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3. AUTHOR(S)
 Schramm, Wilbur; Mayo, J. K.; McAnany, E. G.; Hornik, R. C.

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9. ABSTRACT

The second-year report of a four-year study of Instructional Television (ITV) in El Salvador's Educational Reform. This year, 1970, saw a great increase in ITV classes, as well as revisions and improvements in the first-year program.

From the 1970 samples of seventh and eighth grade ITV classes, substantial gains in all subjects were found in the seventh grade as a whole, with significantly larger gains in ITV classes. Eighth grade ITV classes made less remarkable gains, but still more than in the traditional ones. In science, however, traditional classes outperformed their ITV counterparts.

Attempts to measure the learning effects of ITV as distinct from other components of the Educational Reform were inconclusive, but it was decided that ITV at least had a great catalytic effect on the new system.

Teacher attitudes toward the new system, while favorable, were not quite as enthusiastic as in 1969. Student attitudes remained very good, and their aspirations toward higher education and careers stayed high.

Tests and questionnaires used in gathering this data are in the appendices.

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TELEVISION AND EDUCATIONAL REFORM

IN EL SALVADOR

Complete Report on the Second Year of Research

Wilbur Schramm
John K. Mayo
Emile G. McAnany
Robert C. Hornik

Research Report No. 7

This is one of a series of reports of research on the Educational Reform Program of El Salvador, and especially its use of instructional television. This report has been prepared by members of the Institute for Communication Research, Stanford University, on behalf of the Academy for Educational Development, under contract with the U.S. Agency for International Development.

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4. The El Salvador Educational Reform: Some Effects of the First Teacher Retraining Course. Research Report No. 2. July, 1969. By Emile G. McAnany, Generoso Gil, Jr., Donald F. Roberts. *
5. Measuring Educational Development through Classroom Interaction. Research Memorandum No. 1. September, 1969. By Wilbur Schramm. *
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SUMMARY

The Educational Reform

Nineteen seventy was a year of expansion in El Salvador's Educational Reform. Only 32 seventh-grade classrooms had tried out television and the new curriculum in 1969. In the school year just ended, however, the new curriculum was installed throughout the seventh grade, and television became available to 219 classrooms -- 54 per cent of the 17,407 students enrolled in that grade. Meanwhile, the 32 classes that we had studied in 1969 moved into the eighth grade and became pilot classes there.

Seventh-grade television programs were revised and substantially improved on the basis of a year of experience. Television in the eighth grade suffered from late completion of the eighth-grade curriculum, inexperienced production teams, and crowded conditions in the San Andrés studio which often kept that facility operating 12 hours a day. It was rather remarkable that no scheduled broadcasts were missed, but the eighth-grade crews were hard pressed to get more than a day or so ahead of schedule and the quality of programs produced under these difficulties was a source of worry to all concerned.

A \$1.9 million U.S. loan was ratified during the year, unfortunately not in time to make possible completion of the new Santa Tecla studio complex in time for the 1971 school year. These new studios will be completed in 1971, however, and they will greatly alleviate production problems.

The supervisory system, a well-conceived effort to substitute advice and assistance for the surveillance and punitive character of the former supervision, was almost paralyzed during 1970 by administrative problems. An extensive reorganization of school administration at the end of the year appeared to open the way again to having an effective corps of supervisors.

Another 250 secondary schoolteachers went through the full year retraining course at San Andrés, and plans were being made to install the Reform curriculum in grades 1-6.

Thus, although behind schedule because of the delays over loan arrangements, the Educational Reform continued to move forward strongly. Within a year, ITV will have been installed throughout the Plan Basico grades (7-9), most of the 900 Plan Basico teachers will have been retrained, and over 500,000 students from grades 1 through 9 will be using the new curriculum.

Our 1970 samples

Our seventh-grade samples in the year just concluded consisted of 28 TV classes, six non-TV or "traditional" classes, and six "control" classes which had all the Reform components except for television -- a total of 1364 students. In our eighth-grade sample were 27 TV, nine "traditional," and four "control" classes -- 1154 students. We also sampled 211 teachers for one survey of attitudes toward the program, 190 for a basic attitudinal study, and 197 and 160 teachers respectively, at the beginning and end of the San Andrés retraining course.

Student learning

In 1970 as in 1969 there were substantial gains in all subjects throughout the seventh grade, and significantly greater gains in the television than the "traditional" classes. The advantage in the television classes was less than in 1969, which can be attributed to the fact that all seventh-grade classes were using the new curriculum, teachers' guides, and classroom materials, and some of them had retrained teachers as well. Thus there were no longer any truly "traditional" seventh-grade classes in 1970, and the difference in opportunities offered the TV and non-TV classes was less than in 1969.

Eighth-grade performances were less encouraging. The same classes that performed so much better than traditional classes in 1969, still made significant gains, but relatively little more than the traditional classes, and in one course (science) the traditional classes actually outperformed the TV classes. We have analyzed this unexpected result as thoroughly as possible after the fact, and conclude that it is due mostly to two circumstances: a late and not entirely suitable achievement test, and somewhat less than completely satisfactory TV program. Because the eighth-grade curriculum was completed late, the achievement tests prepared by the Educational Testing Service were correspondingly late, and actually could not be administered until almost three months into the term. By this time large amounts of the material covered by the test had already been taught (particularly in science) and were already reflected in the "before" test. Furthermore, a number of the questions on the test

(see chapter 3) which had been derived from the rather abstract curriculum outline, were nowhere covered in the course itself. The quality of the programs was reduced by inexperienced production teams, crowded studio conditions, and a late start on making the year's programs. These factors may be ample to account for the test scores, but the results remain a source of concern for the project, and must be checked carefully in the 1971 research.

The effect of television

Attempts to measure the learning effects of television as distinct from the components of the Educational Reform (retrained teachers, new curriculum, teachers' guides, classroom study materials, etc.) were as inconclusive in 1970 as they had been in 1969. In each grade students were randomly assigned to a group of experimental and control classes (the latter identical in every component to the former, except without TV). There was a trend in achievement in favor of the television classes: in four out of six subjects they gained more than the controls, one comparison was in favor of the controls, and one was very little different. But only one of these comparisons even approached significance (.08). We conclude that the introduction of television has had a powerful catalytic effect on what El Salvador has been able to do toward reforming its educational system, but have so far been unable conclusively to separate out its learning effect.

Attitudes of teachers

Attitudes of teachers at the end of 1970 toward the new system,

and television in particular, were slightly less favorable than in 1969. However, they were still quite favorable, and the lower scores are traceable chiefly to science and mathematics teachers (who were dissatisfied with programs, especially in the eighth grade) and particularly to teachers who were graduates of the Escuela Normal Superior, and have felt their preferred status has suffered in the Reform. This situation is analyzed in chapter 4. Also in chapter 4 are reports on attitudes of teachers in retraining courses (in general, very favorable), of attitudes toward different TV series (science, as might be expected from the achievement results, rated low), and their identification of "problems" that arise with teaching in the new system.

Attitudes and aspirations of students

Student attitudes toward the new system in general and ITV in particular remained highly favorable in 1970. They were slightly less favorable in the eighth grade than in the seventh, possibly reflecting some of the problems referred to earlier in this summary. However, eighth-grade students were more likely than seventh to agree with the statement that classes with television are more pleasant than other classes, and in both grades there was higher agreement with this statement at the end than at the beginning of the year.

The aspirations of students toward further education and careers were dramatically high, and constituted a possible source of worry to El Salvador. Fifty-five per cent of the students in the seventh and eighth grades were aiming toward semi-skilled, and almost

40 per cent toward professional occupations. In dramatic contrast, 70 per cent of their fathers were working in unskilled occupations, only 10 per cent in semi-skilled, and barely one per cent in professions. This difference was reflected in education. Less than 30 per cent of the fathers had gone beyond primary school, and less than 2 per cent to universities. But 95 per cent of the students intended to go beyond Plan Basico, and 40 per cent were aspiring to university education.

Effects on teaching

A major goal of the Educational Reform, along with modernizing the curriculum and the ways of learning, has been to modernize teaching. This year we have been able to develop an observation form, simple enough to be used by supervisors not trained in research, to measure what is happening in the classrooms. The results are encouraging: no giant leaps forward, but a steady, consistent move toward modern styles of teaching. In the new-system classrooms there is consistently less lecturing, more thought questions (as distinguished from rote memory questions) asked by both teachers and students, more discussion, more opinions given by students, more individual study, more use of audio-visual aids, and other behaviors which were uncommon in the traditional classes, where lectures, rote memory and recitation (the production of "human archives" as the Minister of Education described it) were the rule before the Reform.

Learning feedback

Throughout ITV systems the usual kind of feedback to other studios has been brief questionnaires giving teacher opinions of different televised courses. These have omitted the information most desired by teleteachers and production teams -- how much were the students learning? This year we were able to develop a system for making tests and administering them by television, in such a way as to have the results relayed back to the studios in time for corrective action to be taken if necessary. These were tried out this year in two subjects, and results came back to the studios, at latest, within three days. This learning feedback system will be expanded in 1971 to as many subjects and as many units of the courses, as can be served.

Effect on disadvantaged learners

One question of great interest has been whether a system built around ITV has the effect of equalizing learning opportunities for relatively more and less advantaged students, or whether it further increases the gaps that exist. In El Salvador the relatively disadvantaged learners are the students who test lower on general ability, who come from rural schools, who are female, who come from a family background where there is less education and less affluence. We now have sufficient time span and sample to test what happens to these different groups under the Reform. Although we are not yet prepared to give a final judgment we find an encouraging trend toward narrowing the gap -- that is, a differential effect in favor of the less advantaged and the groups that start lower at the beginning of the year.

Chapter One

INTRODUCTION: FOCUS OF THE REPORT

This report¹ summarizes the research conducted on El Salvador's Educational Reform during the 1970 school year (February - November). It focuses primarily on the use of instructional television (ITV) in that reform. As we have suggested in earlier reports,² instructional television in El Salvador has acted as a catalytic agent for a wide range of educational reforms and innovations. Besides making available

¹During the past year, many different people have contributed their special skills to the work reported in this volume. The work could not have been completed without the help of dedicated research assistants both at Stanford and in El Salvador. For their assistance in computer programming and data analysis, we are particularly grateful to Dan C. Smith and Peter L. Spain. We also wish to thank Mrs. Linda Miller and Mrs. Ann Peterson for their help in preparing the final manuscript.

Much of the work involved in producing this and other research reports has been carried out in conjunction with our counterparts in the Evaluation Section of the Ministry of Education's ETV division. Since its founding in 1968, this office has been under the direction of Lic. Luis Fernando Valero Iglesias. Our own office in San Salvador has also contributed a great deal to this report through the efforts of Sra. Ana María Merino de Manzano, Br. German Rodriguez, Sra. María Ester de Zamora, and Sra. Nohemi de Ehrhardt.

²"The Use of Television in the El Salvador Program of Educational Reform," Administrative Report No. 2. April, 1969, by Wilbur Schramm.

"Television and Educational Reform in El Salvador: Summary Report of the First Year of Research," Research Report No. 3. May, 1970, by Emile G. McAnany, John K. Mayo, and Robert C. Hornik.

new sources of information to the classroom in the form of televised lessons, printed teachers' guides, and individual student workbooks, ITV has facilitated the introduction and acceptance of other important changes in the educational system. In revising the primary and secondary school curricula, retraining all junior high teachers, and establishing new supervision and evaluation programs, the Salvadorans have acted boldly and with the belief that genuine educational reform implies much more than the simple installation of television receivers. Judging from the Salvadoran experience, concomitant changes in philosophy and structure may be required if a new technology such as television is to produce the positive results that educational planners throughout the world have hoped for.

Before turning our attention to the results of the second year's research, it may be helpful to review briefly the foundations of El Salvador's Educational Reform. This can be accomplished most efficiently by repeating in large part an outline presented in last year's summary report, which represents not only our observations but also a series of Ministry of Education policy documents stretching back to 1967.³

1. The two main aims of Salvadoran education are:

³The most concise description of El Salvador's Educational Reform may be found in Que es la reforma educativa? Sus fines y sus programas (San Salvador, El Salvador: Direccion de Publicaciones, Ministerio de Educacion, 1969).

- a. to give an integral formation of the personality of students, instilling in them a deep sense of human solidarity.
 - b. to be a basic factor of social and economic development through an adequate, opportune, and efficient preparation of students.
2. The most pressing problems facing the Ministry of Education at the outset of the Reform were:
- a. a disorganized Ministry spread throughout 20 scattered buildings in San Salvador.
 - b. a curriculum that was overloaded at all levels with irrelevant material.
 - c. more than 2,000 unemployed graduates of primary normal schools coupled with a severe shortage of adequately prepared secondary teachers.
 - d. an antiquated and inefficient supervision system.
 - e. lack of space to accommodate students, 70 per cent of schools having only a single room.
 - f. an 80 per cent dropout rate in the six-year primary system.
3. To remedy these problems, the Ministry of Education proposed a reform that would increase efficiency, raise quality, and promote increased enrollments in both primary and secondary. It would do so in the following ways:

Efficiency

- a. create a five-year educational reform plan (1968-1972).
- b. reorganize the administration of the Ministry of Education.
- c. create a new system of supervision.
- d. improve the administration of the secondary school division.
- e. improve services in rural primary schools with a 3-3-6 system (three classrooms, three teachers and six grades taught in a double session).

Quality

- a. complete reform of curricula for grades 1-9.
- b. change the structure of the school system in order to provide nine years of basic education for all students and a wider diversity of technical education programs in higher secondary (grades 10-12).
- c. organize a large retraining program for 900 Plan Basico (grades 7-9) teachers.
- d. install a system of instructional television for presentation of core material for Plan Basico (about 14 broadcasts per week in five subject areas) and eventually for primary as well.

Sufficiency

- a. increase enrollments in secondary and primary.
- b. build new schools and increase the capacity of existing schools.

Nineteen seventy was of critical importance to the overall success of El Salvador's five-year educational reform because, for the first time, many of the new programs were put to a true test in the schools. The first year of the Reform (1968) had been devoted to organization and planning. During this period, the objectives of the Reform were spelled out and later defined in concrete educational programs.

The project entered what might best be termed the stage of experimentation during 1969. It was during this year that various reforms were tried out in a limited fashion in the schools. Televised instruction, for example, began in 32 carefully selected seventh-grade classes. The curriculum had been thoroughly revised for these classes

and their teachers had received a special training course at the San Andrés Normal School. It was on the basis of these preliminary trials that various programs were reviewed and, where necessary, modified for later adoption by the entire system.

With the planning and experimentation stages behind them, the Reform's leaders turned their attention in 1970 to the consolidation and expansion of their policies. The task of implementing a wide range of reform programs simultaneously in a large number of schools was a challenging one which tested many different kinds of abilities: the ability of the project's leaders to administrate change; the ability of the new reform measures to solve El Salvador's long-standing educational problems; and, finally, the ability of teachers and students to respond in a positive way to numerous changes, many of which they could not yet be expected to understand.

Four overarching questions concerned the evaluation team during 1970:

1. Would the ambitious administrative and academic reforms undertaken by the Ministry of Education be manageable on a broad scale throughout the Salvadoran school system?
2. Would students in the new system continue to learn in a more effective manner than their counterparts in traditional classes?
3. Would students and teachers maintain the same high level of enthusiasm for the Reform that they had demonstrated during the pilot year (1969)?
4. How would the educational reform affect the attitudes and aspirations of students? Would such aspirations be fulfilled by the opening up of new schools and job opportunities or would they be frustrated through a continuing lack of opportunity in these areas?

These four questions guided the second year's research and provide the structure for this report. In chapter II, we will review, briefly and in a descriptive fashion, the administrative history of the 1970 school year. Special attention will be paid to the most important aspects of El Salvador's Educational Reform: administrative reform, curriculum revision, instructional television, teacher training, and supervision. The chapter will conclude with a note about the research design of the second year and will provide basic data on student enrollments by level for the period 1968-1970.

Chapter III will deal specifically with the learning results of 1970, the second year in which televised instruction was used in the Salvadoran schools. Here we will be concerned with the progress of the original 32 pilot classes which in 1970 entered the eighth grade. A new sample of 27 seventh-grade classes was selected for intensive analysis from the enlarged population of 219 seventh-grade classes which received instruction by television this past year. For both seventh and eighth grades, the learning of the television classes will be compared with that of a sample of traditional classes that did not receive televised instruction or most of the other reform programs. In addition, Chapter III will analyze the results of a continuing experiment designed to isolate the particular contribution of televised instruction to student learning, and will analyze the evidence we have as to whether television widens or closes the gap in learning performance between more and less disadvantaged groups.

Chapter IV will review the results of the attitude surveys

which have formed an integral part of our research in El Salvador. The surveys have monitored both teacher and student reactions to televised instruction. In another kind of teacher survey instituted this past year, we have also measured teacher ratings of the various television series, and these, too, will be reported in chapter III.

Chapter V will examine student attitudes and the complicated question of student aspirations in the context of educational reform. The long-range implications of high student aspirations coinciding with limited educational and job opportunity will be discussed in terms of El Salvador's economic development. In this chapter, we intend to summarize the longitudinal data obtained over two years and four different student surveys as well as the results from a special interview study of parents conducted in the second half of 1970.

In chapters VI and VII we shall review the results of two special projects which were undertaken by the evaluation team in 1970. The first, done in conjunction with the division of secondary school supervision, represents an attempt to develop a convenient mechanism for measuring changes in classroom teaching behavior. An observation form was developed and pretested for this purpose in a limited number of eighth-grade classrooms. The second project was aimed at developing a method for obtaining quick feedback on student learning from classes receiving televised instruction. It was felt that the studio production teams needed this kind of information to improve their television teaching. Although the results of these projects have been published as individual research reports, we feel they are of significant interest and importance to merit mention in this document.

Chapter Two

ADMINISTRATIVE RECORD OF 1970

The administrative record of 1970 is the second stage of a continuing effort to construct what eventually will be a detailed historical account of El Salvador's Educational Reform. We believe that such a history will someday constitute a useful reference for educational planners from other nations concerning the wide variety of opportunities and problems (human, material, and organizational) that confronted El Salvador in her effort to enact educational reform programs.

Methods. Four main data sources have been utilized to construct the administrative record for 1970. The nature of each one was explained in our 1969 report; they are repeated below to help orient those readers who are unfamiliar with our previous publications:

1. The series of Ministry of Education documents which offer a formal guide to educational policy in El Salvador. Included in this category are the speeches and special reports that Minister Beneke has presented to the National Assembly.
2. The monthly reports and administrative memoranda of the U.S.A.I.D. personnel working in various aspects of the Reform (ITV, teacher training, curriculum, supervision, guidance, and tests and measurements).
3. Participant observation in numerous planning sessions with both Salvadoran and U.S.A.I.D. personnel.
4. Taped interviews with project leaders and their foreign advisers.

Although we have been engaged in administrative research for over two years, the sensitive nature of this work dictates that we do not draw all the conclusions we might at this time. Much of the information we have obtained is still privileged and more time is needed to evaluate the results of many long-range decisions which were made even before we began our investigations in El Salvador. Therefore, the primary purpose of the following sections is not to make final judgment or to second guess the Reform's leaders, but rather to bring our chronological account of the Reform up to the end of 1970.

A. Administration and finance. By the end of 1970, the structural reorganization of the Ministry of Education had been completed. The consolidation and centralization of the 22 agencies which made up the Ministry of Education up to 1967 had been accomplished through a plan drawn up after careful study by Clapp and Mayne, Inc., a management consulting firm from Puerto Rico. The plan established five basic departments within the Ministry. The function of each one of these departments is presented below:

1. Department of General Administration. This department was given general responsibility for planning. Furthermore, it was put in charge of supervising all areas of the administrative reform: implementation, control, and evaluation of results.
2. Department of Personnel. Although more than 15,000 persons were employed by the Ministry of Education in 1967, the Ministry had no single office in charge of personnel administration. Thus, the important tasks of job classification, recruitment, promotion, transfer, and payment were handled by a number of different agencies whose jurisdictions overlapped. The assignments of teachers to schools and promotion

were handled in a confused and often random manner and they were constantly subjected to the pressures of friendship or politics.

The new Department of Personnel required a great deal of dedicated work to become a going concern. Many new systems and procedures were instituted. The greatest problems were in the primary level and it received the most attention throughout 1970. Among the accomplishments of this department may be counted: a system for classifying jobs within the Ministry, improved record keeping, a more equitable method for increasing teachers' salaries, the beginning of automated pay procedures, and a start toward the curbing of personal influence in the assignment and transfer of teachers.

3. Department of Maintenance. Many of the problems confronted by this department were of a financial nature, i.e., there was and is not enough money available in El Salvador to keep all the schools as well equipped and as well maintained as the Ministry leaders would like. Nevertheless, it was felt at the outset of the Reform that better use could be made of existing resources in this area. Therefore, this new department was established (a) to centralize all existing resources and equipment, and (b) to implement modern inventory procedures and controls. The shortage of books, teaching materials, and desks remains an important problem, but it is hoped that through an increased investment in education -- through higher national budgets and foreign borrowing -- these shortages may be alleviated substantially in the next few years.
4. Department of General Services. As the title implies, this department was established to handle the administrative affairs that did not fall under the jurisdiction of either personnel, maintenance, or finance. All printing services were concentrated here along with a new system of general record keeping and documentation. All Ministry vehicles were placed under the control of this department in the hope that repairs could be kept up and a more rational use of the few remaining operating vehicles could be worked out.

5. Department of Finance. The functions of this department do not need much explanation. Briefly, they involve the translation of educational policies, both short and long term, into concrete monetary estimates and budgets. To improve the performance of this section of the Ministry, five subdivisions were created: accounting, disbursement, purchasing, rents (of private buildings for use as schools), and inventories.

The financial outlook for the Educational Reform was a good deal brighter at the end of 1970 than it had been at the end of 1969. Following an initial \$653,000 grant from U.S.A.I.D. in 1968, and a subsequent one of \$400,000 in 1969, the Reform was threatened by the failure of a major 1.9 million dollar loan to receive the final approval of the U.S. Government. When U.S. approval was obtained, further delay resulted from the Salvadoran Government's delay in ratifying the loan agreement. The money was of critical importance to the ITV project for without it needed new studios could not be constructed and the expansion of service to the eighth and ninth grades could not proceed on schedule. Finally, in October, 1970, the loan was ratified. The delay meant that the new studios would not be completed on schedule, but classroom broadcasts would not be seriously impaired. To alleviate pressure on existing production and transmission facilities in 1971, the project's leaders decided to buy additional time from local commercial stations.

In addition to the \$2,953,000 in U.S. grants and loans that has been earmarked specifically for the ITV project, El Salvador has also received financial assistance in other areas of the Reform. Most notable in this regard is a \$4.9 million loan from the World

Bank for the construction and equipping of the new diversified senior high schools and another \$8.2 million U.S. loan for primary school construction. According to Minister Beneke's estimates, the value of technical assistance that has been donated by various international agencies such as UNESCO and UNICEF as well as by friendly governments such as the United States, Japan, and Great Britain amounts to approximately \$2 million.

The budgets of the Ministry of Education for the past four years have reflected El Salvador's growing commitment to the Reform:

1967	(\$22.5 million)*
1968 (first year of the Reform). . .	(\$24 million)
1969	(\$26.2 million)
1970	(\$31.2 million)

These figures comprise, respectively, 22.1, 24.7, 25.4, and 28 per cent of the total national budgets.

B. Curriculum revision. The objective of the general curriculum revision was to develop courses of study which would be more in tune with the needs of the country. Traditionally, Salvador's primary and secondary school curricula had been impractical, concentrating on concepts which students would memorize in rote fashion and then repeat verbatim on examinations. In Minister Beneke's words, such courses of study produced "human archives," students who could recite but could

* Figures represent rounded off dollar equivalents.

not attack problems in a systematic manner. To reverse this situation, the new curricula were designed with specific behavioral objectives in mind. Such objectives were stated along with appropriate activities, teaching methodologies, evaluation techniques, and bibliographies for each content area. In this way, the Ministry curricula planners believed that teachers, who had grown up under the old system, would be better able to supply the new guidelines to their own experience and training. The new techniques presented in the revised curricula were, of course, also reflected in the teachers' guides and student workbooks which formed a fundamental part of the ITV system in grades 7-9.

In 1970, the new curricula were put into practice in only the seventh and eighth grades. As work proceeded on the revision of grades 1-6 and 9, different content segments were pretested on a limited scale in certain experimental schools. Various strategies for orienting the classroom teachers in the new curricula were debated in the latter half of 1970 and it was finally decided to undertake a massive training program via television in the first part of the 1971 school year. It remains to be seen whether or not a short-term orientation course will be sufficient training for the vast number of primary teachers who will be required to use the new curricula for the first time in 1971.

The mistrust which existed between the curriculum reformers in the Ministry of Education and the ITV production personnel at San Andrés in 1969, evaporated in 1970. Communications between these two

important groups improved considerably and their efforts once again became complementary. This was due principally to the decision of the respective division heads to work together and to do their best to keep channels open between their staffs.

C. Television production. We have termed the 1970 school year in El Salvador the year of expansion and this is especially true for the ITV component of the Educational Reform. In 1969, only 32 seventh-grade classes received televised instruction. In 1970, when the system was broadened to include 219 seventh-grade classes, the original 32 classes advanced to eighth grade and retained their pilot status at that level. All told, 9,401 seventh-graders (54 per cent of the total number of students in that grade) and 1,266 eighth-graders (9 per cent of total) participated in the ITV system in 1970.

Although most of the organizational and scheduling difficulties of the first year had been ironed out by the second semester (November 1969), the burden of producing twice the number of programs in the same facilities caused great difficulty at the beginning of the new year. The television teams that had been recruited for the eighth grade (teleteachers, script writers, production assistants, and cameramen) were not given enough training before being put to work on a rigorous taping schedule. To make matters worse, the majority of the seventh-grade personnel were kept in their old teams. This left the eighth-grade production units with a dearth of experienced people and minimized their chances for producing quality lessons.

The delay in the completion of the new eighth-grade curricula further complicated the situation and led ultimately to special measures being taken to alleviate the pressure in the studio. Eventually, the studio was kept operating 12 hours a day and work was staggered in two shifts in order to give each production team more time to prepare and tape their lessons.

As the year progressed, the new studio personnel gained confidence and were able to adjust to their demanding schedules. However, continuing supply problems and power failures at San Andrés prevented the eighth-grade production teams from ever getting very far ahead in their series. In some cases, there was only a one-day lag between the taping and transmission of lessons. Under such circumstances, it is easy to see why the quality of many programs was of concern to the project's leaders.

We do not wish to present an unduly bleak picture of the studio operation in 1970 because, in fact, there are many reasons for the Salvadoran leaders to be proud of it. Despite the limitations of time and space, no scheduled programs were missed. The overall performance of the seventh-grade production teams was also a reason to be pleased. Building upon their 1969 experience, the seventh-grade teams were able to revise and substantially improve the quality of their lessons in 1970. This statement is borne out by the reactions of classroom teachers which we shall discuss in chapter IV.

The transfer of the production facilities to the new studio complex in Santa Tecla -- projected for the summer of 1971 -- should

go a long way toward eliminating the organizational and material problems which plagued the project during the first two years. With two fully equipped studios, there will be more studio time available for the production teams to prepare and rehearse their lessons. Thus, as more experience is gained on the job, we may expect a sharp improvement in the quality of the televised lessons in the years to come.

D. Teacher training. In the 1969 report, we emphasized the importance of El Salvador's teacher training programs to the success of her Educational Reform. By providing a full year's retraining at the San Andrés Normal School for each of 900 Plan Basico teachers, the Reform's leaders are paying special attention to the needs of the people who will be most responsible for implementing change in the schools. During the retraining year at San Andrés, each teacher receives an intensive course in his area of specialization: either science and math or humanities and social studies. In addition, all teachers receive courses on how best to use television in the classroom. But over and above the specific objective of preparing better qualified secondary teachers, the retraining program is also aimed at giving the individual teachers a new sense of self-esteem as well as pride in their profession. Such qualities have been largely absent from the teaching corps in the past, but they will be of crucial importance in the future when teachers will be asked increasingly to reevaluate their own performance and standards in light of the massive changes called for in the Reform.

The second complement of 250 secondary teachers attended the San Andrés course during 1970. Although they followed the same basic program as their predecessors the year before, a number of new courses were added to the curriculum. For the first time, teachers received training in test construction and administration. This course was added in response to suggestions made by the preceding group of trainees and in recognition of the fact that, if behavioral objectives were going to be stressed in the new curricula, teachers would have to modify the traditional ways of evaluating student performance. Accordingly, teachers were encouraged to think of evaluation as an essentially productive, ongoing, and multidimensional activity in contrast to the dreary and punitive exam system they had grown up with, and, in most cases, simply incorporated into their own teaching.

