583M² at the maximum to function comfortably. Each of the two floors currently used by this department now contains some 750M². The implications of this excess space will be handled later. No additional space will be needed by this department as a result of the expansion of grades one to three.

3. Department Of Resources

Such expansion would also require additional personnel and space for the Department of Resources.

The graphic arts studio would require five or six new draftsmen. The actual space now available in the studio is nearly double that which will be required. Each draftsman presently requires the following space:

*A large group could be handled by the construction of two bridges to connect the department with the auditorium with no real additional increase in M².

● Drawing Table - 1M x 1 1/2M	= 1 1/2M ²
● Chair Movement - 1M x 1 1/2M	= 1 1/2M ²
● Storage Cabinet - 1M x 1M	= 1M ²
● Cabinet Excess - 1M x 1M	= 1M ²
● Corridor Space - 1/2M x 2M	= 1M ²
● Wall Counter Space and Excess - 1M x 1M	= <u>1M²</u>
<u>Total Per Draftsman</u>	<u>7M²</u>
There are 20 draftsmen	140M ²
The space contains	238M ²
With 20 draftsmen the need would be	<u>182M²</u>

The additional space is ample for circulation, special machines, bulky items, other storage, etc., and would still allow for further expansion; however, moving this lab to the present materials center, which would move to the General Services building, would provide closer working space for the department, an office for cinematography, and would allow for space to house administrative and service personnel (currently in the General Service building) next to the current director's office.

The materials center would need to expand by about one-third or 90-100M². The library would need to expand by about 30M². The audio lab would not change.

All of these changes could be accomplished simply, quickly, and inexpensively by transferring the materials center to the General Services building (south), which is structurally a warehouse. The existing partitions are plywood and could be removed in one or two days. This change would produce an open space, to be divided as necessary, for use as a library, materials center, review rooms, office, and an audio lab. Any future expansion could be made to the east or west (preferably) with ease.

UNICEF, its personnel, and the general services and storage presently housed in the building could be moved to the present graphics lab and also to the ample space which will become available on the second and third floors in the north building.

G. CUMULATIVE FACILITIES EXPANSION

This section is concerned with the cumulative increase in facilities and equipment which will be required to expand the coverage beyond grades one to nine, to implement the Urban and Rural Basic Skills Program (Level I), and to further the production and transmission of TV programs to complement the adult, non-formal, and basic-skills programs which operate throughout the country.

1. Department Of Operations

Such a level of expansion would not raise the studio requirements of the Department of Operations. It is believed that with the four properly functioning studios and the mobile unit, present production space is adequate for this increase.

Present open time on channels 8 and 10 would be available for this project, but the amount of open time would be inadequate for the required transmission time. The non-formal character of these programs calls for greater flexibility in scheduling programs than that allowed by current scheduling practices. It is suggested that programs could be relayed from ETV, San Salvador at night to the various repeater stations through UHF rebroadcast the following day or upon demand. This would require the installation of recorders in the three stations. It would increase the crew of ETV, but would not increase space requirements, since the crew would be working during the hours when the station is presently closed.

2. Department Of Production

Five additional production teams would be required if expansion were to occur. The expert would change with content demands, but the other team members would remain constant, and, in any event, there would always be a fourth member and more space is required. This would add 20 people to the staff, and the estimations outlined in section three would indicate the following increase of space for the department:

● Five Cubicles of 20M ²	= 100M ²
● Conference Room	= 15M ²
● Baths (2 of 4M ² each)	= <u>8M²</u>
	<u>Subtotal</u> 123M ²
● Additional Circulation (10%)	= <u>13M²</u>
	<u>TOTAL</u> <u>136M²</u>

This, with the 580M² required in section three, barely exhausts the space resources of one floor in the new north building where the department is currently occupying two floors. If the Urban-Rural television programs are to serve the needs of the projected urban and rural basic-needs centers, coordination will be required between the production teams and the center's personnel. It is recommended that two to five vans with projection capabilities be purchased for this purpose. This will increase the parking and auto maintenance requirements.