An experimental guidance course was also inaugurated at the San Andrés Normal School during 1970. It was designed to familiarize teachers with certain basic concepts of student guidance as well as provide them with resources for following up work in this area in their own schools. Tensions between the guidance specialists at the Ministry of Education and those at San Andrés prevented this course from having the impact that was anticipated, but it is hoped that such differences will be settled in the near future and that a guidance course will be fully integrated into the Normal School program during 1971.

The expansion of the campus library and bookstore in 1970 also contributed in important ways to the retraining programs. The library

facilities permitted teachers to undertake special research projects and to pursue, on their own, new interests that had emerged as a result of their course work. From the campus bookstore, teachers at the retraining course were able to buy, at reduced prices, reference books which would help them apply what they had learned at San Andrés to their own classes. Salvadoran teachers were hungry for reference materials and for teaching aids of all kinds, and the bookstore made a start toward meeting these demands.

Secondary teacher retraining was by no means the only activity going on at the normal school during 1970. Individually tailored courses for primary and secondary school supervisors, principals, and physical education instructors were also in progress at different times in the year. If one place could be designated the hub of the Salvadoran Educational Reform, it would have to be the San Andrés Normal School.

E. Supervision. Minister Beneke and the other leaders of the Reform have stressed continually the need for a strong program of school supervision to insure the successful adoption of educational innovations in El Salvador. In a number of documents, they have called for an end to the old system of supervision which was based largely on the exercise of authority and a lack of positive reinforcement and guidance. In its place, they have proposed a new system of supervision, one which would be oriented toward helping teachers apply television, the new curricula, and their retraining experience, to the

realities of the Salvadoran classroom. In addition, supervisors in the new system would provide a critical link between the Ministry planners and the teachers in the schools.

In spite of the official hopes and plans, there was no effective program of secondary school supervision during the 1970 school year. This was due to a number of special problems and circumstances. In the first place, although 17 supervisor positions had been established for 1970, 13 of these were not filled until the ninth month of the school year. This came about because an entire three-month training course, which had been specifically set up in the vacation period between the 1969 and 1970 school years to select and train new supervisors, was declared null and void for legal and political reasons. The candidates who had participated in this course were reassigned to their former positions. The steps involved in recruiting candidates for a new supervisor course, as well as the administration of the course itself, and the appointment of the new people upon its conclusion, consumed more than five months. There was little time left to organize a coherent plan of work for the remainder of the year.

The work of the four remaining supervisors -- all of whom had gained valuable experience as ITV utilization specialists in 1969 --

For most of 1970, the 60 of 90 primary school supervisors were taking part in an in-service training course at San Andrés. For this reason, and because the Reform has not affected the primary level so far, this group will not concern us at this time.

was hampered by a lack of cooperation, leadership, and support on the part of the leaders of the Division of Secondary Education in the Ministry. These problems came to a head in late August and caused the resignation of the director of the supervision section, the man who had guided the ITV utilization program in 1969.

In sum, the former ITV personnel were not welcomed within the Division of Secondary Education in 1970 and their efforts to develop a new supervision system were, in fact, thwarted at every turn. The lack of sufficient personnel and cooperation was further complicated by lack of adequate transportation to make school visits. It became abundantly clear to the Reform's leaders at the end of 1970 that a major reshuffling would be required to set school supervision on a proper course.

Preliminary indications are that such steps have been taken in recent months. At the end of 1970, a major reorganization plan for both primary and secondary education went into effect. The divisions between the two were abolished and a new administrative structure was established. From now on, grades 1-9 will be administered through one office, the Division of Basic Education. Grades 10-12 have also been reorganized and are now located in the newly formed Division of Diversified Education. An encouraging footnote to these changes has been the rehiring of the former director of the secondary supervision section to oversee all supervision programs for the Division of Basic Education. Certain other personnel changes have increased the probability of success in his new job. For the first

time in over a year, it is possible to envision the eventual achievement of the new style of supervision which the educational system so desperately needs.

F. Evaluation. We conclude this chapter with some basic figures on student enrollments by level over the past two years and some notes on the various student and teacher populations upon which we have concentrated our research in 1970. These populations will be described in greater depth in following chapters, but we believe that a brief overview of them at this point will help prepare the reader for what lies ahead.

Seventh-grade samples. In 1970, there were 17,407 seventh-graders in El Salvador. Fifty-four per cent of this group (9,400) received televised instruction; 8,168 in public schools and 1,233 in private (including religious) institutions. Our research in the seventh grade focused on 40 public school classes: 28 TV classes, six non-TV or "traditional" classes, and six control classes which had all the reform components with the exception of television. For experimental purposes, we also selected a subset of six classes from the TV group for comparison with the control group. The so-called TV experimental and control classes were drawn from six different schools and students were randomly assigned to one of the two conditions. Our seventh-grade samples are summarized in the following chart:

TABLE ONE

Some enrollment statistics on the educational system in El Salvador

1. Kindergarten (parvularia): one-two years

February, 1969
Total: 23,218

February, 1970
Total: 24,211

2. Primary (primaria): six years

February, 1969
Total: 516,875

Public: 494,690 (95.7%)
Private: 22,185 (4.3%)
Boys: 272,693 (52.7%)
Girls: 244,182 (47.3%)

March, 1970

Total: 529,054
Public: 506,857 (95.6%)
Private: 22,197 (4.4%)
Boys: 278,166 (52.6%)
Girls: 250,888 (47.4%)

3. SecondaryA. Plan Basico

February, 1969
Total: 46,913

Public: 25,550 (54.5%)
Private: 21,363 (45.5%)
Boys: 26,243 (56.0%)
Girls: 20,670 (44.0%)

February, 1970
Total: 49,588

Public: 28,462 (57.4%)
Private: 21,126 (42.6%)
Boys: 27,577 (55.6%)
Girls: 22,011 (44.4%)

B. Higher secondary (bachillerato): two-three years

February, 1969
Total: 10,620

Public: 4,898 (46.1%)
Private: 5,722 (53.9%)
Boys: 6,401 (60.3%)
Girls: 4,219 (39.7%)

February, 1970
Total: 12,725

Public: 6,845 (53.9%)
Private: 5,980 (46.1%)
Boys: 8,210 (64.5%)
Girls: 4,525 (35.5%)

C. Short Courses (Carrera Corta): two-three years

February, 1969
Total: 27,343

Accountant: 7,616 (27.8%)
Comm. Sec.: 5,197 (19.0%)
Bookkeeper: 5,958 (21.7%)
Office help: 4,935 (18.0%)
Others: 3,637 (13.3%)

February, 1970
Total: 24,440

Accountant: 7,805 (31.9%)
Comm. Sec.: 5,426 (22.2%)
Bookkeeper: 5,636 (23.1%)
Office help: 4,409 (18.0%)
Others: 1,164 (4.8%)

<u>TV</u>		<u>Traditional</u>		<u>Control</u>		<u>TV/Experimental</u>	
N = 948		N = 216		N = 200		N = 221	
537	411	126	90	116	84	122	99
male	female	male	female	male	female	male	female
577	371	88	128	156	44	173	48
urban	rural	urban	rural	urban	rural	urban	rural

Eighth-grade samples. Of the 14,165 eighth-grade students, 1,266 (9 per cent) received televised instruction in 1970; 1,074 in public schools and 192 in private institutions. Although our sample number of classes was again 40, it differed somewhat in composition from the seventh grade: 27 TV classes, nine traditional classes, four control classes, and four TV/experimental classes* drawn from the same schools as the control group. The eighth-grade samples are summarized in the following chart:

<u>TV</u>		<u>Traditional</u>		<u>Control</u>		<u>TV/Experimental</u>	
N = 716		N = 283		N = 155		N = 129	
416	300	178	105	80	75	67	62
male	female	male	female	male	female	male	female
313	403	199	84	155	0	95	33
urban	rural	urban	rural	urban	rural	urban	rural

Teacher samples. There were approximately 450 Plan Basico teachers using television in 1970. For purposes of our year-end feedback survey, we sampled by grade and subject area:

*The four TV/experimental classes are included in the sample 27 TV classes.

	Math	Science	Spanish	Social Studies	English
7th grade teachers	21	21	20	20	18
8th grade teachers	21	23	24	21	21

Total: N = 211

In our year-end attitude survey, we attempted to include the teachers from all the classes from which we were gathering student learning data. This effort yielded a total sample of 190. Our teacher-attitude survey was also administered at the beginning and end of the teacher retraining course at San Andrés. This resulted in samples of 107 and 160 in March and November, respectively.

Chapter Three

STUDENT LEARNING, 1970

The sample of students

The learning results we reported for 1969, which was the first school year of the El Salvador Educational Reform, were based on 43 classes in 42 schools, all in the seventh grade. Of these, 32 classes had television, retrained teachers, the new curriculum, and all the materials of the Reform; four classes (controls) had all these except television; and 12 classes were taught without television in the traditional way as all public schools in El Salvador had been taught before the Reform. A total of 1,340 students in these classes took all six achievement tests, two questionnaires on attitudes and demographic information, and the tests of general ability and reading skill.

At the beginning of the 1970 school year, these students moved into the eighth grade, and became our primary eighth-grade sample for this year. At the same time, the new curriculum was extended to the entire seventh grade, and television was introduced into all the classrooms where it could be received -- a majority of the schools in the country. It is no longer possible, therefore, in the seventh grade to make the clear comparison between "television" and "traditional" classes that we made last year. All the seventh-grade classes, with

or without television, are now using the new curriculum, the new teachers' guides and classroom study materials, and some of them have teachers who have been through the retraining course. Therefore there is much less difference, this year than last, between the learning opportunities being offered the comparison groups in the seventh grade, and we should expect their learning gains to be less different than they were last year. As will become apparent later, this is precisely what we have found.

On the other hand, this year we had somewhat greater control over drawing the seventh-grade sample. In the first year of the Reform, the television classes were a pilot group selected by the Ministry of Education; we could draw a representative sample of traditional classes, but had no control over the selection of television classes. This year we have been able to select the entire sample, and for that reason have more confidence in its representativeness.

Our new seventh-grade sample consists of

- 28 classes with television, retrained teachers, the new curriculum and all the teaching materials associated with it;
- 6 control classes which had all these advantages except television. These were in schools where there were two seventh-grade classes, and students were randomly assigned to the television or the non-television class;
- 6 "traditional" classes that had no television, but used the new curriculum and its materials, and in a few cases had teachers who had gone through the retraining course.

A total of 948 students in the television classes, 200 in the six control classes, and 216 in the "traditional" classes completed all the achievement, ability, and attitude tests, and completed the questionnaires, and are here reported on.

It must be understood that the kinds of students who are in the seventh and eighth grades of public school in El Salvador are not completely representative of their age cohorts. Only about 17 per cent of the students who enter the first grade in El Salvador reach the seventh grade, and only about 15 per cent reach the eighth. Our experimental sample is thus highly selected by conditions outside our control -- partly on ability to learn, but also on ability to attend, family background, rural or urban residence, and other similar reasons. In a sense they are thus an elite group. However, there is another elite group -- perhaps even more of an elite -- in the same age cohort, from families that are high on the socioeconomic scale, and send their children to private schools.

We found last year, in detailed analyses, a considerable advantage in general ability and reading scores in favor of urban students over rural, male students over female, students whose father and mother had gone beyond primary school over those whose parents had not, and for those who had a television set at home over those who did not (the television set was used as a simple index of economic status). The sex difference in ability and reading scores was ascribable to the differential sex roles in the Salvador culture, and the others appeared to trace back to the quality of schooling and of support and help at

home. Furthermore, education and television ownership correlated highly with urbanization, and therefore there tended to be a group, even within this relatively elite sample, that could be thought of as more highly advantaged than others.

One thing that has much interested both us and the educational officials of El Salvador is whether television, and the Educational Reform surrounding it, would open or close the gap between these more and less "disadvantaged" groups. Would the urban students, the males, those with better educated and wealthier parents, be able to make better use of television and the other learning opportunities offered by the new curriculum, and thus increase their advantage? Or would the new system tend to equalize opportunity and perhaps bring the achievement scores closer together? This year, with a better sample in the seventh grade, we have analyzed the question in some detail, and will present the results later in this chapter.

Last year's findings

Readers of this report may remember that in the 1969 school year we found large gains in achievement in the television classes, and all these gains were significantly greater than those of the traditional classes at a statistical level beyond .001. These were the detailed results:

TABLE TWO

Mean scores in three subjects before and after the first year:
television and traditional classes, 1969

<u>Subject</u>	<u>Television classes</u>	<u>Traditional classes</u>
Mathematics		
Mean score, February	11.79	12.22
Mean score, October	18.06	14.17
Gain	6.27	1.95*
Science		
Mean score, February	17.82	18.47
Mean score, October	23.79	19.81
Gain	5.97	1.34*
Social studies		
Mean score, February	26.55	26.82
Mean score, October	33.77	29.43
Gain	7.22	2.61*

[*Gain scores significantly different at better than .001 level]

However, in the controlled experiment we did not find any clear advantage for either the new system classes with television or those without television. The seventh-grade social studies classes showed a significant advantage for television, the seventh-grade science classes did better without television, if they had retrained teachers, and all the materials and subject matter of the new curriculum. There was very little difference between the experimental and control mathematics classes, as the following table shows:

TABLE THREE

October, 1969, test scores, television and non-television control classes, adjusted for initial differences

	<u>With TV</u>	<u>Without TV</u>
Mathematics	17.4	17.5
Science	22.0	23.7*
Social studies	32.7*	30.2

(*Statistically significant differences, $< .05$)

With those findings in mind, let us now turn to results of the second year.

1970 findings: television versus traditional classes

In the second year of the Educational Reform, as in the first, we found substantial gains in the seventh-grade classes taught with the assistance of television, and significantly greater gains in these classes than in the "traditional" classes taught without television. In the eighth grade, however, the result is less favorable to the television classes; not only are the differences between television and traditional classes considerably less than when the same groups were tested in the seventh grade last year, but in one of the three subjects, science, the traditional classes actually gained more than the television classes. These results are seen in table 4.

Mean Achievement Scores Before and After the Second Year:
Television and Traditional Classes

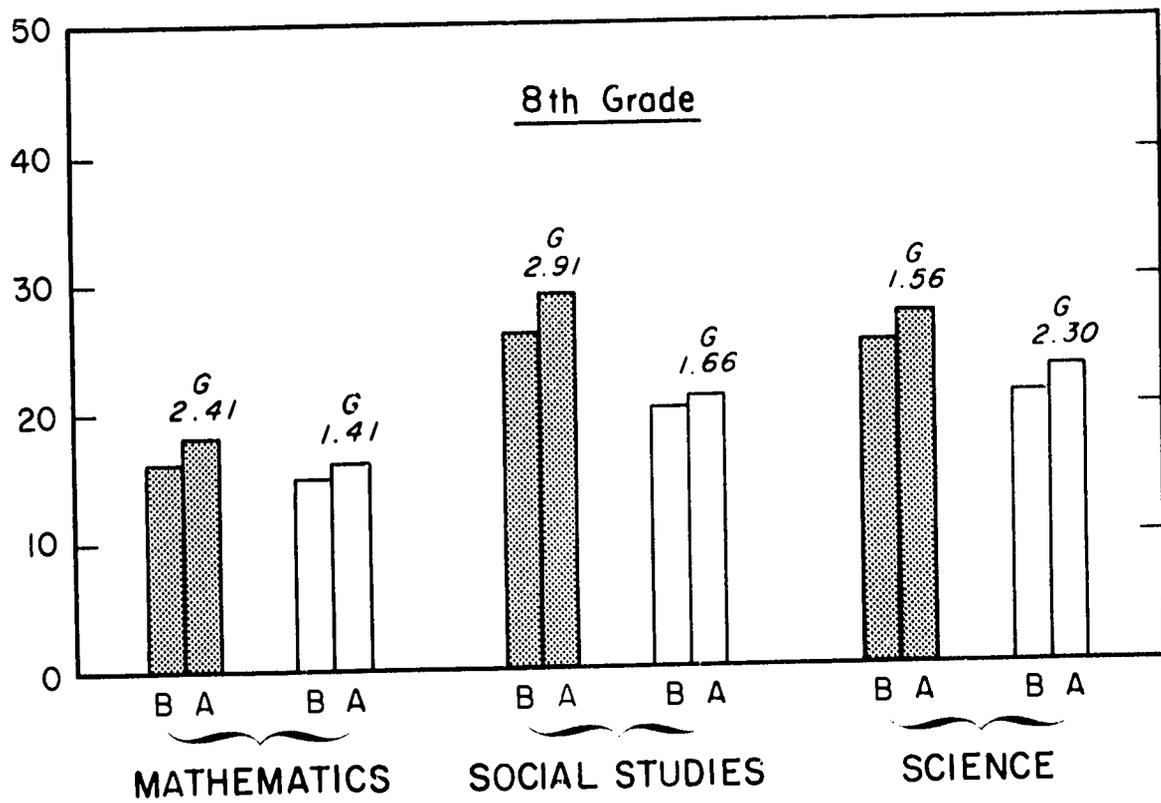
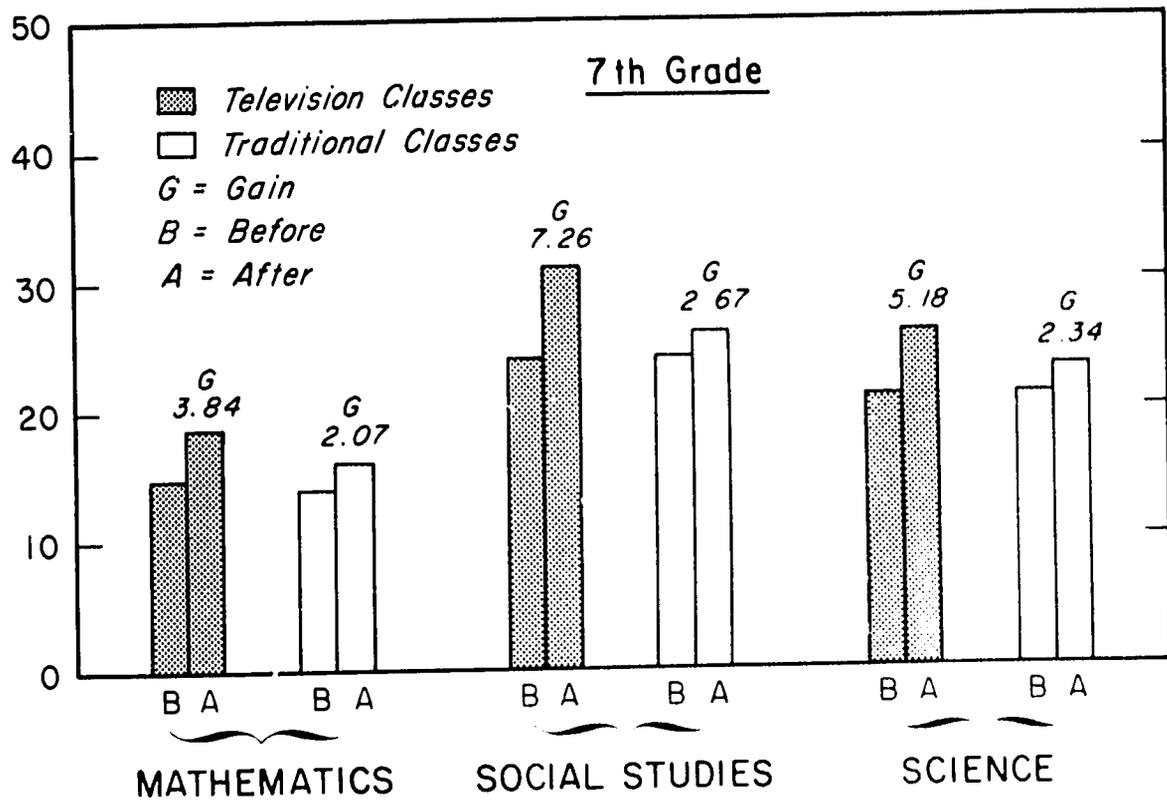


TABLE FOUR

Mean scores, seventh and eighth grades, on academic achievement tests administered at beginning and end of 1970 school year

<u>Seventh grade</u>		<u>Television</u>	<u>Traditional</u>
Mathematics	(March)	15.03	14.19
	(October)	<u>18.87</u>	<u>16.26</u>
	Change	+ 3.84	+ 2.07
Science	(March)	20.50	20.90
	(October)	<u>25.68</u>	<u>23.24</u>
	Change	+ 5.18	+ 2.34
Social Studies	(March)	23.50	23.69
	(October)	<u>30.76</u>	<u>26.36</u>
	Change	+ 7.26	+ 2.67
 <u>Eighth grade</u>			
Mathematics	(May)	15.93	15.01
	(October)	<u>18.34</u>	<u>16.42</u>
	Change	+ 2.41	+ 1.41
Science	(May)	25.07	20.70
	(October)	<u>26.63</u>	<u>23.00</u>
	Change	+ 1.56	+ 2.30
Social Studies	(May)	25.72	19.83
	(October)	<u>28.63</u>	<u>21.49</u>
	Change	+ 2.91	+ 1.66

Because there were no significant differences in measurements of general ability and reading skill among the groups being compared it was not felt necessary to further adjust the figures.

These results are considerably different from those of the previous year. To sum up the differences:

Comparison of 7th Grade Achievement Results for 1969 and 1970

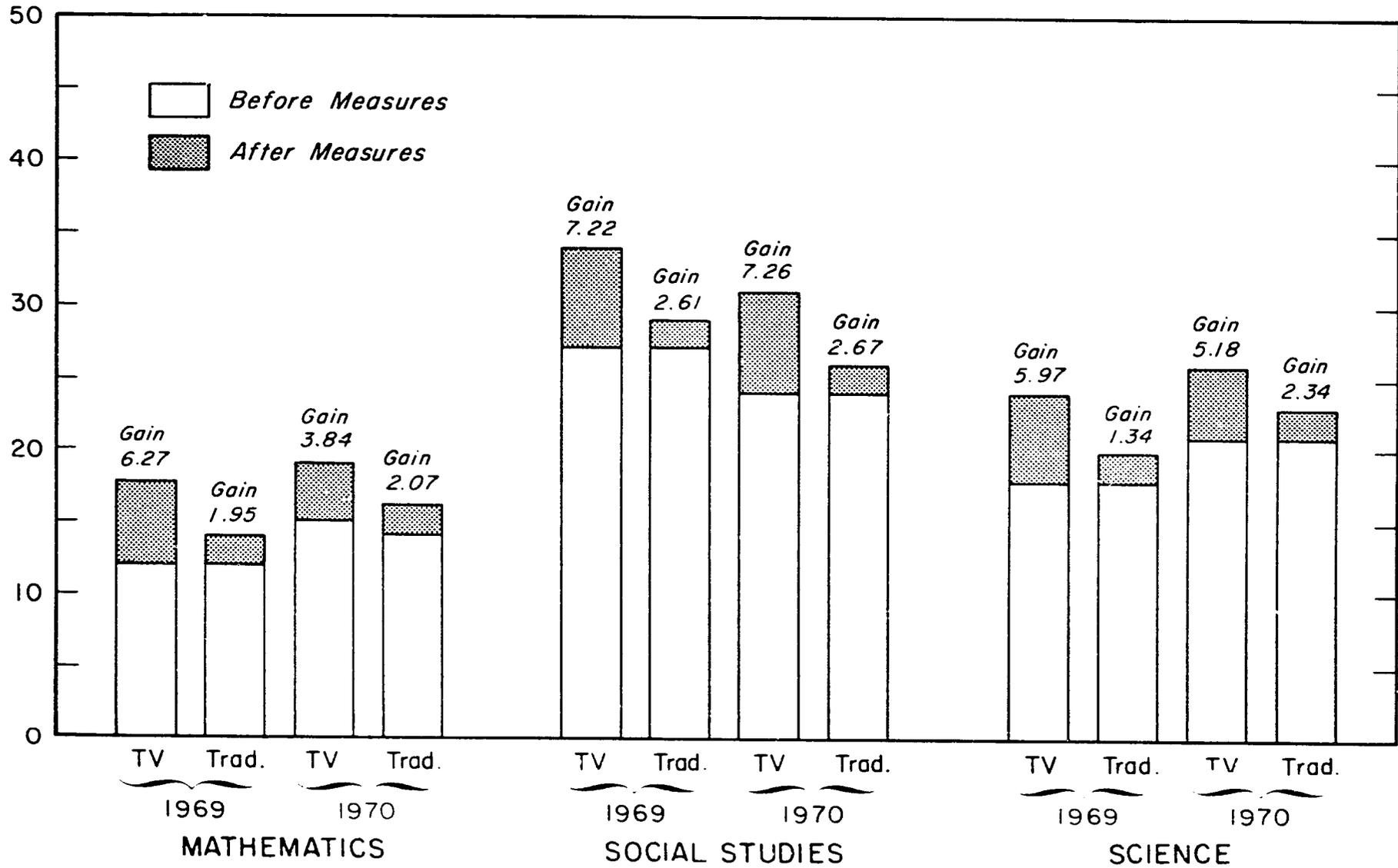


TABLE FIVE

Statistical significance of differences -- to the extent that statistical logic properly applies -- between achievement score means at beginning and end of year, and between gain scores, 1970 school year

Significance of differences between scores
at beginning and end of year

<u>Seventh grade</u>	<u>Television</u>	<u>Traditional</u>
Mathematics	<.001	<.01
Science	<.001	<.01
Social Studies	<.001	<.001
<u>Eighth grade</u>		
Mathematics	<.001	n.s. (.08)
Science	<.05	<.01
Social Studies	<.001	n.s. (.06)

Significance of differences between gain
scores of TV and Traditional samples

<u>Seventh grade</u>	
Mathematics	<.05
Science	<.001
Social Studies	<.001
<u>Eighth grade</u>	
Mathematics	n.s.
Science	n.s.
Social Studies	n.s. (.06)

(1) Although the seventh-grade TV classes still gained overall more than twice as much as the traditional classes, still their gains are relatively less than in the seventh grade last year (see tables 4, 6).

(2) In every case except seventh-grade social science, the ratio of TV class gains to traditional class gains is considerably less in 1970 than it was in 1969 (see table 6). Overall, the seventh-grade classes gained 3.6 times as much as traditional classes in 1969, only 2.3 times as much in 1970.

(3) In the eighth grade, the same students (with the same teachers) who gained 3.6 times as much as the traditional classes with whom they were compared in 1969, gained only 1.2 times as much, on average, in 1970. As we have noted, in one subject the traditional students actually gained substantially more than the TV classes.

These differences are easily seen in the two following tables.

TABLE SIX

Percentage of gain over achievement scores at beginning of year, in 1969 and 1970, for seventh and eighth grades

<u>Seventh grade</u>	1969		1970	
	TV	TRAD	TV	TRAD
Mathematics	53.2	16.0	25.5	14.6
Science	33.5	7.3	25.3	11.2
Social studies	27.2	9.7	30.9	11.0
 <u>Eighth grade</u>				
Mathematics			15.1	9.4
Science			6.2	11.1
Social studies			11.3	8.4

TABLE SEVEN

Ratio of TV to Traditional class gains in 1969 and 1970,
for seventh and eighth grades

	<u>7th grade, 1969</u>	<u>7th, 1970</u>	<u>8th, 1970</u>
Mathematics	3.3	1.7	1.6
Science	4.6	2.3	.6
Social studies	2.8	2.8	1.3
	(3.6)	(2.3)	(1.2)

We must therefore ask, why should there be such differences, and do they suggest problems that should concern the directors of the Salvador project?

Why the differences in the seventh grade?

We believe that the seventh and eighth grades represent different kinds of problems, and are better treated separately.

The situation in the seventh grade was quite different in 1970 from what it was the previous year. In 1969, classes taught in part by television, with retrained teachers in charge of the classrooms, using a new curriculum and new teachers' guides and student classroom material (generally judged to be excellent) were compared with classes taught without television, without the new curriculum, the new guides, and the new classroom study materials, and with unretrained teachers in charge of the classrooms. It was possible to compare the two groups in their scores only because there was a great deal of commonality in the subject matter of the old and new curricula.

In 1970, however, all classes, television and "traditional," were using the new curriculum, the new guides, and the new classroom study materials. A number of the teachers in the "traditional" classrooms had gone to the San Andrés teachers college for retraining. Therefore, there was much less difference in the learning experience given the two groups. Indeed, some of the classes differed only in the circumstance that one group had TV, the other did not -- which is the same design as the controlled experiment to be described later. Consequently, we should expect less difference in the television and "traditional" groups in 1970 than in 1969. If the differences were still as large as the first year, then the whole premise of the new curriculum, the new materials, and the teacher retraining would be in question.

Secondly, the achievement tests arrived a bit late for the 1970 school year, and could not be given until the last days of February and early March, a month after the term had begun. The "before" measure in 1970 was therefore not exactly a measure of achievement at the beginning of the year, but rather of achievement after some of the basic concepts of the courses had already been presented. For this reason, also, we should expect lower gains than in 1969.

It is worth noting also that neither the test nor the curriculum used in 1970 was precisely the same as in 1969, and therefore comparisons must be made with some caution.

Finally, if there was a "Hawthorne" effect on the TV class

scores in 1969 -- by "Hawthorne" effect we mean the stimulating effect of special attention paid to a test group pioneering in a new procedure, so called because it was demonstrated in a well-known study of productivity at the Hawthorne plant of the Western Electric Company -- it should have been much less in 1970 when the majority of the seventh grade, rather than a few classes, were using television.

For all these reasons, we should expect lower overall gains in the TV classes and less difference between gains in the TV and traditional classes in 1970 than in 1969. Our judgment is that the evidence presented here suggests a situation worth watching in school year 1971, but so far nothing that is necessarily of major concern to those in charge of the Salvador project.

Why the differences in the eighth grade?

The eighth-grade results, however, are a different matter. This is the case, not only because the gains were much lower than in the seventh grade, but also because these were the same students in the TV classes who made such impressive gains in the seventh grade, and they were being compared with the same "traditional" classes whom they outperformed by such a large margin in the previous year. Why were they unable to do so again in 1970?

Because this summary report is being written three months earlier in the year than was last year's report, we have not been able to analyze the causes fully, and it may not be possible to arrive at a clear answer even after further study. Our tentative judgment, however, is that there were multiple reasons for what happened:

1. Late administration of the "before" tests. The new curricular outlines for the eighth grade were completed very late. By the time they had been sent to the Educational Testing Service in Princeton, tests made, printed, and returned, it was already late April, and the "before" tests were administered at the end of April and the early days of May -- nearly three months into the term. By that time, obviously, a great deal of the subject matter of the eighth-grade courses had already been presented. It would be very difficult to find out just what had been done in the traditional classes, but by examining the outlines and guides we have calculated how many of the test questions had already been covered in the television courses before the first test was given. Our best estimate is:

For mathematics, 16 of the 50 test questions.

For science, 25 of the 50 questions.

For social studies, 10 of the 50.

This circumstance obviously reduces the amount of gain that could have occurred between the "before" and "after" tests even under the most favorable circumstances. In mathematics, for example, the maximum possible gain would have been reduced by almost a third; in the other two courses, by about 50 per cent and 20 per cent respectively.

2. The nature of the tests. The eighth-grade curriculum outlines were rather abstract. They were ready late, and the television programs and the guides, as well as the tests, had to be

prepared under pressure. It is reasonable to suppose, therefore, that there may have been less coherence than desired between what was asked in the test and what was actually taught in the classroom. To test this, we asked the especialistas, the subject matter experts who worked on the television programs and classroom materials for the eighth grade last year, to go over the achievement tests and determine whether any of the questions had not been covered in the course. The results were rather startling:

In mathematics (according to the especialistas)
2 of the 50 questions were not covered.

In science, 8 of 50 were not covered.

In social studies, 9 of 50 were not covered.

Let us make clear that we do not consider this a criticism of the Educational Testing Service, whose work appeared to be up to the high standard of quality maintained by that organization. Rather, it is a criticism of the way the tests had to be made: late, under time pressure, at a great distance from El Salvador, from rather abstract outlines which themselves were prepared late and under pressure. It would have been much easier to fit the tests closely to the subject matter actually taught if it could have been done on a more leisurely schedule, with the opportunity to check back and forth -- or if a testing bureau had been available in the El Salvador Ministry of Education to prepare the tests in close and continuing cooperation with the personnel in curriculum and programming.

Regardless of where the blame lay, this situation must have

inhibited considerably the learning that was measured in the eighth grade between May and October. Summing up the figures we have just given concerning the relationship of the test to the actual teaching, we arrive at this kind of estimate of the effect on scores, barring lucky guesses and other indeterminables:

Of 50 questions, these were:			Meaning that
<u>COVERED BEFORE MAY TEST</u>	<u>NOT COVERED AT ALL</u>	<u>TOTAL</u>	<u>GAIN WAS PROBABLY INHIBITED BY FACTOR OF</u>
16	2	18	36%
25	8	33	66%
10	9	19	38%

Those figures alone would explain most of the eighth-grade results in 1970, and make it much easier to understand not only why the eighth-grade gains were less than the seventh, but also why the science scores in the new curriculum were so much lower, comparatively, than were the social studies and mathematics scores.

But there were other likely reasons also for what happened in the eighth grade.

3. The quality of the programs. The television teams -- producer, teleteacher, two subject matter specialists, and a specialist in materials -- who worked on the eighth-grade television program in 1970 were all new to the job, and, in effect, were learning while they worked. They, too, had to work in great haste. All the experienced teams remained with the seventh-grade programs. It would not be surprising, therefore, if the eighth-grade television programs were

not as effective as they might have been, and consequently the television classes might have learned less from them. In support of this we do have some at-least-suggestive evidence:

(a) Experienced observers connected with or visiting the project felt that the eighth-grade programs were not as successful as the seventh-grade ones.

(b) The television teams themselves were dissatisfied with their programs, and have planned to retape about 90 per cent of them for use in 1971.

(c) We queried the classroom teachers at the end of the year on a number of topics related to the courses. With one exception (English) they rated all the eighth-grade programs lower than the seventh-grade programs. Eighth-grade science and social studies were lowest of all in the rank order. They rated the eighth-grade science teacher's "mastery of the subject matter" lowest among all the tele-teachers, and his "ability to involve the students" lower than any of the other teleteachers except the eighth-grade social science tele-teacher. Comparing the help they felt they received from the science programs under present circumstances with what they felt could be received under ideal circumstances, they reported a greater discrepancy between these measures for eighth-grade science than for any other course. Overall, these discrepancies were higher for eighth grade than for seventh-grade televised lessons. Therefore, there is at least a suggestion that some of the low performance may have been related to the quality of the television programs.

(d) Quality of other materials. There is a tiny suggestion that other teaching material for the eighth grade may also have been less satisfactory than the previous year. The seventh-grade teachers' guides (once again, except for English) were rated by the teachers substantially lower than the seventh-grade guides for the "help" they provided, and the eighth-grade science guide received the lowest rating among all the guides in the two grades for "practical value of activities recommended." These are very small bits of evidence, but they help to indicate that there was probably no single reason for what happened to the gain scores in the eighth grade.

(e) Did the Hawthorne effect fade out? In the previous year these classes had been the focus of a new and exciting experiment. They might have been expected to be on their mettle that first year, and to react a bit negatively this last year. If that had been the case, however, we should expect that the attitude ratings of students and teachers in the eighth grade would be less favorable to the new system than they were in the seventh grade. As the next chapter will demonstrate, this was not the case.

(f) Is the usefulness of televised teaching overrated? The effect of television, as distinguished from the other variables in the situation, is better examined in the experimental designs reported upon in the following section of this chapter. However, in the eighth-grade comparisons of 1970, much more than television is being measured. The "television" classes include the new curriculum, the retrained teachers, the new guides and classroom materials, and other aids that

go with them. In 1969 this same combination, with the same teachers and the same students, registered a most impressive performance. Therefore, it is necessary to look for some change in the conditions between 1969 and 1970.

There are still other possibilities to consider, but these seem to be the most likely ones. We suspect that the most likely causes are the late administration of the tests, the quality of the televised programs, and the relation of the tests to the subject matter actually taught in the courses. And we believe that there is no single cause for what happened.

We shall continue to analyze the reasons, insofar as it is possible after the fact to do so. But our judgment is, contrary to what we said about the seventh-grade results, that this is a danger signal deserving of close attention from the directors of the El Salvador project.

1970 findings: the effect of the television itself

How much of the effect of the Educational Reform in El Salvador can be attributed to television, rather than to the retraining of teachers, the new curriculum, the new guides and classroom materials, et cetera? In 1969 we tried to isolate the effects of television from these other effects by setting up an experiment in which four classes that used every element of the new system, including television, were compared with four classes that were the same in every respect -- retrained teachers, new curriculum, new guides, new study materials,

utilization aids, and all the other elements of the new system except television. The results in 1969 were inconclusive. The experimental group (with television) did significantly better in social science; the control group (without television) did significantly better in science; and there was very little difference between the groups in mathematics.

This year, with the same groups now in the eighth, and with a new sample of six experimental and six control classes in the seventh grade, we repeated the experiment. We were more confident this year of the random selection of students for the seventh-grade classes. We could not control the assignment of teachers, but within each school students were randomly assigned to the two classes, one an experimental group the other a control group. The results, however, are hardly more conclusive than in the previous year, as the following table shows:

TABLE EIGHT

Mean achievement scores and gains, Control and Experimental groups, 7th and 8th grades, 1970

<u>Seventh grade</u>		<u>Experimental</u>	<u>Control</u>
Mathematics	(March)	14.20	14.72
	(October)	<u>18.31</u>	<u>18.94</u>
	Change	+ 4.11	+ 4.22
Science	(March)	19.78	20.65
	(October)	<u>24.28</u>	<u>24.43</u>
	Change	+ 4.50	+ 3.78
Social Studies	(March)	22.81	22.46
	(October)	<u>30.50</u>	<u>28.68</u>
	Change	+ 7.69	+ 6.22
 <u>Eighth grade</u>			
Mathematics	(May)	15.29	15.59
	(October)	<u>17.21</u>	<u>16.99</u>
	Change	+ 1.92	+ 1.40
Science	(May)	24.56	23.40
	(October)	<u>26.53</u>	<u>26.54</u>
	Change	+ 1.87	+ 3.14
Social Studies	(May)	24.56	24.60
	(October)	<u>27.60</u>	<u>27.04</u>
	Change	+ 3.04	+ 2.40

It will be noted (Table 9) that there is not a clearly significant difference amongst all the pairs of gains. One is marginally significant in favor of the television group; the others are beyond even the 10 per cent confidence level. So far as trend goes, it is in favor of the experimental group: four gains were in

TABLE NINE

Statistical significance of differences -- to the extent that statistical logic applies -- between achievement score means for experimental and control groups at beginning and end of year, and between the gain scores of these two groups, 1970 school year

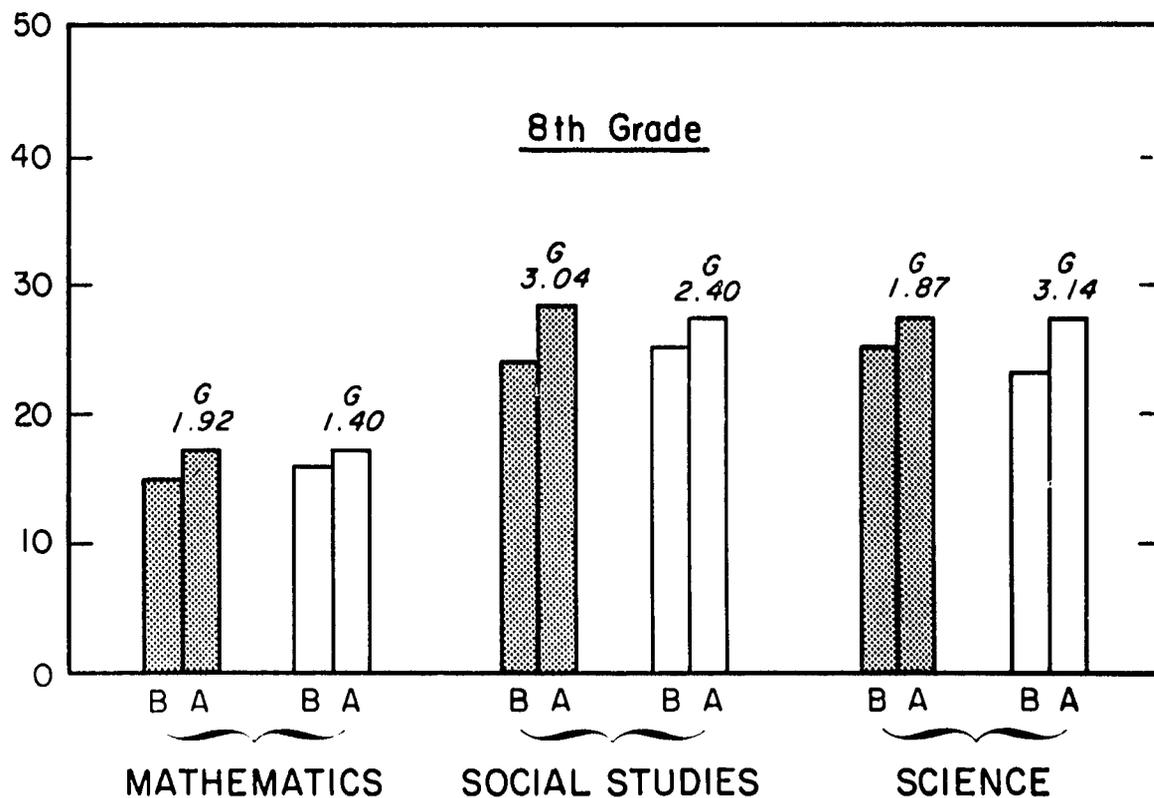
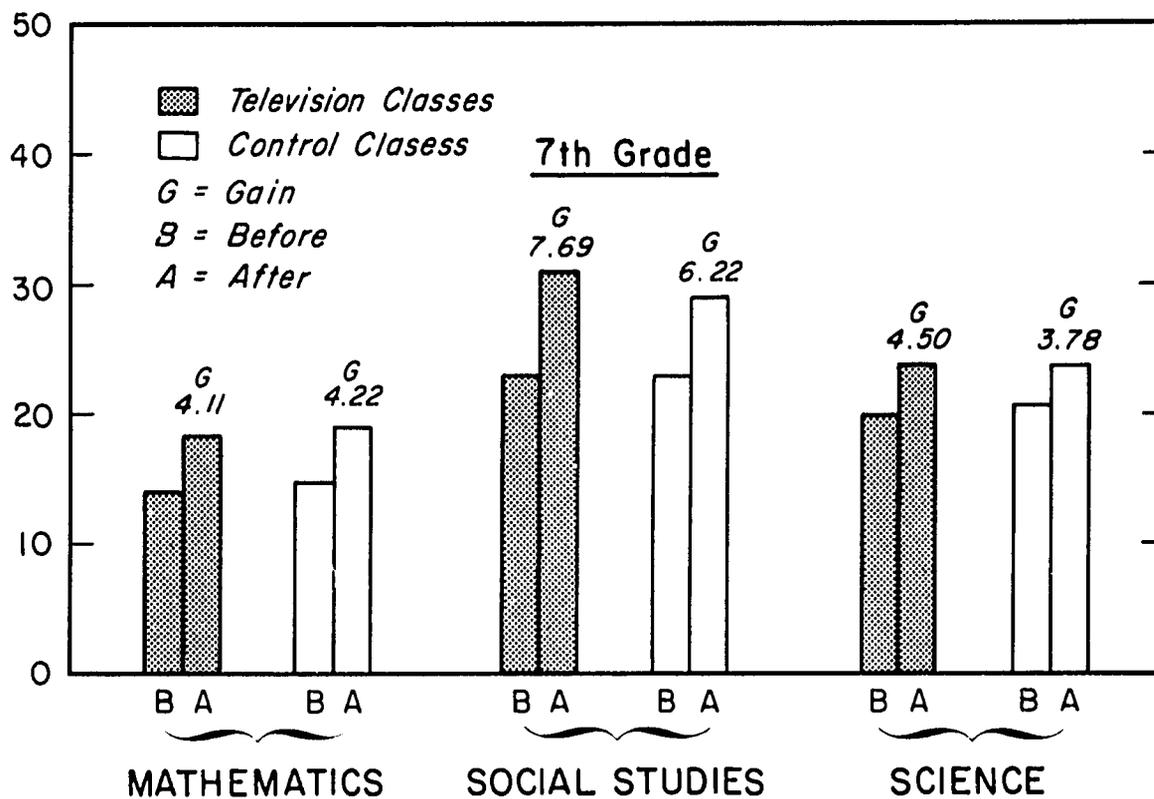
Significance of differences between scores
at beginning and end of year:

<u>Seventh grade</u>	<u>Experimental</u>	<u>Control</u>
Mathematics	<.001	<.001
Science	<.001	<.001
Social studies	<.001	<.001
<u>Eighth grade</u>		
Mathematics	<.05	n.s.
Science	<.05	<.001
Social Studies	<.001	<.05

Significance of differences between gain
scores of experimental and control groups

<u>Seventh grade</u>	
Mathematics	n.s.
Science	n.s.
Social Studies	n.s. (.08)
<u>Eighth grade</u>	
Mathematics	n.s.
Science	n.s.
Social Studies	n.s.

Comparison of Before and After Mean Achievement Scores of
Television and Non-television Control Classes, 1970



favor of that group, one in favor of the control group, and one was very little different in favor of either group.

The seventh-grade results are perhaps more deserving of our attention than the others, inasmuch as the sample was very carefully randomized and the tests of general ability and reading skill indicated that the groups were very well matched indeed. Here are the scores of the two groups on those basic abilities:

<u>General Ability</u>	<u>Experimental</u>	<u>Control</u>
Verbal	19.09	19.10
Nonverbal	22.87	22.52
Numeric	14.68	14.88
Total	56.65	56.50
<u>Reading</u>		
Vocabulary	16.56	16.03
Speed	8.05	7.96
Comprehension	12.36	12.28
Total	36.92	36.30

With groups so well matched, and with a curriculum that has already been tried for a year and achievement tests revised to fit the first year's experience, we can be fairly confident of the results. In these groups, more than with the seventh-grade groups measured in 1969, there is a clear trend toward more learning with television. The social science gain scores just miss being significant at the .05 level, and the gains in science are higher in the television group, although the differences are not statistically significant. As in 1969, there is almost no difference in the

mathematics gains, and one might hypothesize that television contributes less to mathematics learning than to science or social science. But the differences are not large, and any conclusion must await further testing.

A question that must be raised, however, is whether the contribution of television to the effect of a curriculum on students is measured adequately by achievement tests alone. There is apparently some effect on how well the students like the course. There is a difference in the way the teachers handle their assignments.* There is at least a suggestion of certain cognitive differences related to teaching by television, but not directly measured by achievement tests. We have not, at this writing, completed our analysis of these matters, and to analyze them thoroughly will require more and different kinds of testing.

In addition to analyzing present data as fully as possible for evidence of differences not measured by the achievement tests, we plan to devote special attention in 1971 to these well-matched experimental and control groups which, in 1971, will be in the eighth grade.

*For example, in the six television classes and the four control classes which were observed carefully, using our new classroom interaction form, there was at least suggestive evidence that relatively more opinion and thought questions were asked in the television classrooms, more work in small groups, more use of audio-visual materials in addition to the television.

Effects of ability and demographic variables on student achievement

Last year we found evidence that five sets of variables -- general ability, urban or rural residence, sex, parental education, and economic status (represented by family ownership or nonownership of a television receiver) -- were more closely related than others to a student's performance on achievement tests. The following tables show the 1970 achievement data set against these variables:

TABLE TEN

Effect of different levels of general ability on achievement of television and traditional classes, 7th and 8th grades, 1970

<u>Seventh grade</u>		<u>Television</u>		<u>Traditional</u>	
		General ability:		General ability:	
		<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Mathematics	(March)	13.97	16.22	13.68	14.79
	(October)	<u>17.77</u>	<u>20.26</u>	<u>15.77</u>	<u>17.22</u>
	Change	+ 3.80	+ 4.04	+ 2.09	+ 2.43
Science	(March)	19.49	21.67	20.21	22.14
	(October)	<u>24.29</u>	<u>27.47</u>	<u>21.71</u>	<u>25.63</u>
	Change	+ 4.80	+ 5.80	+ 1.50	+ 3.49
Social Studies	(March)	21.83	25.53	22.34	25.72
	(October)	<u>29.11</u>	<u>32.89</u>	<u>24.57</u>	<u>28.76</u>
	Change	+ 7.28	+ 7.31	+ 2.23	+ 3.06
<u>Eighth grade</u>					
Mathematics	(May)	15.15	17.29	13.31	17.93
	(October)	<u>17.04</u>	<u>19.94</u>	<u>14.75</u>	<u>19.05</u>
	Change	+ 1.89	+ 2.65	+ 1.44	+ 1.12
Science	(May)	23.65	27.36	19.16	23.26
	(October)	<u>25.30</u>	<u>28.78</u>	<u>21.75</u>	<u>25.46</u>
	Change	+ 1.65	+ 1.42	+ 2.59	+ 2.20
Social Studies	(May)	24.12	28.32	17.60	23.98
	(October)	<u>26.69</u>	<u>31.58</u>	<u>19.02</u>	<u>25.22</u>
	Change	+ 2.57	+ 3.26	+ 1.42	+ 2.24

TABLE ELEVEN

Effect of different levels of urbanization on achievement of television and traditional classes, 7th and 8th grades, 1970

<u>Seventh grade</u>		<u>Television</u>		<u>Traditional</u>	
		<u>Urban</u>	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>
Mathematics	(March)	15.43	14.36	13.01	14.91
	(October)	<u>19.00</u>	<u>18.22</u>	<u>15.89</u>	<u>16.71</u>
	Change	+ 3.57	+ 3.86	+ 2.88	+ 1.80
Science	(March)	20.96	19.78	20.16	21.61
	(October)	<u>25.79</u>	<u>25.74</u>	<u>23.19</u>	<u>23.85</u>
	Change	+ 4.83	+ 5.96	+ 3.03	+ 1.84
Social Studies	(March)	24.02	22.86	22.85	24.37
	(October)	<u>31.04</u>	<u>30.60</u>	<u>24.74</u>	<u>27.41</u>
	Change	+ 7.02	+ 7.74	+ 1.89	+ 3.04
<u>Eighth grade</u>					
Mathematics	(May)	15.49	16.46	15.40	14.61
	(October)	<u>17.44</u>	<u>18.51</u>	<u>16.48</u>	<u>16.48</u>
	Change	+ 1.95	+ 2.05	+ 1.08	+ 1.87
Science	(May)	24.36	25.83	21.40	19.59
	(October)	<u>26.09</u>	<u>27.25</u>	<u>23.96</u>	<u>21.92</u>
	Change	+ 1.73	+ 1.42	+ 2.56	+ 2.53
Social Studies	(May)	24.76	26.70	20.94	18.32
	(October)	<u>28.41</u>	<u>28.92</u>	<u>22.86</u>	<u>19.68</u>
	Change	+ 3.65	+ 2.22	+ 1.92	+ 1.36

TABLE TWELVE

Effect of sex on achievement of television and traditional classes, 7th and 8th grades, 1970

<u>Seventh grade</u>		<u>Television</u>		<u>Traditional</u>	
		<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Mathematics	(March)	15.40	14.52	14.83	13.16
	(October)	<u>19.45</u>	<u>18.25</u>	<u>16.56</u>	<u>16.12</u>
	Change	+ 4.05	+ 3.73	+ 1.73	+ 2.96
Science	(March)	21.22	19.58	21.58	20.23
	(October)	<u>26.97</u>	<u>24.21</u>	<u>24.00</u>	<u>22.43</u>
	Change	+ 5.75	+ 4.63	+ 2.42	+ 2.20
Social Studies	(March)	24.90	21.84	24.40	22.84
	(October)	<u>32.19</u>	<u>29.15</u>	<u>26.94</u>	<u>25.46</u>
	Change	+ 7.29	+ 7.31	+ 2.54	+ 2.64
<u>Eighth grade</u>					
Mathematics	(May)	16.71	15.09	16.02	13.77
	(October)	<u>18.70</u>	<u>17.59</u>	<u>17.32</u>	<u>15.06</u>
	Change	+ 1.99	+ 2.50	+ 1.30	+ 1.34
Science	(May)	26.43	23.47	21.82	19.11
	(October)	<u>27.83</u>	<u>25.23</u>	<u>24.45</u>	<u>21.20</u>
	Change	+ 1.40	+ 1.76	+ 2.63	+ 2.09
Social Studies	(May)	27.37	23.74	21.82	17.37
	(October)	<u>30.41</u>	<u>26.32</u>	<u>23.87</u>	<u>18.62</u>
	Change	+ 3.04	+ 2.58	+ 2.05	+ 1.25

TABLE THIRTEEN

Effect of different levels of father's education on achievement of television and traditional classes, 7th and 8th grades, 1970

		<u>Television</u>		<u>Traditional</u>	
		Father's educ.		Father's educ.	
		<u>Primary or less</u>	<u>More than primary</u>	<u>Primary or less</u>	<u>More than primary</u>
<u>Seventh grade</u>					
Mathematics	(March)	14.93	15.28	14.09	15.49
	(October)	<u>18.85</u>	<u>19.15</u>	<u>16.42</u>	<u>17.81</u>
	Change	+ 3.92	+ 3.87	+ 2.37	+ 1.75
Science	(March)	20.29	21.08	20.99	21.16
	(October)	<u>25.56</u>	<u>26.37</u>	<u>23.42</u>	<u>24.02</u>
	Change	+ 5.27	+ 5.29	+ 2.44	+ 1.89
Social Studies	(March)	23.35	24.19	23.81	23.51
	(October)	<u>30.74</u>	<u>31.22</u>	<u>26.53</u>	<u>25.23</u>
	Change	+ 7.39	+ 7.03	+ 2.54	+ 2.72
<u>Eighth grade</u>					
Mathematics	(May)	16.12	15.79	15.06	15.43
	(October)	<u>18.34</u>	<u>17.94</u>	<u>16.25</u>	<u>17.24</u>
	Change	+ 2.22	+ 2.15	+ 1.19	+ 1.81
Science	(May)	25.28	24.92	20.52	21.53
	(October)	<u>26.84</u>	<u>26.46</u>	<u>23.22</u>	<u>24.31</u>
	Change	+ 1.56	+ 1.54	+ 2.70	+ 1.78
Social Studies	(May)	26.00	25.42	19.68	21.35
	(October)	<u>28.74</u>	<u>28.57</u>	<u>21.02</u>	<u>21.12</u>
	Change	+ 2.74	+ 3.15	+ 1.34	+ 2.73

TABLE FOURTEEN

Effect of economic status (represented by ownership of a television receiver) on achievement of television and traditional classes, 7th and 8th grades, 1970

<u>Seventh grade</u>		<u>Television</u>		<u>Traditional</u>	
		<u>TV</u>	<u>No TV</u>	<u>TV</u>	<u>No TV</u>
Mathematics	(March)	15.36	14.70	14.14	14.13
	(October)	<u>19.26</u>	<u>18.63</u>	<u>16.41</u>	<u>16.35</u>
	Change	+ 3.90	+ 3.93	+ 2.27	+ 2.22
Science	(March)	21.02	20.04	20.59	21.30
	(October)	<u>26.30</u>	<u>25.30</u>	<u>23.00</u>	<u>23.57</u>
	Change	+ 5.28	+ 5.26	+ 2.41	+ 2.27
Social Studies	(March)	24.12	23.08	23.35	24.01
	(October)	<u>31.32</u>	<u>30.47</u>	<u>25.75</u>	<u>26.95</u>
	Change	+ 7.20	+ 7.39	+ 2.40	+ 2.95
 <u>Eighth grade</u>					
Mathematics	(May)	16.04	16.03	15.70	14.58
	(October)	<u>17.89</u>	<u>18.49</u>	<u>17.21</u>	<u>15.67</u>
	Change	+ 1.85	+ 2.46	+ 1.50	+ 1.09
Science	(May)	25.05	25.29	21.15	20.44
	(October)	<u>26.67</u>	<u>26.79</u>	<u>23.77</u>	<u>22.66</u>
	Change	+ 1.62	+ 1.50	+ 2.62	+ 2.22
Social Studies	(May)	25.54	26.09	20.68	19.60
	(October)	<u>28.59</u>	<u>28.73</u>	<u>22.87</u>	<u>20.87</u>
	Change	+ 3.05	+ 2.64	+ 2.19	+ 1.27

We have not yet completed our analysis of the fascinating variabilities within these five tables. For example, can we confirm that the traditional form of teaching especially handicaps the lower-ability students when they face middle school science for the first time (table 10)? We shall present some of the analyses we have made of these data in the following section of this chapter. However, it is apparent from these tables that ability does make a major difference, and that girls typically score lower than boys on achievement tests regardless of whether they are taught by television or not. Relationships between learning scores and the other variables are less clear.

One of the best ways to look at the effect of these variables is in terms of the percentage of variance they account for in the before-and-after achievement scores. These are in the two following tables.