3. Department Of Resources

Again, the space requirements for the materials center and the library would have to be expanded by an estimated one-third, or about 120M². The space to the west of the General Services building, which is available for construction (following its current lines), is about 128M². If the expansion levels are developed in sequence, rather than beginning, for example, with Level II, the planning of the audio lab would take into consideration the probable expansion of these two other areas.

Personnel increases for the graphics division can be maintained in the present space, but additional facilities for animation are likely to be required. These facilities will amount to no more than about 10M².

H. ADDITIONAL RECOMMENDATIONS FOR SITE AND FACILITIES

The construction of the various buildings is such that the removal of any and all walls (exterior and interior) would be an easy, inexpensive matter.

Most of the site is occupied. A small area which runs in front (east of the complex) is not recommended for expansion because the removal of the trees here would affect both the garden and the climatic effects (sun protection, shade, etc.), and their buffering protection against traffic pollution and noise. The area at the extreme southeast end (about 10M²) could be used with no detrimental effects. An area of about eight meters in width runs along the entire west side of the complex between it and the site boundary. Construction here is recommended on several counts, primarily as a way of expanding present space as needed.

Both to the north and south ends of the ETV site are open fields which are public lands. These are currently allocated for recreational uses, but it is possible that portions of one or both could be allocated for ETV use if necessary.

The area west of the main patio (currently baths) would be considered for use if radio is installed. The ability to use the structural elements or foundations is not known. This would need investigation.

The walls between Studios Two and Three might very well be removed upon the construction of a new studio during Level I, producing a more versatile studio and creating additional production capacity. This should be investigated. Also, and in the event this change occurs, the 'trampa sonidos' next to Control Two can be closed to enlarge the control room.

The area to the north of the new building, which currently houses the Department of Production, presents a series of difficult problems regarding both current and future expansion uses.

1. The Carpentry Shop (N.W.)

The carpentry shop irregularly disturbs the work of some 80 to 85 people in the Department of Production, which it currently faces. Air circulation necessities keep both of these areas open to one another. The carpentry shop blocks the only windows (high ones) in the printing shop and restricts the air flow there. The narrow space between the carpentry shop and the printing shop is filled with refuse which is both unsightly and potentially a fire hazard. Some of the unsightly kindling is used on occasion for the construction of flats.

2. The Printing Shop

The printing shop which faces west has no air circulation. The fan doesn't help the noise from the printing shop, and the carpentry shop disturbs the people working in the Department of Production. Its windows are blocked and are sealed off for storage. The back wall is sealed off for storage on the other side.

3. TV Storage

The area to the east of the press room, which is used for TV storage, lacks air circulation and blocks air circulation in the press room. Because this space was not designed for storage, the room is a mess, and more storage space is needed.

4. Vehicle Maintenance Yard

This yard is located at the northeast corner of the site and contains an open shed and a small toolhouse. The noise from this area disturbs everyone in the immediate vicinity.

5. Cafeteria

Heat and fumes from the cafeteria rise into the offices so that those who are not afflicted by the noise are outraged by the odor and heat.

Fortunately, all of this construction is made of low-grade concrete block and tin roofing. Its removal would be a matter of no economic consequence, which facilitates the solution. The following recommendations are made regarding the disposition of this entire area to the north of the new building:

- Expand the scenographics studio west to the site's boundary (80M² expansion), and redesign the entire complex to maximize storage space.
- Clean up the patio area. Storage space for usable materials may be provided to the north of the expanded scenographics studio.
- Raze the carpentry shop and the existing areas, and relocate the shop in the west hall of the 'bodega-technica' across from Studio Two.
- Reopen the space to the south of the press area (now used for TV parts storage), and use the resulting space for the storage of printed materials now stored in the west end of the General Services building. These materials are produced by the press room, and their storage closer to the press area would be more logical and convenient. This would open up the windows for partial air exchange in the press room. The placement of windows at the north end of the press room would also be welcome.
- The materials displaced by the new storage area created in the preceding section (as well as the materials displaced by the carpentry shop) are part of the storage provisions which will extend to the east, occupying the