TABLE FIFTEEN

Variance accounted for in regression on achievement
test scores with five factors, 7th grade, 1970

	<u>MATH-MARCH</u>			<u>SCI-MARCH</u>			<u>SS-MARCH</u>		
	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>
General Ability	.095	.054	.104	.111	.112	.111	.125	.124	.132
Sex	.006	.022	.011	.024	.006	.020	.054	.002	.033
Urbanization	.002	.046	.000	.006	.019	.000	.004	.025	.000
Father's Ed.	.000	.000	.000	.001	---	.000	.000	.000	.000
TV Ownership	.000	.002	.002	.001	.008	.003	.000	.003	.001
Total Var. Accounted: R^2	.104	.123	.117	.142	.145	.135	.182	.188	.171

	<u>MATH-OCT</u>			<u>SCI-OCT</u>			<u>SS-OCT</u>		
	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>
General Ability	.088	.064	.098	.124	.141	.134	.127	.138	.141
Sex	.011	.000	.009	.049	.007	.037	.056	.000	.039
Urbanization	.000	.002	.002	.000	.008	.000	.001	.046	---
Father's Ed.	.001	.010	.001	.001	.003	.000	.000	---	.000
TV Ownership	.001	.001	.001	.001	.008	.001	.000	.004	.001
Total Var. Accounted: R^2	.100	.076	.110	.174	.165	.173	.185	.189	.181

TABLE SIXTEEN

Variance accounted for in regression on achievement
test scores with five factors, 8th grade, 1970

	<u>MATH-MAY</u>			<u>SCI-MAY</u>			<u>SS-MAY</u>		
	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>
General Ability	.129	.264	.158	.193	.242	.198	.184	.332	.207
Sex	.008	.007	.007	.041	.011	.020	.039	.038	.029
Urbanization	.022	.003	.004	.008	.026	.002	.031	.013	.032
Father's Ed.	.002	.002	.000	.000	---	.000	.000	---	.001
TV Ownership	---	.001	.000	.002	.001	.006	.003	.001	.007
Total Var. Accounted: R^2	.160	.276	.168	.244	.281	.206	.248	.369	.236

	<u>MATH-OCT</u>			<u>SCI-OCT</u>			<u>SS-OCT</u>		
	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>	<u>TV</u>	<u>TR</u>	<u>Both</u>
General Ability	.144	.253	.171	.169	.234	.175	.228	.382	.211
Sex	---	.004	.002	.025	.030	.028	.014	.034	.017
Urbanization	.017	.001	.006	.003	.012	.000	.004	.050	.010
Father's Ed.	.000	.000	.000	.005	.004	.004	.000	.010	.001
TV Ownership	.007	.008	.001	.001	.001	.000	.002	.000	.004
Total Var. Accounted: R^2	.168	.265	.179	.203	.281	.207	.278	.469	.253

It is apparent from these tables that general ability does make a substantial contribution to the variance. Indeed, these figures indicate that student ability scores would correlate about .35 with student achievement scores in the seventh grade; .45 or better in the eighth. The relationship of sex to achievement is also clear. For some reason it seems to bulk larger in science and social studies than in mathematics scores, but throughout the two grades sex correlates about .25 with achievement scores. The contribution of urbanization is noticeable, but less than the two variables just mentioned, and a number of the correlations are negative -- i.e., showing an advantage for the rural students. The difficulty here may lie in the problem of deciding what, outside the city of San Salvador, constitutes truly rural and truly urban residence in El Salvador. The contribution of the other two variables is not large.

The tables we have looked at in these last pages do not essentially change our conclusion from 1969 data concerning the personal and demographic variables related closely to achievement scores. But they do provide some basis for answering a question that has concerned many television teachers and educational planners: whether television has an equalizing effect on the opportunities offered by a developing school system, or whether it gives more advantage to the already advantaged students and permits the disadvantaged to fall still farther behind?

Does television have an equalizing effect?

We cannot answer that question with confidence, because we do not yet have the analyses to let us separate the effect of television from the effect of other elements of the Educational Reform. However, on the basis of this year's findings we can say with some confidence that there is a trend in the data indicating that television and the other elements of the new system do tend to equalize opportunities rather than contributing to greater inequalities.

For example, look at the variances (table 16) for the eighth grade. The television students in this grade have already been through a year of the new system, and their scores should reflect that. The only clear and consistent difference in the tables of variances are those related to general ability (which, as we have noted, explains a larger proportion of the variance than others of the variables we have tested). In the before-and-after scores there are very large differences between the television group and the traditional group in the amount of variance explained by general ability. In every case, this figure is much higher for the traditionally taught classes. Remembering our reservations about the eighth-grade test and the time it was administered, let us treat this evidence with caution. But yet if it can be believed, it seems to say that the learning scores of students who have been taught for a year with television and the other components of the new system depend much less on the students' general ability than do the learning scores of students who have not been so taught.

In the second place, let us ask what evidence there is in the learning scores for 1970 as to how the group that started with lower scores performed in comparison to the group that started with higher scores. This does not assume that one group is more disadvantaged than another.

TABLE SEVENTEEN

Number of cases in which the group that started lower gained more than, the same as (within 0.1 point), or less than the group that started higher -- 1970 scores for mathematics, science, and social studies included

	Gain scores were		
	<u>More</u>	<u>Same</u>	<u>Less</u>
<u>Seventh grade</u>			
Television	5	6	4
Traditional	8	1	6
<u>Eighth grade</u>			
Television	8	4	3
Traditional	4	2	9
<u>Both grades</u>			
Television	13	10	7
	23		
Traditional	12	3	15
	15		

Next let us look at the supposedly disadvantaged groups (because of lower general ability, female sex, rural residence, and so forth) to see how they performed in comparison to the supposedly advantaged groups.

TABLE EIGHTEEN

Number of cases in which supposedly disadvantaged group (lower ability, female, rural, father less highly educated, presumably lower economic status represented by no TV receiver in home) gained more than, the same as (within 0.1 of a point), or less than the supposedly advantaged group -- 1970 scores for mathematics, science, and social studies included

	<u>More</u>	<u>Same</u>	<u>Less</u>
<u>Seventh grade</u>			
Television	5	6	4
Traditional	6	1	3
<u>Eighth grade</u>			
Television	5	2	8
Traditional	4	2	9
<u>Both grades</u>			
Television	10	8	12
	18		
Traditional	10	3	17
	13		

Let us now make still another comparison. Disregarding the nature of the groups or the direction of change, let us inquire whether the gap between the two halves of the dichotomized groups (as shown in tables 10-14) opened, closed, or remained about the same during the school year. For example, were the girls' and the boys' achievement scores nearer or farther apart at the end of the year than at the beginning of the year? This information is summarized in the next table.

TABLE NINETEEN

Number of cases in which mean scores of the dichotomized groups (higher vs. lower ability, male vs. female, etc.) were closer, about the same distance apart (within 0.1 of a point), or farther apart at the end of the school year than they had been at the beginning -- 1970 scores for mathematics, science, and social studies included

	<u>Nearer</u>	<u>Same</u>	<u>Farther Apart</u>
<u>Seventh grade</u>			
Television	4	7	4
Traditional	6	2	7
<u>Eighth grade</u>			
Television	9	2	4
Traditional	4	2	9
<u>Both grades</u>			
Television	13	9	8
	22		
Traditional	10	4	16
	14		

When these same data are examined by subjects, it is seen that the greatest difference occurred in social studies, and in both grades. These are the summary figures for closing or opening the gap, between the beginning and end of the year, in social studies:

	<u>Nearer</u>	<u>Same</u>	<u>Farther</u>
Television	5	3	2
	8		
Traditional	0	1	8
	1		

In fact, this one subject represents most of the difference, and it would be worth trying to find out what are the special qualities of the subject, the curriculum, the method, or the previous education of the students that brings this about.

This is not exactly overpowering evidence, but it is a consistent trend. Everyone of the comparisons we have made suggests that the new system is more likely than the traditional system to equalize opportunities to learn -- to bring the supposedly disadvantaged group or the group that starts lower, nearer to the other group, to close the gap between learners rather than to open it.

Chapter Four

TELEVISION AND THE SALVADORAN TEACHER: 1970

This chapter focuses upon the teachers' reactions to instructional television as well as upon their ratings of the television courses and their attitudes toward the variety of problems that confronted El Salvador's educational system in 1970. In El Salvador, as in all countries, the classroom teacher is of crucial importance to the success of any reform program. To a great extent he is the final arbiter and implementer of change. And without him, very few innovations can be carried out.

The primary objective of the Salvadoran Educational Reform is to improve the quality of secondary education. Televised instruction is of paramount importance in this effort. Yet, the effectiveness of televised instruction depends to a large extent on the cooperation and resourcefulness of the classroom teachers. If they are enthusiastic about teaching with television and if they value the contribution of the teleclasses, they are more likely to work hard in order to make sure their students learn. If, on the other hand, teachers feel that a particular course is not being properly taught on television, or that television itself is hindering more than helping them, they are more likely to belittle or reject the value of such instruction. Because classroom teachers exert such a powerful influence over the

effectiveness of instructional television, their attitudes toward it deserve the careful and continuous scrutiny of project planners and evaluators.

Among the questions for which we sought answers in 1970 were: How did Salvadoran teachers react to teaching with television in the project's second year? How did they evaluate the different television series? What sorts of recommendations did the classroom teachers make to the studio teams? How useful did they find the teacher guides and student workbooks? What lessons for the future can be drawn from the teachers' opinions?

Background

In 1969, the project's pilot year, there were five subjects taught by television. Thirty-two seventh-grade classes received the broadcasts and approximately 72 classroom teachers actually used television as an integral part of their instruction. In 1970, when the ITV project expanded to the eighth grade, five more subjects were added to the television curriculum, an additional 380 teachers began using television, and the system expanded to a total of 251 classes.

For each subject area, the task of presenting new material generally fell to the television teacher. The classroom teacher, acting in a complementary role, built his classes around the core material received via television. Thus, for each 20-minute television class, the classroom teacher provided 10 minutes of "motivation" before the telecast and a 20-minute "follow-up" or "utilization" after the

telecast. Subsequent hour periods were available to the classroom teacher for class projects, review, or other activities deemed necessary to reinforce a particular lesson. To help coordinate this system, teachers' guides and individual student workbooks were provided. The teachers' guides outlined the content of each teleclass and offered suggestions for appropriate motivation and follow-up activities. The workbooks contained homework exercises as well as ideas for projects which students were encouraged to undertake with their classmates.

The smooth transition from a traditional to a television-oriented system in 32 pilot classes in 1969 involved many changes in teacher behavior which would not have been possible had it not been for the retraining courses at San Andrés. During the initial vacation course (November 1968-January 1969), the pilot group of 72 classroom teachers were prepared for television teaching. They received lectures on the new curricula and gained experience in the preparation of motivation and follow-up activities. At the end of the retraining course, the teachers not only exhibited self-confidence and a receptiveness to the Reform programs, but also were extremely positive toward instructional television. They maintained this attitude throughout 1969.

During that same year, two other groups of teachers received retraining. In the first course which ran a full nine-month school year, 250 teachers underwent, in an extended form, the same course as the original 72 pilot teachers. When they finished their course

In November 1969, they also left San Andrés with positive attitudes toward the Reform and toward ITV. Their attitudes were not as positive as the pilot group's, however. A second retraining course was organized at the end of 1969 for graduates of the Normal Superior, El Salvador's most prestigious teacher training institution. This group proved to be outspokenly hostile to the Educational Reform, to television, and, particularly, to the retraining course which they felt was a waste of their time. Their bitterness toward the Ministry remained strong throughout the three-month course, and they eventually left San Andrés with the same negative attitudes they had brought with them.

We measured teacher opinions and attitudes in the following ways in 1970:

- (1) A survey questionnaire administered after the second full year with television to teachers of the 80 classes which participated in our various student studies throughout the year:

7th grade - 27 TV classes, 6 control, 7 traditional
8th grade - 28 TV classes, 4 control, 8 traditional

(N = 190)

- (2) Two survey questionnaires given before (March, 1970) and after (November, 1970) the second full year's retraining course at San Andrés (N = 191 and 180).
- (3) A feedback survey on the various television series administered to a subsample of teachers from the 80 classes mentioned above (N = 203).
- (4) Personal classroom observation by members of the evaluation team and interviews with teachers and school principals (1970 school year, February-November).

Statistical profile of two teacher groups

Table 20 presents some background information on the two secondary teacher groups for which we gathered attitude data in 1970. These groups possess some characteristics that are worth noting. Males predominate in both sample populations. This reflects accurately the composition of the secondary teacher corps, which is over two-thirds male. The teachers in training were slightly older than the classroom teachers and a majority of them (52.5%) had more than 10 years of teaching experience. With the exception of education, the groups were quite similar. In the classroom group, 41.1 per cent had no advanced education; 54.4 per cent was the comparable figure for the retraining group. In addition, 19.4 per cent of the retraining group did not answer the question on education. The most probable explanation of this fact is that they were afraid such information might prejudice their school assignments or be used against them in some other way. We believe, therefore, that the figure of 54.4 per cent is deflated and the percentage of teachers in the retraining course with no higher educational experience is actually closer to 70 per cent. Because the vast majority of Normal Superior graduates had received retraining in the special vacation course which ran from November-January, 1970, very few remained to be retrained in 1970. Accordingly, the 1970 retraining course contained only 2.5 per cent of people with Normal Superior training. In contrast, 22.6 per cent of our classroom teachers' sample were graduates of the Normal Superior.

TABLE TWENTY

Background information on two teacher groups in El Salvador:
 Classroom (TV, Control, Traditional), and Retraining
 (N.B. Total numbers in parentheses)

	<u>Classroom Group</u>		<u>Retraining Group</u>		
<u>Sex</u>					
Men	68.4%	(130)	67.5%	(42)	
Women	31.1	(59)	26.2	(108)	
No Response	.5	(1)	6.2	(10)	
<u>Age</u>					
25 and under	17.9	(34)	11.2	(13)	
25 - 35	46.8	(89)	45.0	(72)	
36 - 45	23.7	(45)	25.6	(41)	
46 and over	11.6	(22)	13.1	(21)	
No response	--	--	5.0	(8)	
<u>Education</u>					
No advanced education (i.e. beyond high school)	41.1	(78)	54.4	(87)	
Normal Superior	22.6	(43)	2.5	(4)	
1 - 2 years university	22.6	(43)	20.6	(33)	
3 or more years university	10.0	(19)	3.1	(5)	
No response	3.7	(7)	19.4	(31)	
<u>Classification as Teacher</u>					
"B" Classification	.5	(1)	.6	(1)	
"A" Classification	27.4	(52)	20.0	(32)	
Bachillerato	17.9	(34)	17.5	(28)	
Class "A" and Bachillerato	50.0	(95)	51.2	(82)	
Other	--	--	4.9	(8)	
No response	4.2	(8)	5.6	(9)	
<u>Teaching Experience</u>					
<u>Entered Teaching</u>	<u>Yrs Experience</u>				
Before 1950	More than 20	16.3	(31)	12.5	(20)
1950 - 1955	15 - 20	10.0	(19)	16.9	(27)
1956 - 1960	10 - 14	22.1	(42)	23.1	(37)
1961 - 1965	5 - 9	26.3	(50)	21.9	(35)
1966 - 1969	2 - 4	17.9	(34)	20.0	(32)
1970	1	3.7	(7)	--	--
No response		3.7	(7)	5.6	(9)

Attitudes toward the use of television in teaching

A survey dealing with classroom teachers' attitudes toward teaching with television was administered at the end of the project's second year. The teachers' sample was drawn from the group of 80 seventh- and eighth-grade classes upon which we have concentrated student achievement studies. When broken down by grade and type of class, our teachers' sample looked like this:

	Teach Classes with Television	Teach Control Classes	Teach Traditional Classes
7th Grade	65	11	18
8th Grade	65	10	21

N = 190

The sample was evenly divided between teachers with a specialization in science and math and those with a specialization in Spanish and social studies. Within the sample of 190, there were 48 teachers who were also school directors.

Teachers were presented with a series of 14 attitude statements, the majority of which had been used in our 1969 teacher surveys. A five-point scale ranging from "strongly agree" to "strongly disagree" was used to record the teachers' responses. The survey was anonymous and teachers were assured that the results would in no way be used to determine school assignments for the coming year. Results of this survey as well as the ones that had been administered the year before suggest that teachers felt free to express their

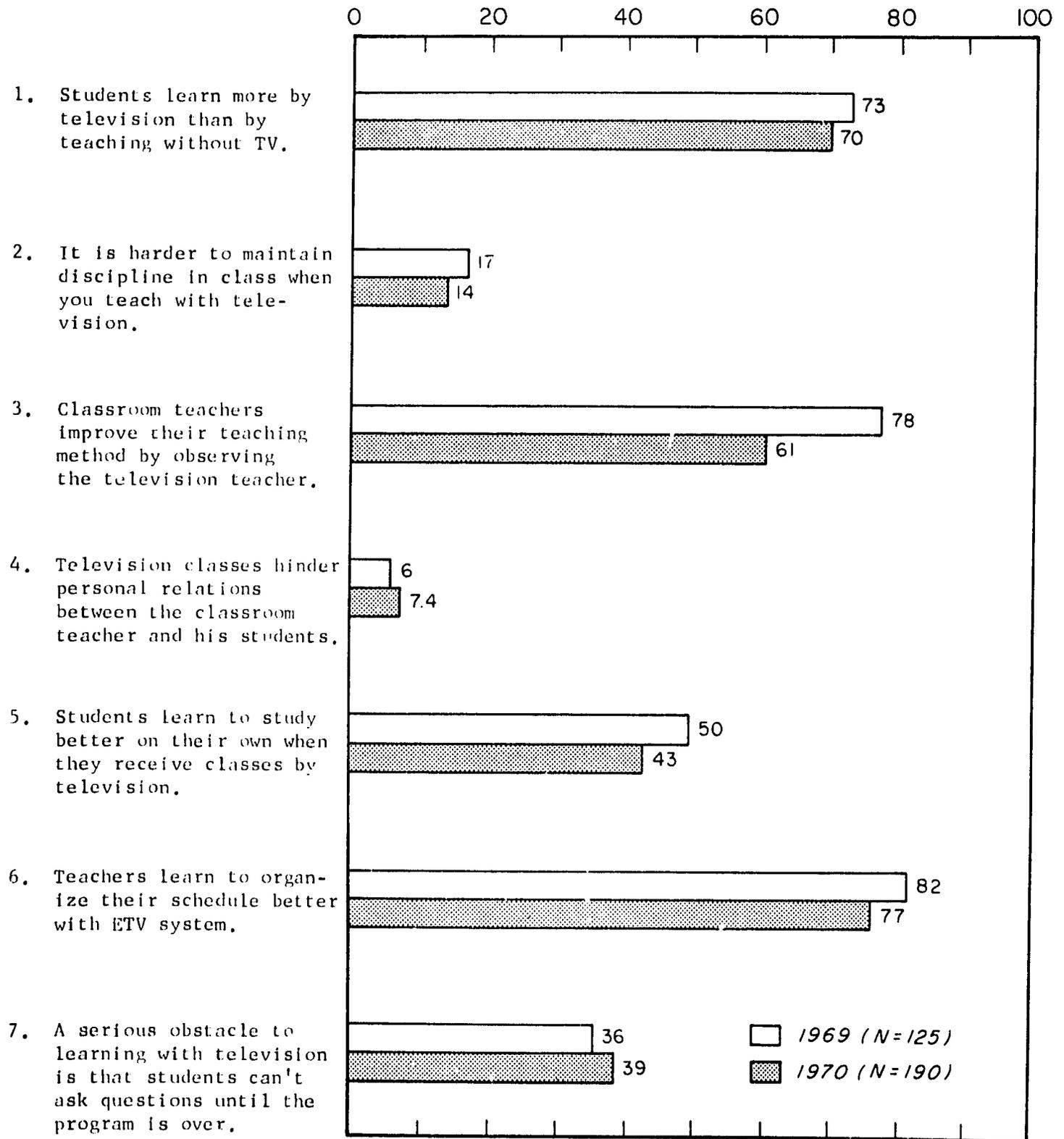
honest opinions and, in fact, did so. There was a very low rate of nonresponse, another indication that teachers did not hesitate to be frank in their answers.

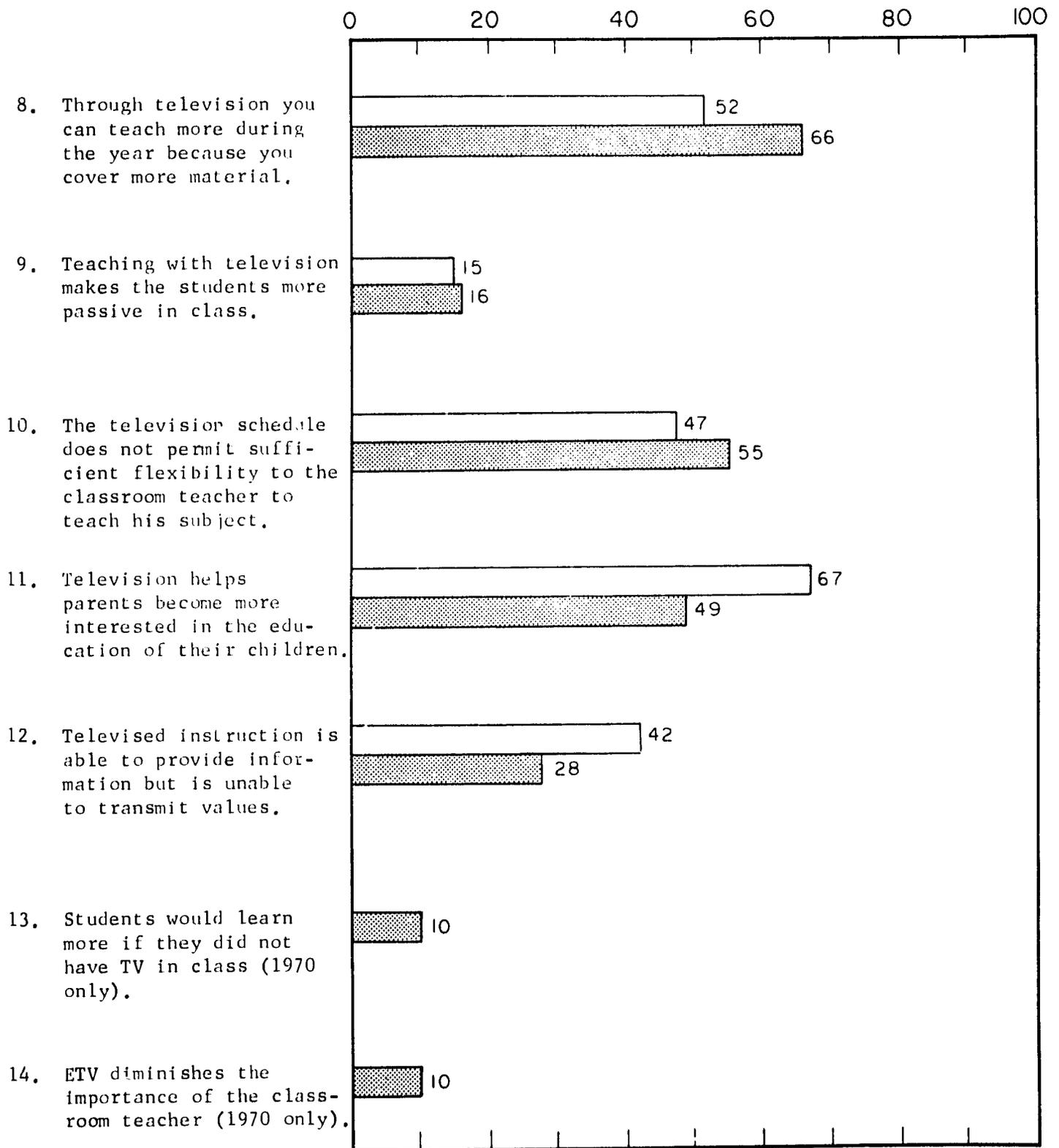
The 14 attitude items contained six positive and eight negative statements about teaching with television. Thus, the greater the agreement with the positive statements, the more positive the attitude toward television and, conversely, the lower the agreement with negative statements, the more positive the attitude toward television.

The results of the 1969 and 1970 classroom teacher surveys are compared in the following chart (see pages 74 and 75). A disquieting pattern emerges from this figure: Classroom teachers as a group were less favorable toward television at the end of the second year than at the end of the first year. For five out of six positive statements about television, the rate of agreement declined. For four of six negative statements about television, the rate of agreement increased. For the remaining two statements (both negative) we have no comparative data for 1969. Before drawing overly hasty conclusions about the significance of these results, it is useful to examine the statements individually. In this way, we can better gauge the magnitude of attitude change and, perhaps, identify the causes for the downward swing.

Turning first to the teachers' reactions to the positive statements about television (Numbers 1, 3, 5, 6, 8, 11), we note that with the exception of statement No. 8 -- in which the percentage

Comparison of Classroom Teacher Attitudes Toward ETV: 1969 and 1970
 Percentage Agreement with Statements About ETV





agreeing with the proposition that more material can be covered with television jumped from 52 in 1969 to 66 in 1970 -- the level of agreement dropped by an average of 10 percentage points.

The smallest drop (3%) in agreement with a positive statement about television occurs in proposition 1 which concerns how much students learn with television. A substantial majority (70%) of classroom teachers seem to feel that their students are learning more with television than they did under the traditional system. This is an encouraging finding and the small dropoff in the level of agreement is not indicative of any significant change in teacher opinion. In the same way, the decline from 82 per cent to 77 per cent agreement with the statement that television helps teachers organize their schedules is not particularly startling. Through the standardization of the school day and the elimination of the "taxicab teachers" who used to teach in a number of schools under the old system, the Reform has led to an increase in teacher efficiency. Teachers' recognition of this fact is borne out by their high percentage of agreement with statement No. 6 over the past two years.

Decreasing teacher agreement with statement No. 3 should be of concern to project leaders. In 1969, 78 per cent of the classroom teachers agreed that observing the television teachers helped to improve their own teaching method. This figure dropped to 61 per cent in 1970, indicating that fewer classroom teachers valued the teleteachers as models. We can offer no single explanation for the decline at this time. The quality of the television lessons, the

composition of the teacher sample, and actual teaching performance of the classroom teachers will have to be analyzed in greater depth to arrive at a more detailed account of the problem.

Statements concerning television's effect on improving students' study habits (No. 5) and on encouraging parental interest in education (No. 11) also received lower rates of teacher agreement in 1970. For both propositions, the percentages of agreement were less than 50 per cent. In the first instance, effect upon students' study habits, program planners may wish to review the kinds of follow-up activities and class projects that are being suggested in the teachers' guides and student workbooks. Classroom teachers may not be implementing these suggestions, or the suggestions themselves may be unrealistic in terms of time or the amount of extra materials that are required to put them into practice. The majority of Salvadoran teachers are not accustomed to having students work on their own or in small groups and they are unsure about how to evaluate such work. If the important concept of student-centered learning is to be achieved, more attention must be paid to the methods for bringing it about. Similarly, the involvement of parents in their children's education does not come naturally through television or through any other technological innovation. Teachers seem to have become increasingly aware of this fact in the project's second year for agreement with the statement about parental involvement dropped 18 percentage points. This change might well have been anticipated given the broader sample of schools which adopted television in 1970. In the

pilot year, only a handpicked group of 32 schools used television. These schools were better able to mobilize parental interest and to generate enthusiasm. Special sessions were organized in these schools to outline the new ITV system. However, in the second year when television entered a much larger number of schools, a corresponding effort to inform parents was not made. This, coupled with traditional low involvement of parents in Salvadoran education, may account for the teachers' reduced rating of television's influence in this area.

Although the classroom teachers increased their agreement with four out of the six negatively phrased statements about television at the end of 1970, the amount of increase for three out of those four statements was not more than three percentage points. This is not to minimize the rise in negative reactions or to deny the existence of heightened teacher criticism of television in the second year, but rather to put such findings in the wider context of what we consider to be a continuing acceptance of television on the part of most classroom teachers.

The most noteworthy increase of negative opinion occurred in statement No. 10 which dealt with the amount of flexibility that ITV allows the classroom teacher. A majority of respondents (55%) indicated that they felt unduly bound by the demands of the television system. Of course, this finding must be interpreted in light of the fact that 77 per cent of the same sample also agreed to the proposition that television helps teachers improve the organization of their own schedules. Despite the ambiguity in these responses, we believe that

they contain an important lesson: Project leaders need to review periodically, and hopefully by means of systematic feedback from the field, the amount and kinds of demands they are putting on classroom teachers. When teachers discover they are unable to keep up with the rate at which new material is being presented, they should be able to communicate this fact to the program planners. When necessary, amendments to the broadcast schedule may be made to allow teachers more time to organize catch-up or review sessions for their students. In this way, classroom teachers will come to view television as their tool instead of their master.

In order to gain a better understanding of the downward swing in teacher attitudes toward television in the project's second year, we analyzed our data from the teacher sample along a number of important demographic variables. We were particularly anxious to know what differences in attitude could be attributed to: (1) whether a teacher taught in an urban or country school; (2) whether he taught humanities or science; (3) his years of teaching experience with television; and (4) his level of professional training.

Assignment to an urban or rural school did not affect in a significant way attitudes toward television. Our urban and rural subsamples were never more than 12 percentage points apart on any attitude statement and on 10 of the 14 statements they were within six percentage points of one another (see table 21). It has often been hypothesized that ITV favors rural teachers (whose resources and experiences are felt to be relatively impoverished) at the expense

TABLE TWENTY-ONE

Attitudes of urban and rural classroom teachers toward television: 1970
 Percentage agreement with statements about television

<u>Statements</u>	<u>Urban Teachers (N=93)</u>	<u>Rural Teachers (N=93)</u>
1. Students learn more by television than by teaching without.	70	76
2. It is harder to maintain discipline in class when you teach with television.	16	13
3. Classroom teachers improve their teaching method by observing the television teacher.	60	65
4. TV classes hinder personal relations between the classroom teacher and students.	10	5
5. Students learn to study better on their own when they receive classes by television.	46	40
6. Teachers learn to organize their schedule better with ETV.	80	77
7. A serious obstacle to learning with TV is that students can't ask questions until the program is over.	36	44
8. Through television you can teach more during the year because you cover more material.	64	71
9. Teaching with TV makes students more passive.	13	21
10. The TV schedule does not permit sufficient flexibility.	57	46
11. TV helps parents become more interested in the education of their children.	47	51
12. Televised instruction is able to provide information but unable to transmit values.	28	28
13. Students would learn more if they did not have TV in class.	12	9
14. ETV diminishes the importance of the classroom teacher.	11	11

of teachers from urban areas who presumably have greater access to learning aids and cultural stimuli and, therefore, have less need for television. Although there is some slight evidence of this phenomenon in the responses to our attitude statements among the urban and rural groups, the differences between the two are not large enough for us to warn of a danger in this area. In short, the attitudes of the urban and rural teachers do not vary substantially from one another or from our overall sample means.

When teacher attitudes were analyzed according to years of experience with television, it was no surprise to find that teachers from the original pilot group retained higher opinions toward television than their counterparts who entered the system in 1970 (see table 22). On 10 of 14 statements, the second-year group was more favorable. On only two statements -- classroom teachers improve their teaching method by observing the television teacher and television helps parents become more interested in the education of their children -- did the second-year group express markedly less positive attitudes toward television than it had the year before. On four items, there was an increase in positive attitude toward television over the previous year. In sum, we found substantially higher attitudes among teachers who had used television in their classes for the longest time (two years) and no evidence that would suggest the Hawthorne effect.

Alongside the attitude data for the first- and second-year groups in table 22, we have presented the breakdown of our teacher

TABLE TWENTY-TWO

Attitudes toward television by years of experience
and by area of specialization: 1970
Percentage agreement with statements about television

<u>Statements</u>	<u>1 Yr. Exper. with TV N=93</u>	<u>2 Yrs. Exper. with TV N=50</u>	<u>Humanities Teachers N=115</u>	<u>Science Teachers N=72</u>
1. Students learn more by television than by teaching without.	77	72	79	61
2. It is harder to maintain discipline in class when you teach with television.	16	4	13	17
3. Classroom teachers improve their teaching method by observing the television teacher.	62	57	68	52
4. TV classes hinder personal relations between the classroom teacher and students.	9	2	5	14
5. Students learn to study better on their own when they receive classes by television.	41	45	46	39
6. Teachers learn to organize their schedule better with ETV.	74	84	83	71
7. A serious obstacle to learning with TV is that students can't ask questions until the program is over.	46	27	34	49
8. Through television you can teach more during the year because you cover more material.	70	69	72	60
9. Teaching with TV makes students more passive.	20	10	16	18
10. The TV schedule does not permit sufficient flexibility.	53	46	41	69
11. TV helps parents become more interested in the education of their children.	38	51	54	41
12. Televised instruction is able to provide information but unable to transmit values.	33	25	23	39
13. Students would learn more if they did not have TV in class.	7	12	6	17
14. ETV diminishes the importance of the classroom teacher.	12	6	9	13

sample according to subject area specializations -- humanities (including social studies and Spanish) and science (including science and mathematics). Here we find some remarkable differences. In each instance, the attitudes toward television expressed by the humanities teachers are higher than their counterparts in science. Seventy-nine per cent of the humanities teachers feel that their students learn more with ITV, while only 61 per cent of science and math teachers share this feeling. In another striking divergence of opinion, 69 per cent of the science group agrees that the television schedule does not permit the classroom teacher enough flexibility; while the figure for the humanities teachers is only 41 per cent. More analyses will be required before we will be able to unravel the reasons for the sharp difference between these groups. The problem may lie with the individual teachers, with the teleseries, or with something more fundamental such as television's compatibility with the new science curriculum. At this point, we can only say that a potentially serious problem does exist among the science and math teachers which deserves further investigation in 1971.

When we analyzed the attitudes toward television according to the levels of teacher training, other noteworthy differences emerged (see table 23). For 10 out of the 14 attitude statements, teachers with no advanced education had the most favorable reaction toward television. On these same 10 statements, graduates of the Normal Superior displayed the least favorable reactions. University-educated teachers generally fell somewhere between these two poles,

TABLE TWENTY-THREE

Attitudes toward television by levels of teacher training: 1970
 Percentage agreement with statements about television

<u>Statements</u>	<u>No Advanced Education N=85</u>	<u>Normal Superior N=43</u>	<u>University N=62</u>
1. Students learn more by television than by teaching without.	80	57	72
2. It is harder to maintain discipline in class when you teach with television.	14	12	16
3. Classroom teachers improve their teaching method by observing the television teacher.	73	45	59
4. TV classes hinder personal relations between the classroom teacher and students.	6	10	8
5. Students learn to study better on their own when they receive classes by television.	40	42	48
6. Teachers learn to organize their schedule better with ETV.	79	77	77
7. A serious obstacle to learning with TV is that students can't ask questions until the program is over.	40	49	34
8. Through television you can teach more during the year because you cover more material.	72	56	68
9. Teaching with TV makes students more passive.	16	19	16
10. The TV schedule does not permit sufficient flexibility.	47	67	48
11. TV helps parents become more interested in the education of their children.	55	37	50
12. Televised instruction is able to provide information but unable to transmit values.	25	31	34
13. Students would learn more if they did not have TV in class.	6	16	11
14. ETV diminishes the importance of the classroom teacher.	10	12	11

but their overall reactions more closely coincided with those of the least trained teachers. We combined the means of the no-advanced-training group with those of the university educated and tested for significant differences between these new means and those of the Normal Superior graduates (table 24). In six instances, the attitudes of Normal Superior graduates proved to be significantly less favorable toward television than those of teachers with other levels of training. The Normal Superior graduates were highly skeptical about whether or not students really learned more with television (only 57 per cent agreed that they did) and two-thirds (67%) felt that television did not provide enough flexibility for the classroom teacher. It is clear from these findings that for many graduates of the Normal Superior, a year of teaching experience with television did not alter their initial prejudice against it.

By way of summarizing our research on the attitudes of classroom teachers toward television, we offer two statistical portraits: one is the classroom teacher who is most happy teaching with television and feels that it is having a positive influence on his students; the other is the classroom teacher who tends to find television bothersome and is skeptical about its effect on his students. We must stress that we are not talking here about real people whom we have tested or actually observed in the field, but about idealized types constructed on the basis of statistical analysis and probability.

The classroom teacher who is happiest teaching with television is located in a rural area, teaching at a small school. He is a

TABLE TWENTY-FOUR

Comparison of normal superior graduates' attitudes
toward television with those of other teachers
Percentage agreement with statements about television

<u>Statements</u>	<u>Normal Superior Graduates N=43</u>	<u>Other Teachers N=47</u>	<u>P.</u>
1. Students learn more by television than by teaching without.	57	76	.05
2. It is harder to maintain discipline in class when you teach with television.	12	15	n.s.
3. Classroom teachers improve their teaching method by observing the television teacher.	45	69	.05
4. TV classes hinder personal relations between the classroom teacher and students.	10	7	n.s.
5. Students learn to study better on their own when they receive classes by television.	42	44	n.s.
6. Teachers learn to organize their schedule better with ETV.	77	78	n.s.
7. A serious obstacle to learning with TV is that students can't ask questions until the program is over.	49	37	n.s.
8. Through television you can teach more during the year because you cover more material.	56	70	.05
9. Teaching with TV makes students more passive.	19	16	n.s.
10. The TV schedule does not permit sufficient flexibility.	67	48	.01
11. TV helps parents become more interested in the education of their children.	37	53	.01
12. Televised instruction is able to provide information but unable to transmit values.	31	29	n.s.
13. Students would learn more if they did not have TV in class.	16	8	.01
14. ETV diminishes the importance of the classroom teacher.	12	11	n.s.

Spanish or social studies teacher who never received advanced training. His career began in the primary school system but when secondary enrollments swelled in the mid-sixties, he won an appointment as a secondary schoolteacher. This entitled him to more pay and greater professional prestige. When the Educational Reform began in 1968, his school was selected as one of the pilot schools for instructional television. Accordingly, he spent two vacation periods at the San Andrés Normal School. There he learned about the Educational Reform, received a refresher course in his subject specialties, and had some practice using television in a simulated classroom situation. He began teaching with television in February, 1969, and he has now completed two full school years in the new system.

In contrast to the individual described above, the teacher who is least enchanted with television is teaching either math or science at a large urban school. He trained for a career in secondary education at the Normal Superior. Although the school where he was teaching in 1968 was generally recognized to be one of the better secondary schools in the country, it was not selected as one of the pilot television schools. When the television system was expanded in 1970 to all schools that could receive the broadcast signal, this teacher was given a special retraining course at San Andrés. He resented being required to attend this course and was outspoken in his condemnation of it as well as the Reform which made it necessary. This teacher returned to his old school in February, 1970, and has completed only one year of teaching with television.

4. Some notes on the 1970 Teacher Retraining Course

In table 25 we present the before-and-after attitude measures of the teachers who attended the second full-year teacher retraining course at San Andrés. None of these teachers have had experience teaching with television and their responses therefore represent reactions to the San Andrés course and predispositions toward ITV, rather than actual experience using television in the classroom. As a group, the teachers in retraining display an uncertainty about whether students learn more under the new system and tend to agree more with the negative statements about ITV than their counterparts in the classroom. Thus, we find that the teachers in retraining are more concerned about the effects of television on student discipline, the student-teacher relationship, the opportunity for students to ask questions, and a possible increase in student passivity. We do not feel that these findings are particularly important at this time, but they will serve as useful baseline measures for research on classroom teacher attitudes in the years to come.

General attitudes toward teaching, students, and the Educational Reform

In our year-end surveys we also presented the classroom teachers and their counterparts at the San Andrés retraining course with a series of propositions pertaining to the general state of the teaching profession and of education in El Salvador. We wished to gain some insight on (1) how teachers regarded their profession, (2) what they thought of the increased enrollments in secondary school,

TABLE TWENTY-FIVE

Attitudes toward television before and after 1970 teacher retraining course
 Percentage agreement with statements about television

	<u>Before</u> <u>N=191</u>	<u>After</u> <u>N=160</u>
1. Students learn more by television than by teaching without.	58	60
2. It is harder to maintain discipline in class when you teach with television.	21	24
3. Classroom teachers improve their teaching method by observing the television teacher.	70	64
4. TV classes hinder personal relations between the classroom teacher and students.	10	10
5. Students learn to study better on their own when they receive classes by television.	46	42
6. Teachers learn to organize their schedule better with ETV.	81	74
7. A serious obstacle to learning with TV is that students can't ask questions until the program is over.	60	60
8. Through television you can teach more during the year because you cover more material.	54	65
9. Teaching with TV makes students more passive.	34	24
10. The TV schedule does not permit sufficient flexibility.	58	47
11. TV helps parents become more interested in the education of their children.	54	53
12. Television instruction is able to provide information but unable to transmit values (after only).		41
13. Students would learn more if they did not have TV in class (after only).		14
14. ETV diminishes the importance of the classroom teacher (after only).		7

and (3) whether or not they felt the Educational Reform was achieving its major objectives. The identical five-point scale we had used to measure teacher attitudes toward television was also adopted for this section of our questionnaire. The percentages of classroom and retraining teachers agreeing with each of the 13 statements are presented in table 26.

Although the vast majority of teachers in the two samples believe that all Salvadoran children deserve education beyond the primary level, they do not seem convinced that the students who are currently in the secondary system are taking sufficient advantage of that opportunity. Thus, 98 per cent of both samples agree that all young people ought to have the chance to finish Plan Basico and only 4 per cent say that only the best students should continue studying after primary. However, less than 50 per cent of the classroom teachers believe that the majority of Plan Basico students are motivated to take advantage of their education. Fifty-two per cent of the Normal School sample and 48 per cent of the classroom teachers also feel that students lack respect for their teachers and 29 per cent of the latter group believe that the majority of Plan Basico students are not interested in learning. Teachers seem to be saying, in effect, that they are in favor of increasing educational opportunity, but are not very impressed by the motivation of the students they now have.

Possibly the teachers' displeasure stems more from their own lack of motivation and/or status than from the attitudes of their

TABLE TWENTY-SIX

Teacher agreement with statements about teaching
and education in El Salvador: 1970

<u>Statements</u>	<u>Classroom Teachers N=190</u>	<u>Teachers in Retraining N=160</u>
1. Teaching is not a profession that gives much satisfaction.	18	24
2. All young people ought to have the opportunity to finish Plan Basico.	98	98
3. The increase in enrollment decreases the quality of secondary education.	36	38
4. The fundamental goal of education is the formation of a child's character.	71	70
5. I would encourage my best students to become teachers.	20	20
6. Only the best students should study beyond primary.	4	6
7. Teachers are highly respected in El Salvador.	18	19
8. The majority of Plan Basico students are not very interested in learning.	29	21
9. I would stay in teaching even if I were offered a better paying job.	45	57
10. Many teachers lack respect for their teachers.	48	52
11. The most important goal of education is the development of reasoning ability.	68	73
12. The great majority of students are motivated to take advantage of their education in Plan Basico.	71	54
13. The Educational Reform is leading toward a high quality of education in the Plan Basico.	48	69

students. Teachers are underpaid in El Salvador, as they are in most countries, and the frustration of having to survive on low salaries and to find other jobs with which to supplement income is often great. Only 18 per cent of the classroom group feel that teachers are highly respected in their country and a mere 20 per cent would encourage their best students to become teachers. The comparable figures for the retraining group are also low: 19 per cent and 20 per cent, respectively. Yet, despite this rather low opinion of the teaching profession, only 18 per cent of the classroom sample agreed to the proposition that teaching doesn't give much satisfaction and 45 per cent claim they would stay in teaching even if they were offered a better paying job. In short, Salvadoran teachers are certainly not pleased with their current status, but neither do they seem to have given up hope for the future. An encouraging finding was that 71 per cent of the classroom teachers and 69 per cent of the retraining group felt that the Educational Reform was leading toward a quality education at the Plan Basico level, an education which would presumably enhance their position as well.

Attitudes toward some specific teaching problems

Throughout 1970, members of the evaluation team came in contact with teachers and school directors. In the course of these meetings which varied widely between formal meetings and seminars on the one hand, to informal gatherings and happenstance conversations on the other, we received many different opinions about the television

series and about the problems which confront Salvadoran teachers day to day. At the end of the year, we decided to find out in a more systematic way what kinds of problems really concerned teachers the most. We divided this project into two parts: the first part dealing with general teaching problems (both related and unrelated to television) and the second part dealing with reactions to the 10 televised series. In this section, we shall report on the first of these topics.

We began by compiling a list of all the different problems and complaints we had either experienced with teachers or heard them talk about in the course of our numerous meetings and conversations. When this step had been accomplished, we reduced the number of complaints into 14 categories. A four-point scale was devised to record teachers' responses to each problem category. The scale ranged from "very serious" to "not at all serious." The list of the problem categories along with the percentage of classroom teachers who claimed that they presented a "very serious" problem is presented in table 27.

Six problem categories were rated "very serious" by more than 25 per cent of the classroom teachers. We have referred above to the financial plight of many teachers. This was borne out by the fact that 53.7 per cent of our sample rated their financial position as very serious. This, we feel, is not the natural phenomenon of people thinking they are underpaid; many Salvadoran teachers are simply unable to support their families on the salaries they earn from the

TABLE TWENTY-SEVEN

Problems with teaching and with the educational system
 Percentage of classroom teachers saying that problem is "Very Serious"

<u>Problems</u>	<u>Percentage</u>
1. The financial position of teachers.	53.7
2. The poverty of students and their surroundings.	44.7
3. Shortage of teachers with a "vocation for teaching."	34.2
4. Lack of teaching material.	33.7
5. Lack of cooperation from parents.	27.4
6. Too many students in class.	25.8
7. The efficiency of the Ministry of Education.	22.1
8. The method for assigning teachers to schools.	20.5
9. The guides and workbooks do not arrive on time.	14.2
10. Administration within the schools.	11.1
11. Lack of supervision.	9.5
12. Changes in the system of student evaluation and promotion.	8.9
13. Technical failures in the reception of the teleclasses.	8.4

Ministry. They are forced to supplement their teaching salaries with other kinds of jobs which often must interfere with the fulfillment of all their responsibilities to the schools.

Three other problem categories recognized by more than 25 per cent of the teachers as "very serious" were also related to economic conditions. The first was the poverty of students and their environment (44.7%). Many students cannot afford the minimal tuition required to attend Plan Basico. Ancillary learning materials such as books and pencils are also beyond the means of many Salvadoran families. Parents, to avoid having to meet the school expenses, often stay away from meetings called by school directors. It is for this reason that the teachers cite lack of cooperation from parents as another very serious problem (27.4%). The third problem is really a function of the ones already mentioned. Because the Ministry of Education has trouble paying its teachers and keeping its school buildings in operating condition, it has little money left over to supply teachers with teaching aids. Similarly, students from families that can not meet monthly tuition payments are hardly in a position to purchase extra books and school supplies. For these reasons, teachers are forced to improvise or make do with antiquated materials left over from previous years. Thus, the lack of teaching material is felt to be a very serious problem by 33.7 per cent of our sample.

More than a third of the classroom teachers (34.2%) claimed that the shortage of teachers with a "vocation" for teaching constituted a very serious problem. We can offer no ready interpretation

for this finding. We have observed over the past two years a high rate of absenteeism in rural schools. Some teachers commute great distances to their schools and this often results in tardiness through poor bus connections, bad weather, etc. In such instances, other teachers in the school are forced either to assume a double work load or to dismiss a colleague's class. In urban areas, the problem is somewhat different. There, teachers often scurry between a number of jobs and their teaching responsibilities may become lost in the shuffle. The fact that both these situations exist and are reinforced by low morale among teachers and a lack of supervision may well have prompted this response from the teachers in our survey.

Teacher ratings of the television series

In order to measure teacher opinions toward the individual television courses, we administered a special feedback survey in September, 1970, approximately one month before the end of the school year. A sample of teachers, stratified according to the 10 television courses, was drawn independently from the sample of teachers who participated in our year-end attitude study. In place of the positive and negative statements which were the format for the attitude questionnaire, in this study we had teachers respond to neutral phrases that incorporated the criteria we wished to consider for each of the series: student learning and motivation, the teacher's guide, the teleteacher, and certain miscellaneous aspects of the television classes themselves (amount of content, teacher exposition, audio-visual

materials, etc.). A 1-5 interval scale, with 5 signifying the highest possible rating, was used to record the teachers' opinions.

As we consider the teachers' ratings of the individual tele-series, it is important to remember that we will be interpreting opinions. The correctness of these opinions is a separate issue. When teachers rate a course relatively low on one or more dimensions, we cannot be sure that the course is actually deficient in those areas. Student achievement and opinion may give us a completely different perspective of a course and therefore they too must be taken into account. A rating tells us only what teachers think about a specific course. It is the job of program planners to decide what action, if any, is warranted on the basis of such information. In some instances, the solution to a particular problem may lie with the revision of a series; in others it may be that teachers' opinions are what need to be changed.

In table 28 we have displayed a matrix of teacher ratings for all the seventh- and eighth-grade teleseries. To simplify the interpretation of these results, we took the average of the teachers' ratings for each subject and multiplied them by a factor of 20. Thus, an average rating of 3 on our 1-5 scale yielded an equivalent figure of 60 in our table, an average of 3.5 translated to a figure of 70, and so forth. The higher the teachers' opinion of a particular course, the closer to the ceiling of 100 was its overall rating.

What students learn with television

A majority of the classroom teachers seemed to be satisfied that their students were learning efficiently with television. All of the seventh-grade series received average ratings of 75 or more on this dimension as did the eighth-grade English series. Only eighth-grade math fell below an average rating of 70. When the teachers were asked to compare their students' learning with television versus their learning in the traditional system, the impact of the new medium became dramatically apparent. Teachers' ratings of student learning before television were an average of 19 points below their current levels with television. The most striking learning increases from the teachers' point of view occurred in seventh- and eighth-grade English where gains under the new system amounted to 24 and 37 points, respectively.

Student motivation with television

Teachers expressed an even more positive opinion about effects of the television courses on student motivation. The difference in teachers' ratings of student motivation between the old and new systems was 22.2 points. For all subjects but one (seventh-grade Spanish), teachers believed that student motivation had risen by 30 per cent or more with the new system. The ratings of student motivation were higher for the seventh-grade subjects than for eighth. Only English achieved a motivation rating above 80 within the eighth-grade group, while only Spanish failed to do so among the five seventh-grade

TABLE TWENTY-EIGHT

Classroom teachers' ratings of the television courses
 Figures represent average ratings on scale of 1 - 100

	7th Eng. N=18	7th Span. N=20	7th Soc N=20	7th Sci. N=21	7th Math N=21	8th Eng N=21	8th Span. N=24	8th Soc. N=22	8th Sci. N=23	8th Math N=21
1. What students learn with ETV	78	75	84	79	76	81	74	74	73	68
2. What students learned before ETV	54	62	66	56	63	44	55	55	56	55
3. Student motivation with ETV	84	79	80	80	82	82	74	76	74	73
4. Student motivation before ETV	57	74	60	53	58	50	53	52	52	53
5. Help provided by the guides	82	92	89	82	88	85	78	77	80	85
6. Practical value of activities recommended in the guides	80	83	83	77	80	75	76	70	69	75
7. Relation between the guides and the TV classes	81	83	89	78	87	80	78	72	79	79
8. Television teacher's mastery of the subject material	74	84	85	70	91	88	83	77	70	90
9. Teaching ability of the TV teacher	74	91	80	63	83	80	84	70	74	85
10. Ability of the TV teacher to involve the students	80	79	68	57	86	73	69	53	57	68
11. Legibility of the graphic material	80	77	85	82	80	81	73	76	72	77
12. Contribution of audiovisual material to the teleclasses	87	85	89	89	86	81	74	80	83	78
13. The help of ETV under ideal circumstances	93	91	91	90	88	94	89	87	91	87
14. The help of ETV under current circumstances	82	77	81	78	75	74	79	77	72	75
(excluding 2, 4, 13) $\bar{X} =$	80.2	82.7	83.0	75.9	83.1	80.5	76.5	72.9	73.0	77.5

subjects. This was the first indication of what subsequently proved to be an overall trend in favor of the seventh-grade television series.

The teachers' guides

One of the most important components of each Salvadoran televised course system is the guide which is distributed at regular intervals to all the classroom teachers. The guides are designed to help integrate classroom and television teaching by (1) informing the classroom teacher in advance of the contents and objectives of each television lesson, (2) suggesting ways to utilize the teleclasses through appropriate motivation and follow-up activities, and (3) offering new methods for evaluating student learning within particular content areas.

We solicited teacher reactions to the television guides on three items: the general help provided by the guides, the practical value of activities recommended in the guides, and the relation between the guides and the teleclasses. Although teacher ratings for all the guides were quite high, the ratings of the seventh-grade materials were somewhat better in this area. On each dimension, the group means for the seventh-grade series were between 5.5 and 7.6 points higher than those for the eighth grade. And while science was the only seventh-grade subject that failed to achieve an overall rating of 80 across the three-item battery, not one of the eighth-grade subjects reached that high a level.

In the administrative record at the beginning of this report, we referred to the hasty manner in which the new eighth-grade production teams were recruited and trained in 1970. The problems attributable to inexperience were compounded by the pressures of a very rigorous taping schedule. As a consequence, the television lessons for the eighth grade were not planned far enough in advance to permit the writing of comprehensive lesson guides and with the possible exception of the math and English series, they were not as well received as the guides for the seventh grade.

The television teacher

On two of the three dimensions we used to gauge classroom teachers' opinions of the television teachers, there was virtually no difference between the combined means for the seventh- and eighth-grade courses. As a group, the seventh-grade teleteachers were not rated higher in terms of mastery of their subject areas or greater teaching ability. Only in the ability to involve students were the seventh-grade teleteachers rated substantially better than their eighth-grade counterparts. We believe this difference may be attributed to the factors discussed above. Because the eighth-grade production teams were so pressured by their taping schedule, their lessons tended to lack organization. Graphic materials were often paraded across the television screen in a somewhat illogical manner, and students may have had a difficult time comprehending basic concepts. This may also have contributed to the poorer learning performance we found in the eighth-grade television classes.

Although there was not much variation between the ratings of the teleteachers by grade, noteworthy differences did occur within each group. In the seventh grade, for example, the math and Spanish teleteachers received strong positive recognition by the classroom teachers. The average ratings for these teleteachers across the three relevant items were 87 and 85, respectively. The eighth-grade math and English teleteachers also achieved relatively high overall ratings (81 and 80), but not quite as high as their colleagues in the seventh grade. On the other end of the scale, the seventh- and eighth-grade science teleteachers as well as the eighth-grade social studies teleteacher each received ratings averaging below 70. The classroom teacher's low estimation of the seventh-grade science teleteacher is perhaps most disturbing because this individual has been the object of sharp criticism for two years. Although seventh-grade students continue to rank science among their favorite subjects, teachers in the field lack confidence in this particular teleteacher. This unfortunate fact, coupled with the low ratings of the eighth-grade science teleteacher, suggests that the project's leaders should oversee carefully the development of the science series in 1971. Similarly, the teaching performance of the eighth-grade social studies teleteacher may have to be upgraded.

Miscellaneous aspects of the television classes

To obtain additional information about teacher reactions to a number of quantitative and qualitative aspects of the television

lessons themselves, we included in the survey five statements dealing with the general content of the lessons, the amount of exposition made by the teleteacher, the amount of audiovisual material contained in the classes, and the legibility and overall contribution of that material to lesson development. For the qualitative questions relating to the audiovisual material we retained our 1-5 interval scale, but for the quantitative question we asked teachers to record their answers along a different 5-point scale which ranged in its alternatives from "very insufficient" to "very excessive". On this scale, the middle point "adequate" was considered the most favorable response. The classroom teachers' responses to these miscellaneous aspects of the television lessons are summarized briefly below:

- For eight out of the ten television courses, a majority of teachers felt that the amount of material contained in the teleclasses was adequate. In two instances, seventh- and eighth-grade science, a majority responded that the amount of material was excessive. Only in eighth-grade social studies was there substantial teacher opinion (40%) that the content of the teleclasses was insufficient.
- Classroom teachers were generally satisfied with the amount of teleteacher exposition presented in the lessons. In only one instance, eighth-grade social studies, was there strong indication (48%) that the teleteacher might be talking too much.
- The quantity of audiovisual material presented in each series was also said to be adequate by a vast majority of teachers in every course. However, there was a trend of opinion (30%) among the seventh-grade Spanish and social studies teachers suggesting that the amount of audiovisual material in these courses was somewhat insufficient.

-- Teachers gave high ratings to the legibility and overall contribution of the audio-visual materials to the television courses. The seventh grade again outrated the eighth grade in this area. All of the seventh-grade courses achieved ratings of 85 or more on this question; not one of the eighth-grade teams was rated so high.

Conclusions

In table 29 we present the overall mean ratings for the 10 courses that were presented on television in 1970. These were computed by taking the average of the courses' individual ratings across 11 of our 14 categories (items dealing with student learning and motivation before television as well as the help of television under ideal circumstances were eliminated). The seventh-grade courses obtained higher teacher ratings on 9 of the 11 individual scales and this superiority was reflected in the summary ratings.

When we compared teacher ratings of the help that television could provide under ideal circumstances versus the help that it was providing under current circumstances, we discovered that teachers generally had a high opinion of television's potential (90.1 rating) as well as its actual performance in their classes (77.5 rating). We would expect this discrepancy for there is certainly room for improvement in the years to come. This is especially true for the seventh- and eighth-grade science and eighth-grade social studies. Nevertheless, the overall impression conveyed by our data is that classroom teachers have reacted favorably to the television classes they received during the past year. Through a continuing analysis of these ratings, we hope to be able to offer more complete profiles of each course in the months ahead.

TABLE TWENTY-NINE

Classroom teacher ratings of the television courses
Average ratings across 14 items

<u>Television Courses</u>	<u>Ratings</u>
Math 7th	83.1
Social studies 7th	83.0
Spanish 7th	82.7
English 8th	80.5
English 7th	80.2
Math 8th	77.5
Spanish 8th	76.5
Science 7th	75.9
Science 8th	73.0
Social studies 8th	72.9

Chapter Five

RESEARCH ON STUDENTS: THEIR BACKGROUND ASPIRATIONS AND ATTITUDES TOWARD TELEVISION

From the outset of our research in El Salvador, we have been interested in the effects of the Educational Reform, and particularly television, on the attitudes and aspirations of students. Accordingly, in 1970 we conducted two large student surveys, one at the beginning, the other at the end of the school year. We focused our attention on a sample of 80 Plan Basico classes: 40 from the eighth grade and 40 from the seventh grade. The eighth-grade group included all but one of the original 28 public school classes that used television in the pilot year, 6 out of the 12 "traditional" or old system classes we had investigated in 1969, and all four of the special control classes from that same year. For the seventh grade, we drew a new sample which contained 28 television, six traditional, and six control classes. The characteristics of these subgroups have been explained in detail in chapter one.