next block, and also to the north into the section just east of the space described in the above section. All of these materials and the related offices would then be moved to an appropriate space on the second (or third) floor of the same building. This would allow for a redistribution of storage and facilities for the maintenance and installation of TV sets area which is presently cramped and an absolute shambles. When this redistribution is accomplished, an upper wall section between this space and the printing area could be opened for air circulation. The roof of this building (housing the maintenance/printing/storage areas) should be raised to provide air flow, and the entire inside, including the ceiling, should be finished. The present roof is primitive and incomplete and could be easily changed.

- The present cafeteria would be opened to the north and would become the vehicle maintenance area. The tin shed and tool storage shack on the north site boundary would be altogether removed. This would provide better vehicle service, the containment of the serious noise problems, and the removal of the cooking odors and heat from the cafeteria. The cafeteria could be reconstructed either directly adjacent to its present location (to the east) or at the southeast corner of the site near the entrance and gardens. This latter placement seems preferable.
- The space between the scenery lab and the north boundary site will become the new TV studio. Air circulation for the studio would be provided to the west, as with Studio One.
- The space between the General Services building and the main studio building (behind the bathrooms) has been referred to several times as an area of possible and/or recommended expansion. This space is about 342M². It contains a series of service-element components such as the septic tank, pump, and water storage. These elements

may or may not be easily adaptable to change. This will need to be studied. In any event, there is now a water-storage problem because the existing tank is on the ground and the pressure is low on long-runs. An elevated tank and pump system is needed. This would not effect the air conditioning which has fan-cooled water units, but sanitary services such as the cafeteria, shop sinks, etc., and ground level hose bibs, sprinklers, and hoses will be affected.

I. COST OF IMPLEMENTING FACILITIES RECOMMENDATIONS (GOES FINANCED)

1. Cumulative

<u>Facility</u>	<u>Area M²</u>	<u>Estimated Cost</u>
Door, Studio One	2M ² x 2M ²	\$ 500
Acoustical Treatment, Studio One	221	6,000
Acoustical Treatment, "Locator" Room	8	250
Remodel Storage and Program Office, Studio One	16	800
Expansion, Studio Shop	20.25 (new)	2,025
Acoustical Treatment, Studios Two & Three	352	9,500
Doors, Studios Two & Three	4M x 4M	1,000
Destruction of Carpentry Shop	87.5	875

Remodel W 1/2 of "bodega technica" for Carpentry	81	2,250
Open Storage for Press Room	54	100
Remodel Machine, Main & North End, "bodega technica"	240	12,150
Remodel Cafe for Garage	81	4,050
Reorganize Walls, Floors 2 & 3, North Building	1500	7,500
Bridge Between Auditorium and North Building	9	900
Remodel Materials Center (Including Cinema Office)	207	5,175
Remodel General Services (Including Audio Lab)	495	12,500
Remodel Graphic Arts	238	5,950
Expansion of Scenery Lab	81 (new)	8,100
Cafeteria	81 (new)	<u>8,100</u>
	<u>Total</u>	<u>19,125</u>
	<u>Total Removal</u>	<u>68,900</u>
	<u>Level Grand Total</u>	<u>\$88,025</u>

2. Level I Facilities Expansion

<u>Facility</u>	<u>Area M²</u>	<u>Estimated Cost</u>
Studio #2 (new)	221	\$44,200
A. C. Room (new)	77	7,700

3. Level II Facilities Expansion

<u>Facility</u>	<u>Area M²</u>	<u>Estimated Cost</u>
Expansion Library/M.C. (General Services Bldg.)	120 (new)	\$12,000