Although we are confident that our samples were representative of El Salvador's student Plan Basico population, we must point out that Plan Basico students are themselves atypical of their age group. According to Ministry of Education figures, only one out of four students who enters the first grade actually completes the six-year primary cycle and less than one in five ever enters the first year

of Plan Basico (grade 7). There are many reasons for such a high attrition rate. Chief among them are poverty and lack of opportunity, particularly in the rural areas. To alleviate these problems, the Ministry has recently eliminated tuition at the Plan Basico level and has proposed a massive program of primary and secondary school construction. In the years to come, these policies should result in much higher enrollments in the country's Planes Basicos and, in fact, one of the Reform's principal objectives is to provide nine years of basic education to all Salvadoran children. However, this goal is far from being achieved and, for the time being, the students who do reach the Plan Basico must be considered an elite segment of the population.

Although the students in our samples do constitute an elite, they do not come exclusively from the highest social classes. The vast majority of students from the upper and middle classes still attend private schools (in 1970, 43 per cent of all Plan Basico students were enrolled in private schools). The private schools are heavily concentrated in San Salvador and they vary greatly between the prestigious, Church-affiliated institutions and the smaller commercial operations that emerged in response to overflow enrollments in the public sector and the desire on the part of parents to obtain what they thought would be a better education for their children. Many of the schools in this latter category have been forced out of business by the general improvement in the public sector since the advent of television and the concomitant Reform programs. This trend is reflected in the official Ministry of Education statistics for 1970

which show a swelling of Plan Basico enrollments in the public sector and a leveling off of enrollments in the private sector.

Because the wealthiest Salvadoran children are in private schools and the vast majority of poor children drop out of school before completing the sixth grade, the variety of student backgrounds is not great within the public Plan Basico schools. Yet, our studies reveal a good deal about this important middle segment of El Salvador's student population. In the following pages, we shall present its profile, concentrating on certain variables which are related to educational attainment: socioeconomic status, media use, educational and occupational aspirations, and attitudes toward learning with television.

We stress that the survey data which will be summarized in this chapter are only one part of a three-year panel study designed to measure the effects of El Salvador's Educational Reform on students. Through repeated surveys and observations in the years to come, we hope to provide a much fuller account of student attitudes and aspirations during a period of massive educational change.

Statistical profile of two student samples

In table 30 we present some basic socioeconomic data on the seventh- and eighth-grade student samples surveyed in 1970. The widening differences which we noted last year between students and parents remains the most striking feature of this table. Less than 30 per cent of the fathers and 20 per cent of the mothers in either

TABLE THIRTY

Background information on two student samples: 1970
 Percentage of students in each category

	<u>7th Graders</u> N=1364	<u>8th Graders</u> N=1154
<u>Sex</u>		
Boys	57.1	58.4
Girls	42.9	41.6
<u>Average Age (March, 1970)</u>		
	13 yrs. 11 mos.	14 yrs. 11 mos.
<u>Residence</u>		
San Salvador	11.4	24.1
Other urban	48.5	33.3
Semi-rural	32.8	35.0
Rural	6.5	7.2
<u>Level of father's education</u>		
No education	10.5	6.2
Some primary	36.1	34.6
All primary	21.9	25.5
Secondary	22.3	24.9
University	3.7	2.8
No response	5.5	6.2
<u>Level of father's occupation</u>		
Professional	1.2	1.5
Skilled	9.7	13.2
Unskilled	75.1	71.6
No response	14.0	13.7
<u>Level of mother's education</u>		
No education	15.2	13.6
Some primary	43.1	41.3
All primary	19.8	23.0
Secondary	15.0	18.6
University	1.0	.6
No response	5.9	2.3
<u>Have repeated one or more grades</u>		
Yes	49.7	46.8
No	49.2	52.3

sample have achieved a level of education equivalent to that which their children now have. Similarly, less than 15 per cent of the fathers hold jobs which require education beyond the primary level. Later in this chapter we shall discuss the implications of this striking asymmetry for the students' own educational and occupational aspirations.

The percentage of students from families which owned television sets remained at 47 per cent for the eighth grade but rose from 41 to 46 per cent in the seventh grade in the course of the year. On all other media indicators, the seventh- and eighth-grade groups remained roughly the same (see table 31). Newspapers and radios were said to be present in over 90 per cent of the students' homes, books in 85 per cent, and magazines in over 65 per cent. El Salvador, is a small and densely populated country and the mass media are more widely distributed there than in the other countries of the region. For this reason, television ownership has proven to be a consistently good discriminator of socioeconomic status.

All of the variables listed in table 30 are related to the location of a student's school on an urban/rural scale. In 1969 we used three urbanization categories to classify different schools: urban, semi-urban, and rural. "Urban" referred to schools in San Salvador and its environs; "semi-urban" to towns on paved roads linking population centers; and "rural" to towns on dirt roads and away from main highways. Although these categories served us well in most instances, occasional difficulties arose because some "semi-urban"

TABLE THIRTY-ONE

Mass media availability
 Percentage claiming to have particular media in their homes

	<u>7th Grade</u>	<u>8th Grade</u>
<u>Newspapers</u>		
March	89.9	94.8
October	92.4	95.0
<u>Magazines</u>		
March	65.9	75.1
October	67.4	71.3
<u>Radio</u>		
March	94.3	96.6
October	94.9	95.2
<u>Television</u>		
March	41.0	46.9
October	46.0	46.9
<u>Books</u>		
March	78.9	89.6
October	85.3	86.8

towns were actually serviced by dirt roads. In order to prevent a recurrence of this problem, in 1970 we established a new four-category classification for the towns in our sample: San Salvador, other urban, semi-rural, and rural. In addition to providing us with four categories which could be dichotomized when necessary, the classification allowed us to discriminate with more confidence between schools. As it turned out, a majority of the classes in both samples belonged in the two urban categories. The eighth-grade sample reflected the priority given to the San Salvador schools in the pilot year, while the heavy concentration of seventh-grade classes in the "other urban" category reflected the way the project had expanded to El Salvador's other cities in the second year. In each sample, less than 10 per cent of the students fell into our most rural category.

When we analyzed our demographic data along the urban/rural dimension, we again found that urban students, particularly students from San Salvador, are much better off than their rural counterparts. On every socioeconomic variable, the urban students ranked considerably higher than the rural group. Urban students were generally younger due to a lower repeater rate, their fathers and mothers had more education and better jobs, and their households tended to have more mass media available. While approximately 70 per cent of the seventh- and eighth-grade students from San Salvador claimed to have television in their homes, only 41 per cent of the seventh and eighth graders from the other areas did so. The data on television ownership underscores what we believe to be a most important discriminator of socioeconomic

status in El Salvador: residence in the capital of San Salvador. In both the seventh- and eighth-grade samples, we found greater differences between San Salvador students and students from the rest of the country than between any of the other groups on our urban/rural scale.

Time has not permitted us to examine all the socioeconomic variables that we feel bear directly upon student status, attitudes, and learning. We believe that sex, parents' education, and general ability interact in complex but important patterns within our samples to help determine both school attendance and performance. These are priority areas for continued research in the future. So too are the effects of parents missing from the home and the extremely high repeater rate characteristic of the Salvadoran school system. Approximately 50 per cent of the students in our seventh-grade sample and 47 per cent of our eighth-grade sample said they had repeated at least one grade in their academic careers, while 28 per cent and 30 per cent of these same groups come from homes where the father is absent. These factors must be analyzed in more depth before we can claim to understand the experience of Salvadoran students in a changing educational system.

Students' educational and occupational aspirations

In our report on the Educational Reform's first year, we noted that students in the first year of Plan Basico were aspiring to much higher educational and occupational levels than their parents had achieved. At that time we also speculated about what kind of familial

tension or conflict such an asymmetry might cause in the future. We were concerned also about the ability of El Salvador's higher education system to absorb an increasing number of students and the ability of the economy to utilize more highly trained graduates. Looking at the high levels of aspiration of these first-year Plan Basico students, our best prediction for the majority was disappointment and frustration. We felt that this problem posed a serious threat to the success of El Salvador's Educational Reform and we decided to learn more about students' aspirations in 1970. Our research continued to focus on our original sample of seventh-grade classes which entered the eighth grade in 1970, but we also gathered aspiration data on our new seventh-grade sample and on a special sample of ninth graders.

The suggestion that student aspirations would adjust downward to a presumably more realistic level in the course of the three-year Plan Basico cycle was not borne out in our data. The educational aspirations of our eighth-grade sample remained extremely high. Comparing the year-end results for 1969 and 1970, we found that the only downward shift occurred between the aspirations for a university as opposed to a post-graduate career. Preference for the latter program dropped 10 per cent, but most of this difference was absorbed by the percentage increase in students claiming to want a university education. High aspiration levels for education were also found among our seventh- and ninth-grade samples, although the ninth graders did express a relatively higher preference for the Bachillerato (senior high school) course. In table 32 we have summarized our data on level of educational aspiration for the three grades.

TABLE THIRTY-TWO

Students' educational aspirations
 Percentage of students aspiring to different educational levels

<u>Level of Aspiration</u>	<u>7th</u>	<u>8th</u>	<u>9th</u>
Finish Plan Basico:			
March	10.5	5.6	
October	6.8	4.8	2.0
Finish Carrera Corta:			
March	26.6	32.6	
October	27.4	27.5	30.4
Finish Bachillerato:			
March	21.9	22.3	
October	21.8	21.6	28.2
Finish university:			
March	11.4	19.3	
October	15.3	23.9	22.6
Graduate school:			
March	27.1	20.0	
October	27.7	20.8	16.3

Students not only expressed high educational aspirations, they were also confident that such aspirations could be fulfilled. More than 60 per cent of each sample group claimed that they either thought or were sure they would obtain their stated educational objective (see table 33). Less than 7 per cent of the three samples felt they would not reach their stated objective and the remaining students (approximately 30 per cent) answered that "perhaps" they would. When we compared the degree of certainty of attainment with the levels of aspiration we discovered that the higher a student's level of aspiration, the higher his confidence in obtaining it. Among seventh-grade students who desired Bachillerato or more education, 70 per cent felt they would obtain their objective. In contrast, only 60 per cent of those who expressed lower educational aspirations were confident that their hopes would be realized. The corresponding figures for the eighth grade were 63 per cent and 58 per cent, respectively. Although the students do not appear overly confident that they will achieve the educational level they aspire to, students who have set the highest sights also seem the most sure of satisfying them.

In another question concerning commitment to higher education, we asked students if they would continue their education even if such a step would involve having to forego a good paying job. Less than 25 per cent of the three samples claimed they would accept a high-paying job in lieu of continuing their studies, but over 30 per cent admitted to being unsure about what they would do under such circumstances. Good jobs are extremely hard to come by and many Plan Easico

TABLE THIRTY-THREE

Students' confidence in obtaining educational aspirations
 Percentages agreeing with different confidence levels

<u>Degree of Sureness</u>	<u>7th</u>	<u>8th</u>	<u>9th</u>
<u>Sure will finish:</u>			
March	41.5	21.8	
October	34.7	17.9	34.7
<u>Think will finish:</u>			
March	26.8	38.6	
October	31.7	43.2	38.4
<u>Perhaps will finish:</u>			
March	24.6	33.4	
October	28.1	31.5	22.3
<u>Think will not finish:</u>			
March	2.9	3.1	
October	2.7	4.7	1.7
<u>Sure will not finish:</u>			
March	2.1	1.5	
October	2.4	1.7	1.1

graduates must work to help support their families. Lack of money was mentioned by a majority of students in our samples as the most important factor in determining whether or not they would be able to continue their education beyond the Plan Basico. For this reason, the dilemma of starting work at a good salary or continuing in school is a particularly acute one for a majority of Salvadoran students. The solution in the past has been for students to take jobs during the day and continue studying at night. Such a pattern may become increasingly hard to follow in the future as the competition increases for both jobs and opportunities for advanced study.

The students' career choices paralleled closely their educational aspirations: approximately 40 per cent answered that they wanted to pursue professional careers (doctor, lawyer, engineer, etc.); 55 per cent desired middle-level jobs (accounting, nursing, secretarial work, etc.); and less than 5 per cent wished to be farmers, automobile mechanics, or store employees (see table 34). The consistency between occupational and educational goals indicates that students have most likely given some thought to their career choices. Their commitment to those choices is another matter. One of the major goals of the Educational Reform is the creation of a large pool of workers with ninth-grade education to fill what are expected to be many new technical positions in an expanding industrial sector. Yet, the occupational preferences of the students in our samples continue to favor the traditional Latin American professions: medicine, law, and engineering. In the middle sector, the emphasis is not on industrial

TABLE THIRTY-FOUR

Students' occupational aspirations
Percentages favoring different job levels

<u>Job Levels</u>	<u>7th</u>	<u>8th</u>	<u>9th</u>
Unskilled (no secondary education required)			
March	2.7	2.6	
October	2.7	2.5	4.1
Skilled and semi-skilled (secondary education required)			
March	63.2	58.1	
October	55.3	54.1	56.2
Professional (university education required)			
March	31.0	37.0	
October	38.3	40.0	38.2

skills such as machinist, but rather on white-collar skills such as accounting and secretarial work. The plan to diversify secondary education through the creation of 17 diversified high schools should make it easier to attract and train students for trades which are currently supplied mainly through apprentice systems.

The experience of other countries which have attempted to diversify their secondary education systems should be a warning to El Salvador. Because so many students enter secondary school with the intention of eventually reaching the university, any attempt to steer them into non-university directed programs can easily be construed as an effort to force them into accepting lower status occupations. This reaction has often been justified for it is frequently backed up by strong historical and cultural biases against the inclusion of technically oriented fields in the curricula of the university or secondary school. In many countries, technical training has failed because people view it as something outside the realm, and beneath the dignity, of "higher education." The experience of other countries suggests that before a strategy for diversifying higher education is put into effect, considerable work is required to eliminate the deficiencies of existing programs and to interest students to the careers for which training will be available.

Preliminary analyses of our aspiration data have illuminated a number of demographic variables which exert some influence on the ways Salvadoran students think about and plan for their futures. A more detailed discussion of these variables will be presented in a special report on student aspirations to be published later this year.

In both the seventh- and eighth-grade samples, boys expressed higher educational and occupational aspirations than girls. There was a greater difference in the eighth grade where 72 per cent of the boys as opposed to 58 per cent of the girls aspired to advanced educational levels (bachillerato or above). Closer examination of parental values and influence will be needed before we can conclude much from this difference, but the finding does suggest that when families are forced to make a choice, they are more likely to keep their sons rather than their daughters in school. Of course, such decisions may not be communicated directly. Cultural values may cause girls on their own accord to drop out or simply to aspire to lower levels than boys.

Community-related variables are also correlated with students' educational aspirations. In both the seventh- and eighth-grade samples, students from urban areas had higher aspirations. The percentages of students wanting advanced schooling are listed according to our urban/rural scale in the following table:

	Percentage of Students Desiring Advanced Levels of Education	
	<u>7th grade</u>	<u>8th grade</u>
San Salvador	81%	79%
Other urban	66%	65%
Semi-rural	60%	62%
Rural	51%	51%

Students from San Salvador had markedly higher educational aspirations than students from other parts of the country. This was not a

particularly surprising finding when we recall that the best Planes Basicos and nearly all the opportunities for advanced education are concentrated in the capital.

As expected, positive correlations ($r = .20$ or above) were also found between level of parents' education and students' aspirations. When our samples were divided according to whether or not either parent had studied beyond the primary level, we discovered that 80 per cent of the students whose parents had more than primary education expressed an aspiration for advanced schooling. Sixty per cent of the students with less educated parents had an equivalent desire.

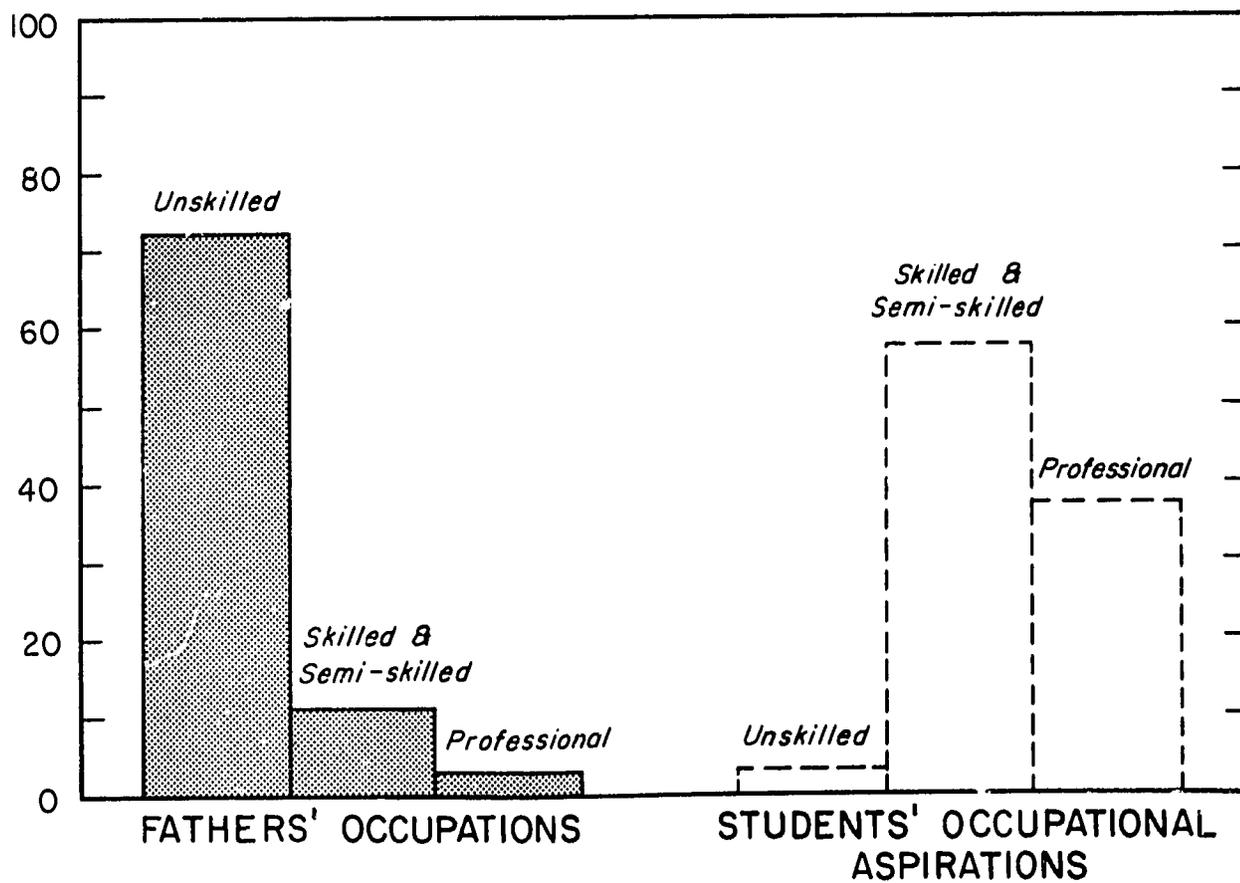
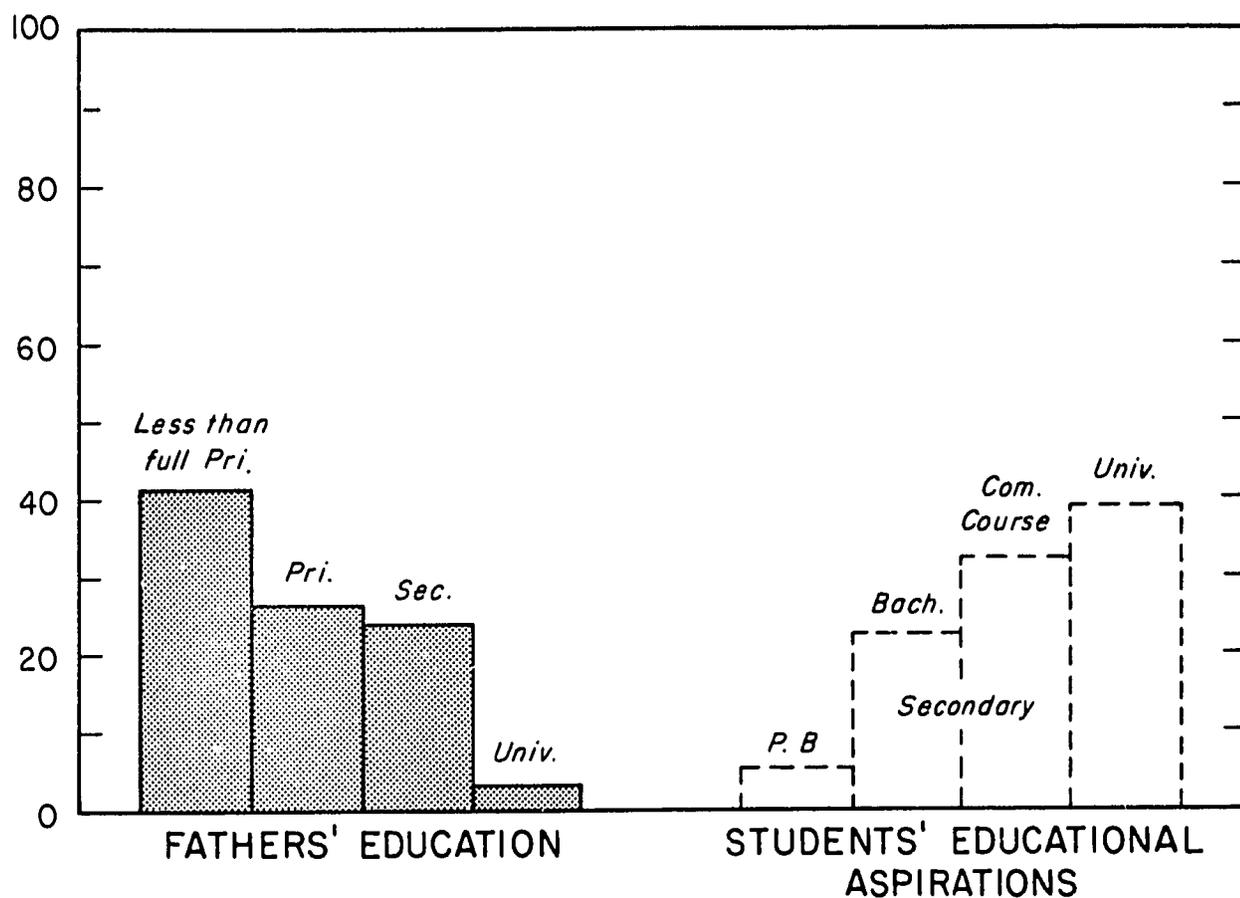
A note on parents

As part of our research on student aspirations, in the second half of 1970 we undertook a special interview study of 250 parents. The parents were selected from 20 Planes Basicos and all of them had sons in our eighth-grade sample. We worked exclusively in the eighth grade because over the course of two years we had managed to gather a considerable amount of background information on the eighth-grade students who were part of our original sample of television and traditional classes. In the process of gathering basic demographic and attitudinal data, we had become intrigued by the large differences in the levels of fathers' education and occupation and those aspired to by their sons (see following chart). It was this discrepancy and its implications that we were most anxious to analyze in depth.

The analysis of our parent interview data has just begun and

Fathers' Education and Occupations vs. Students' Aspirations

8th Grade



we are unable to present any findings at this time. However, as we have mentioned above, student aspirations remain of paramount concern to us and our research in this area will be the subject of a special report to be published later this year.

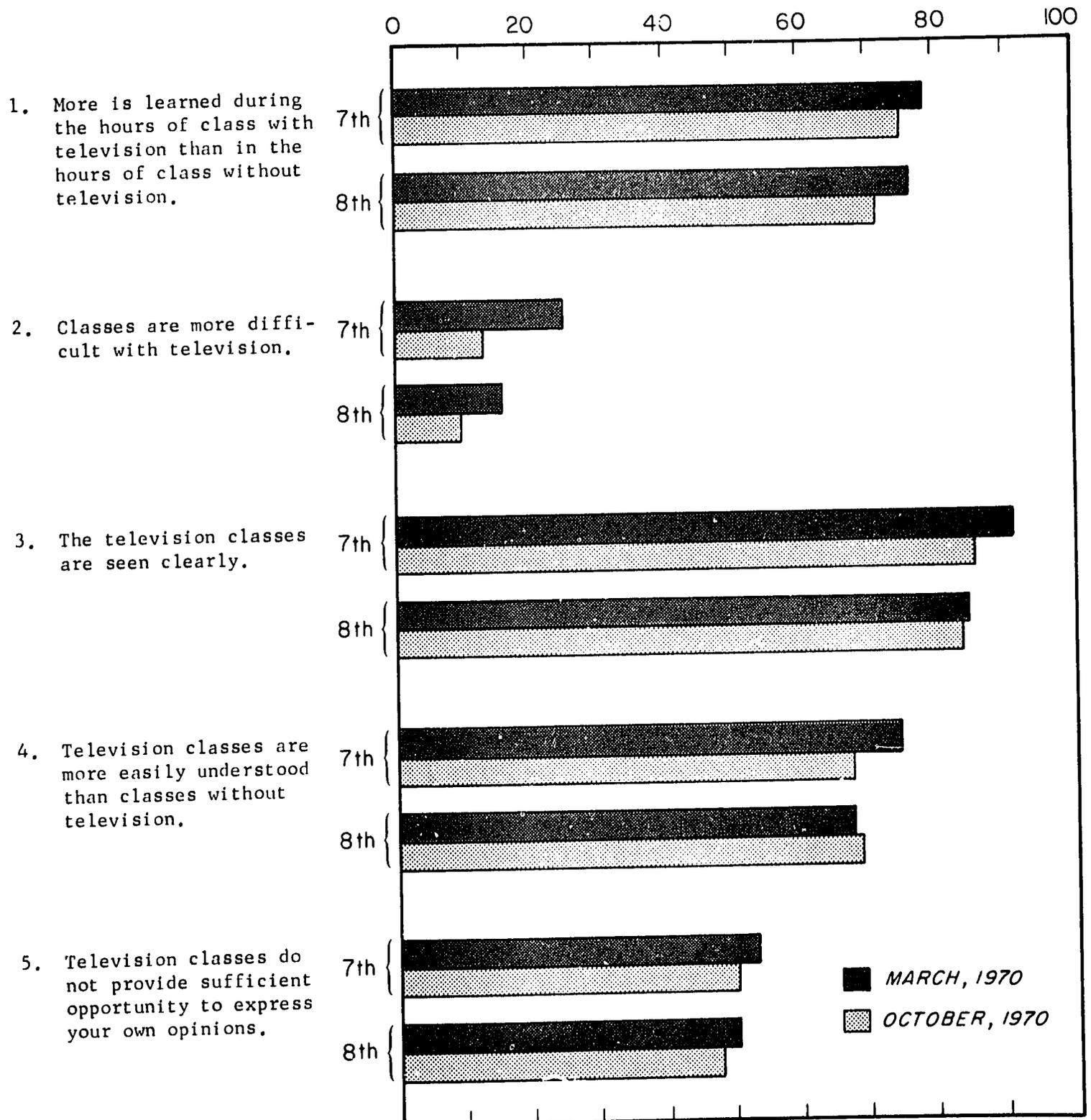
Students' attitudes toward instructional television

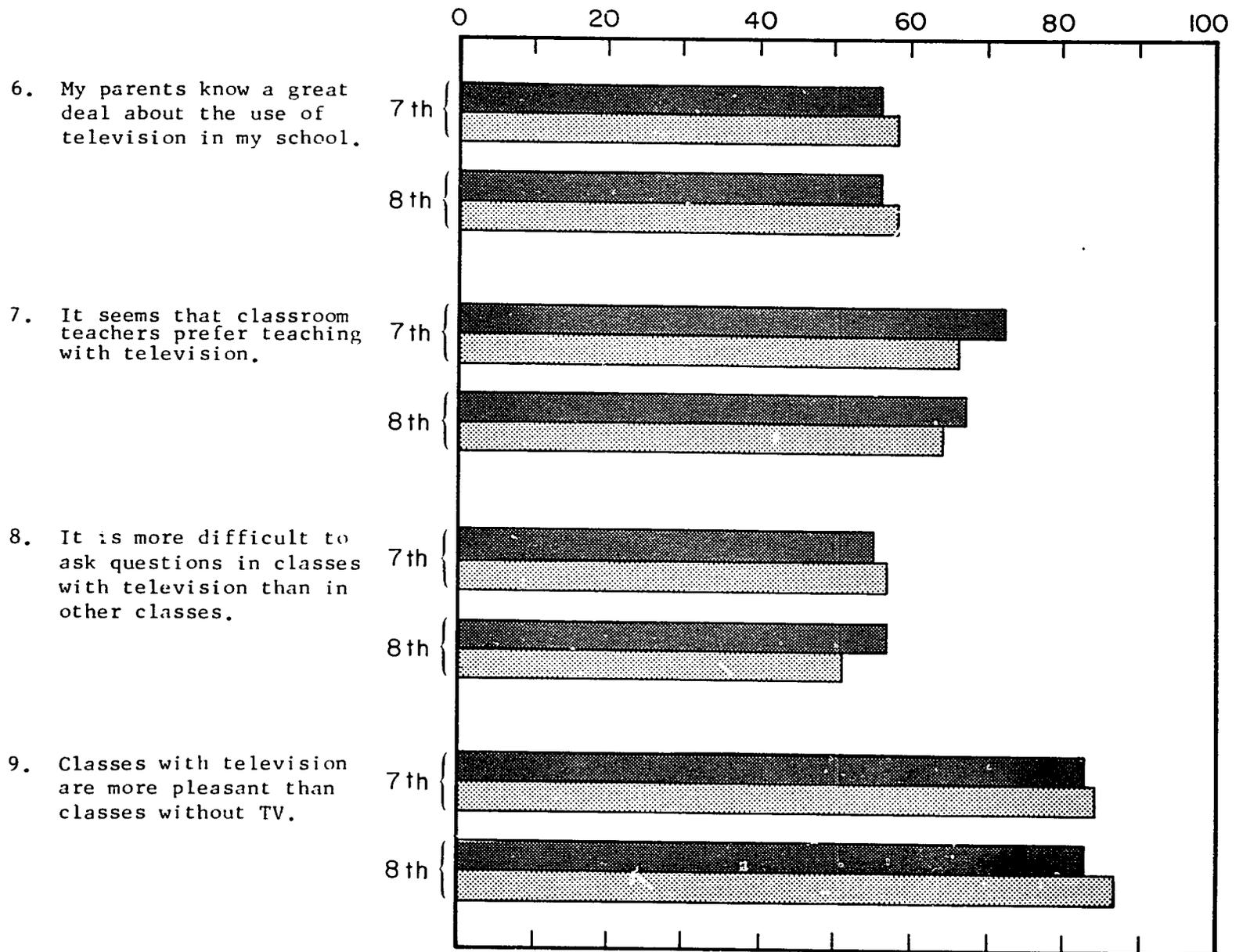
Student attitudes toward ITV were of continuing interest to us in 1970. We measured them at both the beginning and the end of the year and a full picture of the results is presented in the next chart.

Nine statements were used to elicit student reactions to various aspects of instructional television. Six of the statements were phrased so that agreement with them would reflect a positive attitude about the ITV system; three were phrased so that agreement would reflect a negative attitude. In 1969 we had students respond on a three-point scale (agree-undecided-disagree); in 1970 we employed a five-point scale which was identical to the one we have used all along to record classroom teachers' opinions. The expanded scale was adopted for students so that we would be able to determine the degree of student agreement or disagreement with particular attitude statements and compare them with teacher responses.

In 1969 students expressed extremely positive attitudes toward ITV. On five out of six positively phrased questions, there was over 90 per cent agreement. Students felt they were learning more with television, that television classes were more interesting, that

Student Attitudes Toward ETV
 Percentages of Students Agreeing with Statements About ETV





television teachers taught well, and that television classes were easier to understand than traditional ones. In our end-of-the-year measures of students' attitudes, we also found that a year's experience with television had lessened concern about the difficulty of TV lessons and about the problem of resolving questions raised in the course of the telecasts. In two areas, classroom distraction and the ability of classroom teachers to know if students had really learned a particular lesson, students became more negative in the course of the year. However, our general impression at the end of the project's pilot year was that ITV had been well received by the vast majority of students who participated in the new system.

Student attitudes remained highly favorable in 1970, although there was a slight downturn in both the seventh and eighth grades at the end of the year. Seventh graders, who were slightly more positive toward ITV at the beginning of the year, expressed lower rates of agreement on four out of the six positively phrased statements at the end of the year. The sharpest declines (seven points) within the seventh grade were on the statements regarding how easily television classes were to understand vis-à-vis other kinds of classes and the perceived preference of classroom teachers for television. On the two other positive statements, parental knowledge of ITV and the overall pleasantness of the television classes, the level of agreement among seventh graders increased.

Although the eighth graders began 1970 a bit less enthusiastic about ITV than they had been the year before, their rate of agreement

with the positively phrased statements remained more stable throughout the year. On only one item -- learning with television -- did their rate of agreement drop as much as five percentage points. This is an interesting result when we recall that these students' learning gains were lower in the eighth grade than they had been in the seventh grade. On all other positive statements, the eighth graders' level of agreement stayed the same or rose above beginning-of-the-year levels.

On two out of the three negatively phrased statements about ITV, the seventh graders' level of agreement rose while that of the eighth graders declined. Approximately 50 per cent of both samples believed that classes with television do not provide enough opportunity for students to express their own opinions or to ask questions. This finding reinforces the classroom observation data we gathered in the second half of 1970 and suggests that more emphasis needs to be placed on the development of techniques for involving students in the lessons. This is a difficult problem whose origin is perhaps at least as much directly related to the vestiges of a traditional education system as to any inherent problem with television. In any case, its ultimate solution will depend on the concerted effort of teleteachers, classroom teachers, and the students themselves.

Chapter Six

A STUDY OF TEACHING STYLES AND CLASSROOM INTERACTION

One of the special activities of the 1970 school year was the development and first application of an instrument by which to observe and measure what was happening, under the Educational Reform, to teaching methods and classroom interaction. This was under the supervision of Judith A. Mayo, whose Research Report No. 5 in this series describes the project in some detail. The present chapter is based on her report.

The need for a measuring instrument

After a year of giving demonstration lessons, and helping teachers plan classes and develop teaching materials, the El Salvador Educational Reform still had no concrete evidence that those efforts had been successful in improving teaching methods. Subjectively, conclusions were reached as to whether a specific teacher was using "modern" techniques or "traditional" ones; however, there were no agreed-upon criteria on which to base those judgments, and there were frequent differences of opinion among the supervisors.

Some standardized form for observing and evaluating teaching behavior was needed to demonstrate not only differences among teachers, but also the progress of individual teachers toward the adoption of modern teaching methods.

Certain limitations were recognized. Supervisors were not trained as researchers; therefore, they required as simple an instrument as possible. In addition, because of the exigencies of their work, they needed a method requiring a minimum of training time to achieve reliability, and one that could be rapidly tabulated. Above all, the instrument had to be of practical value to their work.

In the United States, there have been developed some excellent instruments for describing the interaction between teacher and pupils in a classroom. The Flanders measures are an outstanding example. Good as these methods are, they typically demand highly expert observers who need a great deal of training. Further, they assume substantial interaction between teacher and students, and there is little such interaction in the classrooms of El Salvador. We did not feel that they were the kinds of instruments that could be readily used by Salvadoran supervisors trying to help the teachers of their developing school system.

Beeby's typology

It was decided to develop a new observation method,* on guidelines taken from C. E. Beeby's book, The Quality of Education in Developing Countries. Beeby's hypothesis is that developing educational systems evolve through four stages, and that the level

*Some of the thinking behind this development task will be found in Research Memorandum No. 1 of this project, Measuring Educational Development through Classroom Interaction, by Wilbur Schramm.

of general education and the amount and kind of professional preparation of teachers is directly related to their stage of development.

Briefly, at Beeby's first level of development, termed the "dame school" stage, most teachers are poorly educated and sketchily trained. Because the curriculum is vague (or nonexistent), the teacher is the sole authority of knowledge, and the students' school day consists of little but mechanical drill, memorization, and choral recitation.

Second is the Stage of Formalism, at which teachers are ill educated but trained. Authority is centered in the official program of studies, and the teacher lacks the self-confidence to adapt that program to the interests and needs of his students. Most of the questions asked by the teacher have a single correct answer. The student continues to serve largely as a passive receptacle for knowledge poured into him by the teacher.

At the Transition Stage, teachers are better educated than at Stage Two, and they are better trained. The program of studies is followed less rigidly, and students learn that not all the answers are contained in the syllabus. The teacher's professional training increases his self-confidence, prompting him to introduce activities of his own invention and to enrich the school day with special projects and audio-visual aids. Students are active participants in the learning process, and they ask questions and bring their own experiences into the classroom.

The Stage of Meaning has well-educated, well-trained teachers

who encourage students to think for themselves. The learning process is individualized to relate to the needs, interests, and abilities of students. Much time is devoted to projects, problems, and exercises chosen by the students themselves.

Beeby's theory of educational development is pertinent to El Salvador. Here the majority of secondary teachers have 11 years of general education; their professional preparation occurs at either the high school or junior college level (in rare instances, at the university), and for the majority it is the high school level. As might therefore be expected, prior to the Reform, their teaching style reflected Beeby's second level of development, the Stage of Formalism. The official program of studies was rigidly adhered to. Teaching consisted mainly of lecture and dictation, and the student's role was to memorize what was said by the teacher in order to reproduce it verbatim on examinations.

The Educational Reform seeks to change this situation through the new concept-centered curricula, methodological suggestions to aid teachers, encouragement of student participation, de-emphasizing of written examinations in favor of evaluating other student activities, such as reports, essays, dramatizations, investigations, experiments, and map-making. One of the reasons for introducing instructional television was to enrich the students' school day with information and experiences otherwise unavailable in their own classrooms and communities. In addition, it was hoped that the teleteachers would provide models of good teaching that could be emulated by classroom teachers.

To help teachers prepare for change, a new normal school was organized to provide a full year's retraining. Courses provided dealt with the content of the new curricula, evaluation techniques, guidance, the utilization of instructional television, the preparation of audio-visual materials, the organization of school libraries, and methodology.

How the instrument was developed

While Seeby describes the path of change that El Salvador wishes to follow, he does not indicate how progress along the path can be measured. A major task was to devise a simple means of measuring that progress through observable classroom behavior.

Drawing on the supervisors' experience, it was found relatively easy to characterize "traditional" -- pre-Reform -- teaching in behavioral terms. "Traditional" teaching involves only a few different kinds of behavior: The teacher lectures and dictates for nearly the entire class period; when he asks questions, they are nearly all of the memory (single-answer) type; he depends heavily on the blackboard to write résumés and exercises for students to copy; students almost never ask questions, give opinions, or otherwise participate in class except to copy or "recite".

Given these characteristics of the "traditional" classroom, we decided that the following items of behavior could help us determine a classroom's level of development:

Teacher lecture and dictation: As a classroom develops, the

supposed that dictation would gradually disappear and lecture time diminish, while the proportion of student talk and activities increased.

Teacher questions: The kinds of questions asked by the teacher should be an important measure of development. As a classroom progresses, the proportion of opinion and thought questions (multiple-answer) to memory questions (single-answer) should increase. By memory questions we mean those with a single correct answer (What are the seasons of the year? Who was the first president of El Salvador?). Opinion questions are those relying more on point of view than logical thought, but which permit a variety of correct responses (How might you make a prose version of this poem? What do you think of this play?). Thought questions are those requiring students to make deductions, comparisons, generalizations, etc. (Is this a lyric or an epic poem -- why? Why are these triangles equal? What formula can you deduce from this exercise?).

Use of learning aids: In the early stages of development, a syllabus or text and the blackboard are likely to be the only learning aids used. As a classroom develops, other learning aids -- pictures, charts, maps, demonstrations -- should begin to appear. Their use should increase with further development, until finally learning aids are individualized.

Individualized instruction: As a classroom moves upward on the Beeby scale, a portion of the teacher's time should begin to be

devoted to directing group exercises and activities, and to helping individual students. With further development, these activities should gain importance.

Homework assignments: As a classroom progresses, the teacher should increasingly assign homework that requires investigation and reasoning by students.

Student questions: In the first levels of development, students ask few, if any, questions. Most of those they do ask involve classroom procedure (what are we supposed to do?). As a classroom progresses, students should begin to ask some clarification questions (what does this mean?) and then thought questions (what would happen if . . .?). As development continues, thought questions should predominate.

Student talk: In the "traditional" classroom, students rarely venture an opinion without being specifically asked for it by the teacher. As a classroom moves upward, we expect more opinions to be volunteered by students, and some discussion among students to occur. As development continues, both activities should increase dramatically.

Small group and individual work: In the earliest stages of development, group work is nonexistent, and the individual work done by students is mechanical (practicing mathematical operations, copying from the blackboard). As a classroom develops, occasional group work should occur, and the individual work assigned students during class should require more thought and investigation. Farther along the

development path, students should spend an increasing amount of time working on projects, problems, and exercises of their own choosing.

The observation form

The sample observation form (translated from the Spanish) on the following page illustrates the items of behavior selected for observation. A few items pertinent to supervisors' work but not necessarily related to development are also included. These are the three items on the student half of the form labeled "Repetition drills", "Question-answer drills", and "Dramatizations". They were included for observing foreign language (English) teachers whose retraining course included techniques of oral-aural language instruction. To find out whether teachers were applying those techniques, these items were added to the form.

Even so, it is apparent that not all of the possible classroom activities were selected for observation. Other possibilities -- the teacher's ability to maintain interest, his knowledge of the subject matter, his ability to relate a topic to the students' own environment and experiences -- were purposely excluded as being too difficult to measure. Also, it was felt that those activities selected for observation were adequate for supervisors' needs.

How to record observations

Once the activities to be observed were selected, the problem was to devise a simple means of recording their occurrence in the

OBSERVATION FORM

SCHOOL _____
 TEACHER _____
 GRADE _____
 SUBJECT _____
 THEME OF THE LESSON _____

TOWN _____

DATE _____

SCIENCE HUMANITIES

TV NO TV ACT WB

The teacher had prepared his class in advance: Yes No

T E A C H E R

S T U D E N T S

1. Lectures
2. Dictates
3. Explains (Responding to Spanish question).
4. Asks procedure questions.
5. Asks memory questions to group.
6. Asks memory questions to individuals.
7. Asks opinion questions.
8. Asks thought questions.
9. Uses blackboard.
10. Uses demonstrations.
11. Uses audio-visual materials.

12. Directs exercises in groups.
13. Works individually with students.
14. Supervises student activity.
15. Suggests individual projects.
16. Reviews individual projects.
17. Assigns homework.
18. Assigns investigations as homework.
19. Checks homework.
20. Teacher behavior during Teleclass:

21. Student behavior during Teleclass:

1. Ask procedure questions.
2. Ask memory questions.
3. Ask thought questions.
4. Go to blackboard.
5. Give opinions.
6. Take part in discussions.
7. Work in small groups.
8. Work individually.
9. Work on individual projects (chosen by students).
10. Repetition drill.
11. Question-answer drills.
12. Dramatizations.

classroom. We decided to build our form on a time basis. As seen on the sample form, beneath each activity is a line of five boxes:

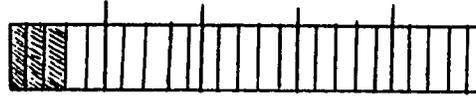
1. Lectures

1	2	3	4	5
---	---	---	---	---

Each individual box ([]) represents five minutes of class time. During the first five-minute observation period, the observer marks the first box of every activity engaged in by both teacher and students. For example, let us suppose that during the first five minutes observed the teacher began by lecturing for three minutes on a new math formula. He then asked a student where the chalk was, spent a minute writing problems concerning the new formula on the board, and afterwards directed students to solve the problems in their notebooks. For those five minutes, the observer would have marked the following items in this way:

TEACHER:

1. Lectures



4. Asks procedure questions



9. Uses blackboard



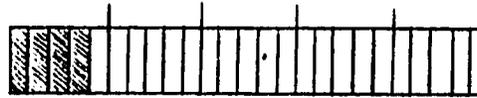
STUDENTS:

8. Work individually



As will be noted, for those activities requiring an accurate time measure (Lectures, Uses blackboard, etc.), each five-minute box is subdivided into one-minute segments. In cases where frequency is more important than duration (Asks procedure questions, etc.), the observer marks each separate occurrence. It is also worth noting that, in the above example, had the teacher continued to lecture at the same time he was writing on the blackboard, the form would have been marked as follows:

1. Lectures



9. Uses blackboard



Observations are recorded in the same fashion during each of the four remaining five-minute periods.

In any given 50-minute class period, observations are recorded for only half that time. It was decided to do this to obtain equivalent observation time in television and non-television classrooms. In classes with television, the first 10 minutes are taught by the classroom teacher, the teleclass consumes the next 20 minutes, and the final 20 minutes are again taught by the classroom teacher. Being primarily interested in the classroom teacher, the supervisors decided not to record behavior during the 20-minute teleclass. In a classroom with television, observations are recorded for the following five-minute periods:

8:00 - :05 -- no recording
 8:05 - :10 -- first box
 8:10 - :30 -- teleclass (no recording)
 8:30 - :35 -- second box
 8:35 - :40 -- third box
 8:40 - :45 -- fourth box
 8:45 - :50 -- fifth box

In non-television classes, observations are made by alternating five minutes of recording with five minutes of non-recording throughout the 50-minute class:

8:00 - :05 -- no recording
 8:05 - :10 -- first box
 8:10 - :15 -- no recording
 8:15 - :20 -- second box
 8:20 - :25 -- no recording
 8:25 - :30 -- third box

ETC. ETC.

In practice, alternating recording periods in this manner presented no problems. Twenty-five minutes seems sufficient to record all significant classroom behavior.

Training observers to a standard of reliability

The first step in training observers was to familiarize them thoroughly with the meaning of each item on the observation form. Once this was done, they were instructed in the mechanics of recording observations. Several five-minute segments of video-taped classes were then viewed, while observers practiced recording activities on the form. Difficulties and uncertainties were discussed whenever they occurred, until all the observers learned to mark the form in the same way. These steps required approximately two hours' training time to achieve inter-observer reliability.

The remaining four hours of training were spent achieving reliability on question classification. Video-taped classes were again viewed and written samples of questions taken from various classrooms were discussed.

Two separate observer groups (six members) attained 90 per cent or more inter-observer reliability on all items, in six hours.

On the other hand, when we tried to train larger groups (13 members) and to telescope the training into three hours, we did not achieve acceptable reliability. Our conclusion is that six hours is the minimum adequate training time, and that reliability is more easily achieved with small groups (two to six members) than large ones.

Tabulating observations

Tabulation of the form is a matter of employing simple addition and a few ratios or percentages. It can be easily and quickly done by the observer himself. The descriptive nature of the form provides the observer with a graphic picture of classroom activity that is readily apparent even without tabulation.

Testing the validity of the observation form

Sixteen eighth-grade teachers were randomly selected for a series of observations by a single observer. These were chosen from two distinct groups of teachers: "New System" teachers, included in the Educational Reform programs, and "Old System" teachers who were not yet affected by the Reform. In this way, we hoped not only to test our form's validity, but also to find differences in development between the two groups of teachers. The New System group included television classrooms and non-television classrooms, identical in every way except that teachers in the latter group did not use instructional television. The Old System classrooms had no television, of course, and the teachers had not been retrained. The differences in the three groups are illustrated below:

-----Educational Reform Programs-----)				
	One year's retraining	New Curricula	Guides and Workbooks	TV
New System television teachers (6)	YES	YES	YES	YES
New System non-television teachers (4)	YES	YES	YES	NO
Old System teachers (6)	NO*	NO	NO	NO

Each teacher was observed on three different occasions over a six-week period, and no teacher was advised of the day or time he would be observed.

Results of the study

The most significant findings were:

Old System teachers dictated six times as much as New System teachers. Of the 25-minute observation period, Old System teachers dictated an average of over five minutes per class, while New System teachers spent less than one minute per class dictating. This means that the average Old System teacher spent over 20 per cent of the observed class time reading from a book while students copied verbatim what was read.

New System teachers asked more than twice as many multiple-answer questions as Old System teachers. Old System teachers asked only three multiple-answer questions per observed class; New System television and non-television teachers asked seven and six per class, respectively. Even more important, Old System teachers averaged only one thought question for every 10 classes observed! This means that

*Three of the Old System teachers had received a seven-week retraining course, but none had attended the full year's course.

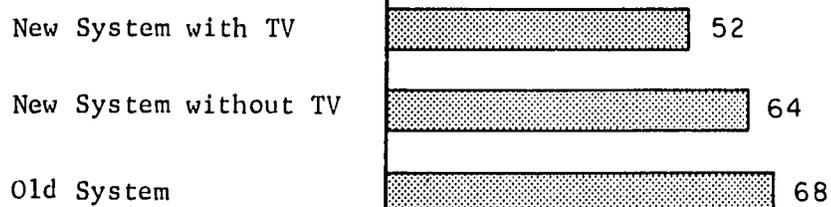
TABLE THIRTY-FIVE

Average numbers of certain behaviors
observed in different kinds of classes

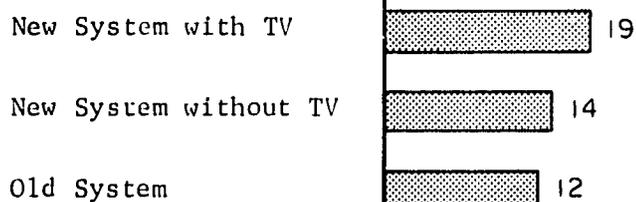
	Teacher dictation	Memory questions asked by teacher	Opinion questions asked by teacher	Thought questions asked by teacher	A-V aids, demonstrations, dramatizations by teacher	Opinions given by students	Questions asked by students (procedure, memory, thought)	Group work by students	Individual work by students	Teacher aid to individual students and supervision of student activities
New System with TV	0.6	10.0	6.6	0.8	2.9	2.1	2.7	2.7	3.3	3.3
New System without TV	0.7	7.2	5.3	1.0	1.1	1.4	2.8	0	5.2	2.0
New System with or without TV	0.7	8.6	5.9	0.9	2.0	1.8	2.8	1.4	4.3	2.7
Old System classrooms	5.3	7.2	2.9	0.1	0	0.2	1.6	0	7.1	3.0

Additional comparative data on classes of different kinds

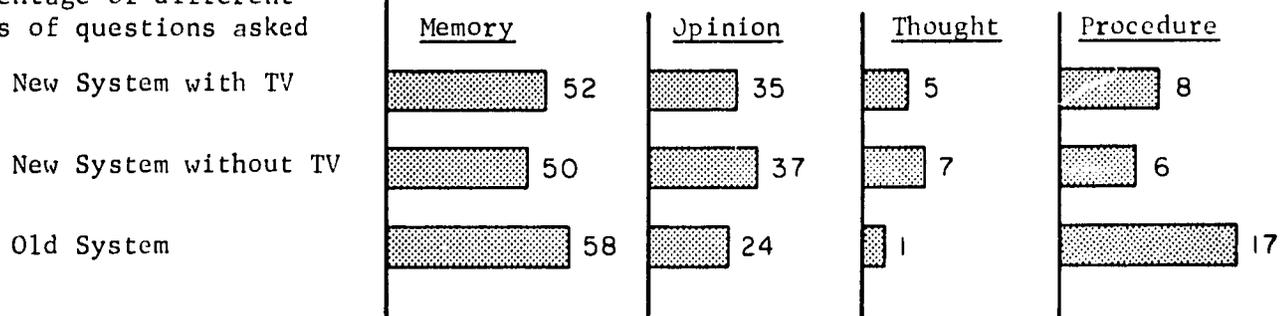
Average per cent of class time when teacher is talking



Total number of questions asked by average teacher



Percentage of different types of questions asked



only once every two weeks would students in Old System classes be asked a question that required them to reason. New System teachers, on the other hand, averaged at least one thought question per class.

Several different types of learning aids were utilized in New System classes, while not one Old System teacher used any learning aid except the blackboard. The learning aids used by New System teachers included demonstrations, slides, charts, maps, pictures, diagrams, etc. Television was not counted among the learning aids.

Students volunteered their own opinions much more frequently in New System classes than in Old System classes. In Old System classes, student participation of this sort was so rare that it occurred in only one of every five classes observed, and in four of the six Old System classrooms, students never volunteered an opinion. On the other hand, students in New System classes ventured opinions at least once in every class, and in no New System classroom did students fail to give at least one opinion during the three observations.

Student work in groups was observed in several television classrooms. It did not occur in non-television or Old System classes. Group work was defined as the interchange of ideas among a small group (four to six members) of students for the purpose of arriving at conclusions, solving problems, writing reports, etc. It did not refer simply to placing students physically in groups.

Student individual work was observed almost twice as frequently

in Old System and non-television classrooms as in television classes.

However, this is accounted for by the fact that teachers with television devoted nearly the same amount of time to group work as they did to individual work. Only half the Old System teachers used individual work, but those that did relied heavily on it, using it between 25 and 100 per cent of the observed time in all their classes. They also demonstrated the tendency to interrupt the students frequently to lecture, with the result that some students would suspend their work to listen to the teacher while others would ignore the teacher and continue to work. The New System teachers interrupted in this way much less frequently. In all cases of individual work, the tasks involved were largely rote.

As is apparent, there was little difference between the television and non-television classrooms in the New System, but considerable difference between the methods of teachers in the New System and those in the Old. Therefore, it is reasonable to assume that the differences in observed classroom behavior are related to the retraining course, the new curricula, and the new teachers' guides, rather than to the presence of television in the classroom.

Learning results from the classes observed

Achievement scores* of students in all 16 classrooms observed were obtained for social studies, mathematics, and natural science.

*From examinations based on the El Salvador eighth-grade curriculum, prepared by the Educational Testing Service, Princeton, New Jersey.

While pupils in both the television and non-television New System classes gained noticeably more than students in Old System classes, we do not feel justified in generalizing from the results. The number of classes was small, we are not certain that pupils were assigned randomly, and there may be uncontrolled and even unknown variables operating to affect learning gains.

Bearing of the study on Beeby's typology

It will be recalled that Beeby's hypothesis is that the education and training of teachers is directly related to their level of development. Teachers in his First ("Dame School") Stage are poorly educated and little trained. When teachers have some training in their craft, they tend to move into Stage Two ("Formalism"), where they closely follow the official syllabus. When they are better educated and better trained, they move into Stage Three ("Transition"); and by Stage Four ("Meaning"), teachers are both well educated and highly trained.

All 16 Salvadoran teachers observed in this study would probably be classified in Beeby's second stage. We obtained the school records of all 16 teachers, and found no significant correlations between their levels of education and training, and their classroom performance as measured by our instrument -- as long as education and training were counted as years in school and years in teacher-training institutions. Indeed, some of the Old System teachers had received more schooling and more advanced training than

many of the New System teachers who performed in a more modern pedagogical pattern.

The one significant difference in their background was the year of retraining included in the Educational Reform. All New System teachers in the sample had received this training, while the Old System teachers had not.

As stated earlier, the retraining course was both substantive and methodological. Teachers were instructed in the subject matters they would teach, and also in the newer methods they were expected to use. Thus, they had both education and training that the Old System teachers did not have.

Why should a single year make such a difference? The Old System teachers apparently were not taught newer methods of teaching in their teacher-training schools; nor were they taught, apparently, much about the new mathematics, the new science, or the Salvador-centered social studies. Further, they were taught in the "traditional" way, and teachers typically teach as they are taught.

We feel strongly that these results should not be interpreted as failing to confirm the importance of general education and teacher-training in the modernizing of teaching behavior. On the contrary, they should be seen as evidence that, if teachers are expected to use modern methods, they first must be shown those methods and allowed to practice them.

Furthermore, it must be remembered that we were not observing the whole range of Beeby's four stages, but rather teachers within a

single stage. In the near future, we plan to observe some teachers elsewhere who would probably be classified in the Third or Fourth Stages, to see how their performance compares with teachers observed in El Salvador. That will give us the opportunity to test Beeby's typology more fully.

Implications of the study for the Educational Reform

The Educational Reform is clearly succeeding in introducing some techniques of modern pedagogy into the classrooms of El Salvador. In Beeby's terms, the results demonstrate the movement of Salvadoran schools from the Stage of Formalism (Stage Two) toward the Stage of Transition (Stage Three).

However, the results also suggest that describing development in terms of four separate stages may not fully reflect the development process. The classrooms of El Salvador do not seem to be taking one giant step from Stage Two to Stage Three. While all 16 teachers observed are in Beeby's Second Stage, they are clearly at different levels within that stage. Development can certainly occur within any single stage, as well as from one stage to its successor. Progress seems to occur in tiny steps, and it is slow and uneven.

One example of this is that certain aspects of modern pedagogy -- student discussion, students' asking of thought questions, teacher aid to individual students -- extremely rarely or never occurred in the classes observed. Other aspects of modern teaching -- the use of learning aids, the asking of thought questions by the teacher -- were employed, but less frequently than one would have hoped.

In any case, New System teachers seem to be moving toward the non-rote, individualized, problem-solving learning that is the goal of the Educational Reform. And when all the small changes are totalled, the sum is impressive. By the same token, changes that are numerically small may, in fact, be greater ones than the numbers suggest. For example, it seems to us that, when compared to an Old System teacher who asks no thought questions, the New System teacher who asks even one such question per class has changed more significantly than the difference between "zero" and "one" suggests. Stimulating the adoption of a previously nonexistent behavior is probably much more difficult than increasing the employment of a behavior already in use.