4. Equipment for the Various Levels

a. Current Level

<u>Item</u>	<u>Estimated Cost</u>
Four TV Cameras (Studio One & Two)	\$ 268,000
Viewing Screen Stand (Materials Center)	120
16 MM Projector (Materials Center)	700
Tape Recorder (Audio Studio)	6,200
Rep. Cartridge Recorders (Audio Studio)	5,100
Eight Channel Console (Audio Studio)	15,000
Two Turntables (Audio Studio)	4,000
Two Equalizers (Audio Studio)	2,500
Twelve Microphones (Audio Studio)	2,200
Associated Items (Audio Studio)	<u>60,200</u>
<u>Total</u>	<u>\$ 364,020</u>

b. Level I

<u>Item</u>	<u>Estimated Cost</u>
Two Video Cassette Recorders (3/4")	\$ 19,000
Three Mobile Color Cameras for Studio	204,000
One Complete Color Movie Set (Multiplexer, Camera, 16MM Projectors, Slides)	175,000
One Image Switcher	32,000
Two Rep. Videotape Recorders	150,000
Six Color Monitors	24,000
10 Monitors B/W - 9"	7,500

One Synchronic Generator	3,000
One Bar Generator (color) and Several Test Signals	3,000
Six Pulsation Distributors	2,610
Six Video Distributors	2,610
Two Jack Panels for Video Interconnection	200
One Console for Remote Control Cameras	2,000
Two Adjustable Feed Sources for 24 VDC	200
Three Oscilloscopes for Camera Monitor	4,500
One Oscilloscope for Measuring Color	3,000
One Vectoroscope for Measuring Color	4,200
One Switcher (10 x 1) for Technical Bank Monitor	365
One Character Generator	9,000
Three Racks for Processing Equipment	630
One Electronic Editor for Videotape Recorders	6,000
One 16-Channel Switcher	12,000
16 Microphones of Different Types and Brands	5,000
Two Professional Turntables	2,000
Three Rep. Cartridge Recorders	2,000
One Audio Generator	600
One Rep. Audio Recorders (Reel 1/4")	3,000
One Graphic Equalizer	1,500
One Monaural Amplifier (100 Watts) Local Sound	500
Five Two- or Three-way Speakers (90 Watts)	3,500
Four Audio Distributors	2,600
One <u>Boom</u> Cart for Microphone Assembling	9,000
Five Microphone Stands (for Floor Use)	160
Five Microphone Stands (for Table Use)	100
One Foldback Amplifiers (50 Watts)	900
One Intercom System (Equipped with Earphones)	2,000
Two Jack Panel for Audio Interconnection	600

Lights and other Fixtures

20 Scoop Lights (2kw)	\$ 4,000
20 Spot Lights (2kw)	6,700
20 Baby Lights (1kw)	8,000
Four Projector Lights (1kw)	1,600
One Dimmer for Light Control	15,000
10 Light Stands	2,100
10 Floor Lights	5,000
One <u>Cyclorama</u> (Depending on Size of Studio)	
Two Sets of Equipment for Front-Projection Effect	700
One Teleprinter System	
One Master Camera Adjuster	300
Wires, Cables, and Connectors for Installation	7,000
Eight Earphones for Intercom System	4,700
One AC Voltage Stabilizer (13kw)	3,000
Two Projection Lights	800
8 Bandoor Lights	<u>600</u>
	<u>TOTAL</u> <u>\$825,775</u>

J. TARGET POPULATION CONSIDERED IN THE RECOMMENDATIONS

The estimates of increased ETV coverage have been based on the number of schools, students, and teachers. Taking as a base number the totals in each category not covered by ETV in 1979, increases of 10, 20, and 30 percent have been calculated for each one.

The estimates illustrate the extent of the projected increase in coverage and service, but they do not constitute a recommendation by the Academy for Educational Development. The project strategy must be based on the financial availability and the administrative and political wishes of GOES, which, at the time of the study's completion, had not been clearly expressed.

The data in this section are intended for orientation in carrying out a more thorough feasibility study of the increase in services and coverage by ETV.

GRADES 1 AND 2

TARGET POPULATION WITHIN THE ETV SYSTEM

(NOT COVERED)

1979

SCHOOLS	%	TEACHERS	%	STUDENTS	%
1.426	63	15.450	81.2	435.073	66.1

1. Phase I

a. Schools

By covering 10 percent of the total number of non-participating schools, the national coverage for second and third grade schools will increase to 43.2 percent, and 142.6 new schools will be incorporated into the ETV system.

By covering 20 percent of that number, the national coverage for second and third grade schools will increase to 49.6 percent, and 285.2 new schools will be incorporated into the ETV system.

By covering 30 percent of that number, the national coverage for second and third grade schools will increase to 55.8 percent, and 427 new schools will be incorporated into the ETV system.

b. Students

By covering 10 percent of the total number of non-participating students, the national coverage for second and third grade students will increase to 6.6 percent, and 87,014 new students will be incorporated into the ETV system.

By covering 30 percent of the total number of non-participating students, the national coverage for second and third grade students will increase to 19.8 percent, and 130,521 new students will be incorporated into the ETV system.

c. Teachers

By covering 10 percent of the total number of non-participating teachers, the national coverage for second and third grade teachers will increase to 26.9 percent, and 1,545 new teachers will be incorporated into the ETV system.

By covering 20 percent of that number, the national coverage for second and third grade teachers will increase to 35.1 percent, and 3,090 new teachers will be incorporated into the system.

By covering 30 percent of that number, the national coverage for second and third grade teachers will increase to 43.2 percent, and 4,635 new teachers will be incorporated into the ETV system.

2. Phase II

This phase will incorporate into the system 282 urban schools and 771 rural schools (first basic cycle); 14,100 first grade students in the rural area; and 36,550 students in the urban area. A total of 846 and 2,313 teachers (first cycle) will be incorporated into the system in the rural and urban areas, respectively. To calculate equipment needs, first and second grade schools are included, as components of the present system.

3. Coverage A & B

The four repeaters presently under construction will provide coverage for 62.7 percent of the total number of rural schools (484); 80.8 percent of the total number of rural students (31,135); and 62.8 percent of the total number of rural school teachers (1,453).

The above figures show the convenience of servicing the rural zones, which will be incorporated into the ETV system at the end of 1979.

4. Coverage B

This coverage will be provide to meet the national demands of the educational system in grades one to three.

K. AMOUNT BUDGETED FOR THE PROJECT BY PHASES

1. Phase I

a. Technical Assistance

● Formative Evaluation (1.5 person/year)	\$ 120,000.00
● Data Management, Planning, and Resource Allocation, Systems Analysis (1 person/year)	80,000.00
● TV and Movie Production (6 MM)	40,000.00
● Teacher Training (6 M/M)	40,000.00
● Production of Materials (6 M/M)	<u>40,000.00</u>
	<u>Subtotal</u> \$ 320,000.00

b. Participant Training

● Formative Evaluation (36 M/M)	<u>\$ 54,000.00</u>
	<u>Subtotal</u> \$ 54,000.00

c. Equipment

● Studio Equipment	\$ 364,000.00
● TV Sets (854 Sets at \$200)	170,800.00
● Vehicles (Evaluation/Materials/Training)	<u>30,000.00</u>
	<u>Subtotal</u> \$ 564,800.00

Total Phase I \$ 938,800.00

2. Phase II

a. Technical Assistance

● Production of Materials (6 M/M)	\$ 40,000.00
● Teacher Training (6 M/M)	40,000.00
● TV Production (1 person/year)	<u>80,000.00</u>
	<u>Subtotal</u> \$ 160,000.00

b. Equipment

● Studio Equipment	\$ 825,775
● TV Sets (6,634 Sets at \$200)	<u>1,326,800</u>
	<u>Subtotal</u>
	\$2,152,575
	<u>Total Phase II</u>
	<u>\$2,312,575</u>

Phase I \$ 938,800

Phase II \$2,312,575

PROJECT
TOTAL \$3,251,375