While the various programs of the Educational Reform have functioned in concert to produce the changes occurring in El Salvador's classrooms, it would appear that the program of teacher retraining has been particularly effective. Were it not providing a model of desired classroom behavior, we believe that progress, as measured by our observation instrument, would be far slower and less evident than it is.

This belief is strengthened by the fact that half the Old System teachers in our sample had received far more general education and advanced teacher training than all but two of the New System teachers, but none of the Old System teachers had received a full year's retraining.* That fact casts doubt on the notion that previous

* It will be recalled that three Old System teachers had received seven weeks' retraining.

advanced training and education, coupled with minimal retraining, can be counted on to produce changes in classroom behavior. From our small sample, we cannot be certain of this, but the problem deserves further study and a reexamination of assumptions regarding the length of retraining required for teachers with advanced professional training.

Limitations of the observation form

While we are generally satisfied with the form as it stands, we recognize a number of important limitations. First, no effective behavior is included, meaning that such teacher behavior as praise, encouragement, and criticism cannot be recorded. This type of behavior is certainly important, but we feel it is too difficult to measure, at least for the present.

Also absent from the form are some important quality distinctions. The form indicates, for example, whether individual or group work is engaged in, but not the type of work. There is an important difference between work that requires only copying and recall and that which demands thoughtful investigation and reasoning. We hope in future revisions (the current form has gone through four revisions) to correct this deficiency.

We also feel that the categories of question classification are by no means perfect. For example, the procedure question category currently refers to both procedural (where is the dictionary?) and rhetorical questions (we represent altitude with an "h", don't we?). We now feel that rhetorical questions should not be recorded, and will not do so in the future.

The memory question category is clear-cut, but the difference between opinion and thought questions is not. Both have multiple, rather than single, answers, and it is not always easy to distinguish between the two. To make sharper distinctions, however, would require creating many more categories of questions. For the present, simplicity seems preferable.

Chapter Seven

FEEDBACK ON STUDENT LEARNING FOR INSTRUCTIONAL TELEVISION

In the 1970 school year, the evaluation team experimented with a method for obtaining rapid "feedback" on how much students had learned from a given unit of a course. Tests were made, pretested, and administered by television near the end of a given unit of the course, and results were reported to the studio in time to permit the preparation of special review or remedial broadcasts. The methods worked very well in two courses, and they are being expanded to cover more courses and more units during the 1971 school year.

For other TV systems that may wish to install learning feedback systems, we are going to report some of the thinking behind El Salvador's trial of its new feedback method, the procedures followed and problems encountered in putting it into effect. This has been done in more detail in Research Report No. 6, by Ana María Merino de Manzano, Robert C. Hornik, and John K. Mayo, on which this chapter is based.

Why this kind of feedback?

Numerous feedback mechanisms have been designed over time and in many different situations to measure the quality of televised instruction. Some have focused on the content of television classes, others have concentrated on teacher and student ratings of individual

courses, and still others have dealt with the mechanics of program transmission and reception. A description of the wide range of feedback methods currently in use throughout the world may be found in our Research Memorandum No. 3, "'Feedback' for Instructional Television," by Wilbur Schramm.

In the first two years of the El Salvador project (1969-70), a number of feedback mechanisms were put into practice. Attitude surveys were administered at the beginning and end of each school year to teachers as well as students. These provided evidence that television teaching had been well received by both groups. Another kind of questionnaire was administered to a random sample of teachers to check on their reactions to various program series. The results of these subject-specific surveys provided useful information about the strengths and weaknesses of each production team. In addition, there was an extensive program of pupil testing at the beginning and end of both years in order to obtain firm measures of student achievement.

As the project expanded, however, it became clear that the production teams needed information that would better guide the day-to-day tasks of lesson development and presentation. Neither final exam grades nor year-end attitudinal data were found to be particularly helpful in identifying the concepts that were giving students the most difficulty or being mastered with relatively little trouble. Similarly, more information seemed to be needed to guide the production teams in the selection of the most appropriate teaching techniques for their subject specialties.

In response to the expressed need for more immediate information from the schools, a new kind of feedback mechanism was proposed by the evaluation team in the second half of the 1970 school year. It was to be based on students' learning performance and was designed specifically to overcome the inflexibility of the existing achievement tests.

Four general questions guided the evaluation team in their approach to the development and pretest of a learning feedback system in El Salvador:

(1) Could a periodic check on student learning be established that would provide information of practical use to the television production teams both on a short- and long-range basis?

(2) Could this periodic check on learning provide information in a convenient and fast enough way?

(3) Would it be possible to develop learning feedback techniques that would be applicable eventually to all subjects throughout the school year?

(4) What use, if any, could individual classroom teachers be expected to make of the learning feedback results?

With the hope of answering these basic questions, a preliminary plan for a learning feedback system was proposed to the project director in July, 1970. The plan took the form of an experiment to be conducted during the second semester of the same school year. The project director heartily endorsed the proposals, and work began soon after on their implementation. The remainder of this report will summarize

El Salvador's experience with learning feedback to date and will conclude by outlining the various functions which we now believe such a system can serve.

Background

In many respects, the situation in El Salvador was ideal for the development and pretest of a learning feedback system for instructional television. The country is small and its population is highly concentrated. The distance between the television production facilities at the San Andrés Normal School and the farthest television school is not more than three hours journey by car. This permits good communication with the schools and facilitates data collection.

Through the extensive retraining of teachers, El Salvador had solidified the support of its teaching corps in the Educational Reform. Classroom teachers had been kept up to date on new developments in the television component of the Reform and the majority had collaborated in previous projects sponsored by the evaluation team. In short, cooperation in the learning feedback experiment was virtually guaranteed by the Salvadoran teachers who as a group had been quite receptive to a vast number of educational innovations during the past two years.

It was decided that the learning feedback system should be based upon short tests or exercises presented via television. This format, it was believed, would encourage the television production teams to become involved in the process from the very beginning. They would, in fact, be able to oversee the entire process. The use

of television to test television learning also had an appealing logic. Furthermore, it would reduce the number of steps required to administer the tests. A simple correction procedure that would not burden the classroom teacher was also decided upon, for the evaluators were determined, above all, to keep the mechanics of the system as simple as possible.

Careful thought also went into anticipating student reactions to the learning feedback idea. Traditionally, Salvadoran students have been quite fearful of any test situation. From experience, they have learned that semester and final exams represent critical moments in their educational careers. The right to pass on to a higher grade may well rest on one exam administered at the end of a particular course.

Because the test situation in El Salvador is so antithetical to the diagnostic and corrective objectives of the learning feedback system, it was decided that the short TV tests should in no way be tied to the traditional patterns of student evaluation and promotion. To insure this division, teachers and students were informed about the purpose of the learning feedback strategy and its nonpunitive connotations were emphasized. Wherever possible, the expression "learning exercise" was used in place of "test" to help convey the difference.

Procedures

Two 20-minute tests, one in seventh-grade mathematics, the

other in seventh-grade social studies, were broadcast during scheduled class hours in September, 1970. Planning for the experimental telecasts had begun approximately six weeks before the first transmission. The following sections outline the numerous considerations and steps that went into the making and use of the tests.

Selection of subject areas All of the seventh-grade production teams had constructed semester as well as final examinations for television classes during the project's first year (1969). This practice had been discontinued in 1970 because of lack of time on the part of television personnel and a long-standing principle of locally made tests. However, the prior experience of the television production teams in the test construction did not, in the opinion of the evaluation staff, constitute adequate preparation for the learning feedback experiments. For this reason and because time was limited, the evaluation team decided to work with only two of the seventh-grade subject areas. The wisdom of this decision was borne out during the test construction phase, which proved to be not only difficult but also very time-consuming.

Limiting the size of the first trial to two subjects also had the advantage of allowing the evaluators to observe in detail the problems confronting an instructional television system that decides to embark on a learning feedback strategy.

It was decided to include one subject each from the Humanities and Science sides of the curriculum. Accordingly, two seventh-grade production teams -- mathematics and social studies -- were invited to

participate. These teams had been working together for over a year and a half.

Construction of the television tests. The first step in the construction of the television tests was the selection of the main concepts that would be taught by television during the period in which the learning feedback tests would apply. This task was performed by the math and social studies specialists. Seven concepts were chosen for the math and four for social studies. They are listed in table 36.

The second step was the actual drafting of the questions or items which would appear in the television broadcasts. This turned out to be a very difficult chore involving many different people. The initial work on this phase was done by a group of teachers who were being trained in tests and measurements at the San Andrés Normal School. Fortunately, their interest in developing a question bank for their subject specialties coincided with the need for test items for the television tests. The San Andrés teachers, working with the concepts that had been singled out by the television teams, constructed a large number of questions for both math and social studies. Not all these questions fulfilled the criteria that the evaluation team had established -- i.e., that each item test but one concept, that they be in a multiple-choice format, and that the alternative responses be concisely worded so that they could be presented within the strict space limitations of the television screen. Additional effort was required to put the questions in shape for pretest.

TABLE THIRTY-SIX

Concepts explored in the experimental feedback tests, by area

<u>Concepts in Mathematics</u>	<u>Questions</u>
1. Properties of the addition of fractions	1, 7.
2. Operations with fractions	3, 4, 11, 12.
3. Decimals: operations and equivalence to fractions	6, 9, 13.
4. Fractions: equivalence and simplification	7, 10.
5. The number line and rational numbers	5, 8.
6. Problem: the properties of fractions	15.
7. Problem: equivalence of fractions	14.
 <u>Concepts in Social Studies</u>	 <u>Questions</u>
1. Agriculture and livestock	1, 2, 3, 4, 5.
2. Common market and economic integration	6, 7, 8, 9, 10.
3. Industry	11, 12, 13.
4. Science and technology	14, 15.

A series of pretests constituted the third step in the construction process. The primary function of the pretests was to determine the difficulty of potential questions as well as their ability to discriminate between students who had mastered a particular concept and those who had not. Secondly, the pretests provided an opportunity to try out the timing of different questions, their sequence, and the procedural directions which would accompany their presentation by the television teacher. Finally, the pretests gave the evaluation team a chance to experiment with different correction procedures. All the pretest work was conducted at the San Andrés Bello Básico school where members of the evaluation staff were able to observe all aspects of the simulated feedback tests.

A complete analysis of the pretest results along with recommendations of the evaluation team were presented and discussed with the math and social studies teams two weeks before the broadcast of the first feedback test. With a few exceptions, the recommendations were accepted by the production teams. Work then began on the final draft of the test questions and, subsequently, on the actual test tapes.

The television tests

The formats for the 15-question television tests in mathematics and social studies were virtually identical (for an example of a learning feedback test, see appendix A). In a few brief introductory remarks, the television teachers greeted their students and

described the nature of the special "review exercise." Students were then told in some detail how to prepare a simple answer sheet using their regular notebook paper. While students were preparing the answer sheets, the television teachers alerted the classroom teachers to the fact that the correct answers to all the questions would be read at the conclusion of the test. The classroom teachers were encouraged to copy down the correct answers for use in interpreting the performance of their own classes.

The television teachers then presented the test, reading each question twice. Alternative answers to each question were presented immediately after each reading. As the alternative answers were read they were displayed on the television screen. Alternative answers were limited to three so that they would all fit in an abbreviated form on the television screen. In this manner, a child taking the test in a television school heard the questions and answers repeated twice by the television teacher. He was then asked to select and note down the corresponding letter (A, B, or C) of the alternative he believed to be the correct answer. To help the student keep the alternative answer straight in his own mind, these were left on the television screen for approximately 30 seconds after the second reading of the question by the teleteacher. Students were requested not to linger on particular questions for which they did not know the answer, but to keep up with the teleteacher as he presented each question.

Collection, tabulation, and interpretation of test results

Although all seventh-grade math and social studies teachers were notified of the special test broadcasts and instructed how to participate, the evaluation team randomly selected 14 classes for intensive analysis. Members of the evaluation team visited these classes during both test transmissions for the purpose of (1) obtaining test results as quickly as possible, (2) observing the mechanics of test administration, and (3) gathering the reactions of both teachers and students.

The answers from the 14 classes were tabulated and analyzed by the evaluation staff immediately following the test broadcasts. The results of this work were presented to the production teams within three days. The speed of this work convinced the evaluation staff that learning feedback from the field could be collected and summarized in a very short time.

The test results made it possible to isolate the concepts which required the additional attention of the television teams. In mathematics, for example, it was immediately apparent that more study and practice on the use of fractions was required. In social studies, the students seemed to have experienced difficulty with certain terminology and in the application of certain concepts to concrete situations.

Although there was not sufficient time remaining in their crowded 1970 taping schedules to prepare review classes based on conclusions from the learning feedback data (as had been the intention) both the mathematics and social studies teams did broadcast special résumés of their findings and suggestions to the classroom teachers.

These résumés complemented the printed instructions that the classroom teachers had received to help guide them in their own interpretation of the results.

Chief problems encountered in the learning feedback experiment

The learning feedback experiment in El Salvador provided affirmative answers to the questions that were posed at the beginning of this report. Procedures for obtaining short-range, yet detailed, information on student learning from television were established. This information helped the television production personnel identify concepts that had not been adequately learned by students within a specific unit of material. Limited corrective action was taken by the subject-area teams to remedy the learning deficiencies, but more could, in principle, have been done along this line.

The new feedback system proved to be easy to administer, considering the number of different people and talents that had to be coordinated. The construction of the television tests proved to be the most time-consuming step, for it demanded a range of highly specialized skills which are still in rather short supply in El Salvador.

Participants in the experiment were encouraged by the enthusiastic reactions of both students and teachers to the television tests. In a survey administered soon after the experiment, the vast majority of classroom teachers requested that similar learning feedback tests be instituted in each unit of every subject for the following year.

The first trial of the new system was a valuable learning experience for all concerned. It illuminated the problems which an expanded system would be likely to encounter. Through participant observation in all phases of the project, the evaluation team identified the following kinds of problems which must be corrected if the learning feedback system is to function smoothly on a larger scale:

(1) The lack of experience or training in modern test construction, particularly test construction for television, was reflected in the content, form, and expression of the questions that were initially drawn up for the feedback experiment. In the future, people will have to be trained in the sophisticated craft of test construction and analysis.

Such training is likely to involve a considerable amount of concomitant attitude change on the part of television teachers and program planners. Good test construction depends to a large extent upon adequate definition of the behavioral objectives of each new content area. The notion of behavioral objectives itself implies a new attitude toward teaching, one that turns away from the traditional reliance on teacher exposition followed by student memorization and repetition. In the final analysis, the successful implementation of a learning feedback system would seem to require a critical reevaluation of all the steps involved in lesson planning and presentation.

(2) There is a severe limitation on the number of letters that can be presented at any one time on the television screen. This

affected the clarity and exposition of the televised questions. It was necessary for the teleteacher to read each question, while displaying only the alternative answers on the screen. In addition, and again due to space limitations, alternatives had to be kept to three, thereby sacrificing some test quality.

(3) The timing of test questions is another potential obstacle to validity. In the math test, students were given too little time to respond to certain questions. This situation may have made them nervous or caused them to guess at answers unnecessarily.

(4) The rapid collection of test results from schools requires a high level of organization and a considerable number of people and vehicles. Yet, it is essential that the test results be obtained as quickly as possible from sample schools so that they may be analyzed and presented to the television production teams as soon as possible. In the future, when a larger or more distant sample of schools may be necessary to guarantee the accuracy of conclusions, some other way of gathering results may have to be developed. The cooperation of school supervisors in the collection process offers perhaps the best solution to this problem at the present time.

(5) Learning feedback must not only be studied, but also acted upon, if it is going to have a positive influence on student achievement and improvement of program quality. After proper analysis, teleteachers and subject-area specialists must decide which concepts within a specific content unit deserve review and/or amplification. They must be prepared to act upon these decisions either through coordinated work

with the classroom teachers or through review sessions on television. When additional television programming is called for, it should ideally be prepared and broadcast before a new content area is introduced.

(5) Corrective action resulting from learning feedback could lead to a difficult concept being over-reviewed or overemphasized at the expense of concepts in the same or other content units. On the other hand, the lack of corrective action could lead to disenchantment on the part of students and teachers. The tests could be dismissed as intellectual exercises, lacking in any practical application. Obviously, both situations must be avoided if the positive functions of the learning feedback are to be preserved.

Conclusions: the applications of learning feedback

On the basis of the promising results of the El Salvador experiment, we believe that periodic feedback on student learning can serve a number of important diagnostic and corrective functions within an instructional television system. It can provide both short- and long-range information and it can provide it to several key audiences simultaneously. We suggest five basic purposes which a learning feedback program, when successfully established, might serve:

1. To provide information to television production teams about student learning in time for immediate corrective action to be taken.

When the results of feedback testing indicate that one or more concepts have not been adequately mastered by the students, several remedies may be called for. If the evaluation and production teams believe that the student errors are not widespread or that they represent a confusion of terminology and not basic concept, the production team might suggest that the topic be reviewed by individual classroom teachers. If, on the other hand, the subject specialists feel the problem is indeed more fundamental to the logical development of their course, they might decide to reteach it in a full review session by television. This strategy would naturally depend on the ability of the production teams to set aside a number of broadcast times at the end of each content unit for just such a contingency.

2. To help guide the periodic revision of television classes and related teaching materials by providing empirical data on the learning of various topics within a specific course.

The review procedure described in the preceding example is largely a stopgap measure. It informs a particular subject team that a concept has not been understood, but in no way guarantees that the same situation will not recur in the future. To prevent a repetition of the problem, the presentation of the concept may have to be changed. This may require substantial alteration in the television lessons as well as their accompanying teachers' guides and student workbooks. This is not to suggest that responsibility for learning problems rests only with the television production teams. More often than not, the source of learning problems involves a combination of factors

including the televised lessons, the course curriculum, and preparedness of the classroom teacher. However, television often enjoys the advantage of being the most flexible component of an educational system. If well managed, it can respond to the need for review quickly and with the best chance of effecting change on a broad scale.

3. To alert evaluators to the existence of problems in the teaching of particular courses and to help discover the cause(s) of these problems.

If poor performance on learning feedback tests is not restricted to particular concepts, but is rather generalized across an entire course, it becomes necessary for evaluators as well as project administrators to think in broad terms. It may be that the quality of the television programs is inadequate. Then again, the curriculum that the television teams use may be too advanced. The poor preparation of students in lower grades may leave them without an adequate base on which to build understanding of what the curriculum writers demand they be taught. There are, of course, many possible reasons for a learning problem to develop within a particular course. Using the kinds of empirical data that the feedback system provides, the possible reasons for learning failure can be investigated. No explanation should be assumed correct until careful research has proven it so.

4. To provide information about what sorts of subjects and teaching styles are most successfully adapted for television.

Researchers know that children do learn quite well with instructional television. But they have little evidence about which subjects or teaching techniques are most effective and which ones inherently cause the most difficulty. Does social studies lend itself to television more readily than mathematics? Are abstract concepts any more difficult to teach by television than by normal classroom presentation? Under what circumstances is a straightforward lecture approach more conducive to student learning than a visually rich, but potentially more confusing, presentation of material? A learning feedback system gathering data over time, over subject matter, and over different teaching styles might well provide answers to these kinds of questions.

5. To provide immediate feedback to production teams who wish to experiment with different teaching methods and who need to know as precisely as possible the learning results.

So far we have discussed the flexibility that learning feedback data provides an instructional television system. If the feedback procedures are themselves kept flexible, they could be expected to assist the production teams in yet another way. We have recognized in the preceding section our ignorance concerning just what subject areas and teaching styles are most suited for instructional television. In order to achieve the most suitable methods for presenting their

lessons, it has been suggested that television production teams experiment more often with different formats and teaching techniques. Because such experimentation creates the possibility of hindering as well as enhancing student learning, rapid feedback is essential. If experimental lessons could be planned with the help of trained evaluators, and a special feedback test scheduled for that lesson alone, the success or failure of such experimentation could be known immediately. If successful, the new method could be expanded to other classes; if it proved to be unsuccessful, the problem could be discovered and repaired with no damage to student progress.

6. To help classroom teachers identify learning problems within their own classes in time so that they too can take corrective action.

Although the learning feedback techniques described in this report have been designed primarily to evaluate an instructional television system, and not individual students, the results of the feedback tests could be used by classroom teachers to identify those content areas which merit additional attention or review within their own classes. With the knowledge of how a class performed on specific questions, the classroom teacher could reinforce whatever corrective action is decided upon by the television production teams. In the cases where certain classes experience learning difficulties which are not common across an entire grade (and therefore do not deserve special emphasis or review via television), the classroom teachers would naturally be responsible for diagnosing the problems and taking subsequent remedial action.

Appendix A

MATHEMATICS TEST

1. In the following expression, what law has been applied?

$$1/2 + 3/4 + 4/5 = 4/5 + 3/4 + 1/2$$

- a) Associative Law
b) Commutative Law 77%*
c) Law of Identity

2. If we add $3/5$ with the neutral additive element, we would obtain:

- a) 0
b) $3/5$ 64%
c) 1

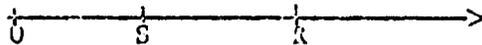
3. If we subtract $1/4$ from $7/8$, the result will be:

- a) $5/8$
b) $3/4$ 21%
c) $6/8$

4. If we multiply $1/2$ by 3, the result will be:

- a) $2/3$
b) $1/6$ 66%
c) $3/2$

5. In this graphic, R and S represent natural numbers. Which of the following alternatives is correct?



- a) $R < S$
b) $R = S$ 55%
c) $R > S$

6. If we subtract 0.06 from 18.5, the result will be:

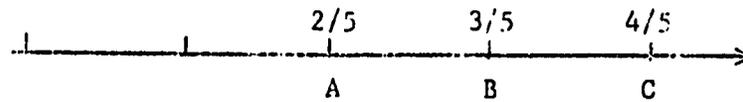
- a) 17.90
b) 18.404 58%
c) 13.44

*Percentages represent the average number of correct responses to each item.

7. $a/d + b/d + c/d$. Which of the following alternatives is equal?

- a) $\frac{a+b+c}{d}$ b) $\frac{a+b+c}{3 \times d}$ c) $\frac{a \times b \times c}{d}$ 69%

8. In this graphic, which letter indicates the fraction equivalent to $16/20$?



- a) A
b) B 66%
c) C

9. If we multiply 1.5 by 0.3, the result will be:

- a) 4.5
b) 3.45 43%
c) 0.45

10. One-fourth is equal to how many eighths?

- a) 2
b) 4 57%
c) 8

11. If we divide $2/3$ by $1/2$, the result will be:

- a) $1/3$
b) $4/6$ 59%
c) $4/3$

12. If to $1 \frac{3}{4}$ we add $2 \frac{1}{2}$, the result will be:

- a) $3 \frac{3}{4}$
b) $4 \frac{1}{8}$ 29%
c) $4 \frac{1}{4}$

13. When 60 is divided by 1.5, the result is:

- a) 40
b) 90 23%
c) 4.0

14. If John has \$100, and he gives \$25 to each of his four friends, what fraction of the \$100 will he have left?

- a) $25/100$
- b) $0/100$
- c) $4/100$

85%

15. If the numerator and denominator of any fraction are each divided by 3, the fraction obtained, with respect to the original fraction, is:

- a) Greater
- b) Smaller
- c) Equivalent

81%

Appendix B

STUDENT SURVEY -- OCTOBER, 1970

Full Name _____

Name of School _____

Grade _____ Section _____

INSTRUCTIONS: THIS IS NOT A TEST. THERE ARE NO CORRECT OR INCORRECT ANSWERS. WHAT COUNTS IS YOUR OWN OPINION. PLEASE ANSWER WITH SINCERITY.

Each one of the following questions has one or more answers. Put an "X" in the blank that corresponds to your answer. In those cases for which you are asked to fill in information, do so in the appropriate space.

Section I: General

1. Age: _____ Birthdays completed
2. Sex: Female _____
Male _____
3. Date of birth _____
Day Month Year
4. Write the total number of people who live in your house (including yourself and servants, if there are any):
_____ Total number
5. Of the following people, which ones live in your house?
_____ mother
_____ father
_____ brothers and sisters
_____ grandparents
_____ other relatives
_____ others who are not relatives

6. What is your father's occupation? _____

7. What is your mother's occupation? _____

8. Indicate your parents' level of education:

	<u>Father</u>	<u>Mother</u>
Didn't study	_____	_____
Part of primary	_____	_____
All of primary	_____	_____
Plan Basico	_____	_____
Commerical course	_____	_____
High school	_____	_____
University	_____	_____

9. How long does it take you to get to school every day?

Less than 15 minutes	_____
Between 15 and 30 minutes	_____
Between 30 minutes and an hour	_____
More than an hour	_____

Section II

10. Of the following information media, which do you have at home?

_____	newspapers
_____	magazines
_____	radio
_____	television
_____	books

11. Outside of school, how many times did you watch television last week?

_____	never
_____	one or two times
_____	three or four times
_____	five or six times
_____	every day

12. Approximately how long do you listen to the radio each day?

_____	never
_____	less than an hour each day
_____	one or two hours each day
_____	three or four hours each day
_____	more than four hours each day

13. How frequently did you read newspapers last week?

- never
- one or two times
- three or four times
- five or six times
- every day

14. How frequently did you read magazines last week?

- never
- one or two times
- three or four times
- more than four times

15. How many books did you read last year?

- none
- from 1 to 3
- from 4 to 10
- more than 10

16. How frequently did you go to the movies last month?

- never
- one or two times
- three or four times
- more than four times

17. Where do you usually see commercial television?

- In your house
- In a friend's house
- In the house of relatives
- In some other place

18. What is your favorite commercial television program?

19. What day or days is that program on?

10. How often do you see each one of the following programs?

	<u>Every week</u>	<u>Once or Twice a month</u>	<u>Rarely</u>	<u>Never</u>
A. Tarzan	_____	_____	_____	_____
B. Tom Jones	_____	_____	_____	_____
C. Oficina para todos	_____	_____	_____	_____
D. Tierra de gigantes	_____	_____	_____	_____

Section III

INSTRUCTIONS:

In this section you will find a series of statements. There are five possible answers for each statement that go from "Completely agree" to "Completely disagree." You should choose the answer that most closely approximates your own opinion and put an "X" on the corresponding line. Example:

Playing with a ball is lots of fun.

<u>Completely</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Completely</u>
agree				Disagree

Please answer the following statements that are about Educational Television. Remember we want to know your personal opinions.

21. You learn more during classes with television than during classes without television.

<u>Completely</u>	<u>Agree</u>	<u>Undecided</u>	<u>Disagree</u>	<u>Completely</u>
Agree				disagree

22. Classes with television are more difficult.

23. The picture-quality on television is good.

24. It is easier to understand classes with television than classes without television.

25. Classes with television do not give one enough opportunity to express his opinions.

26. My parents know a lot about the use of television in my school.

27. It seems that classroom teachers prefer to teach with television.

28. It is more difficult to ask questions in classes with television than in other classes.

29. Classes with television are more enjoyable than classes without television.

30. From which of the following situations do you learn most?
 _____ From my own study
 _____ From my courses with classroom teachers
 _____ From written work or group projects in class
 _____ From Educational Television programs
31. From which of the following situations do you learn least?
 _____ From my own study
 _____ From my courses with classroom teachers
 _____ From written work or group projects in class
 _____ From Educational Television programs

Section IV

32. Which subject do you most like to study?

- Mathematics
- Natural sciences
- Social studies
- English
- Spanish
- All of the above

33. Which subject do you least like to study?

- Mathematics
- Natural sciences
- Social studies
- English
- Spanish
- All of the above

34. How far do you intend to go in school?

- Finish Short career, without Plan Basico (Jr. high)
- Finish Plan Basico
- Finish Short career, after Plan Basico
- Finish high school
- Finish the university
- Specialize after graduating from the university

35. How sure are you that you will finish the studies you hope to complete?

- I am certain I will not finish
- I believe I will not finish
- I may finish
- I believe I will finish
- I am certain I will finish

36. Of the following reasons, mark the most important one that you believe would not permit you to study as much as you want to:

- studies will be too difficult
- opposition of my parents
- lack of money
- lack of opportunity
- other reasons
- no reason

37. What level of studies do you consider necessary for the majority of the Salvadorean population?

- Primary school
- Plan Basico (Jr. High)
- Short career
- High school
- University

38. Who is most concerned about your education?

- father
- mother
- another relative
- another person who is not a member of the family
- no one

39. Which career would you most like to follow when you finish your studies?

40. The career noted by you in the previous question was chosen by you for which of the following reasons:

- it pays a good salary
- it is a respected career
- that career is one that helps other people
- it is a "Short" career
- you prefer it, but for no particular reason
- other reasons

41. If for some reason you are unable to have the career you selected in Question 39, what kind of work will you probably do?

42. What career would your parents most like you to have?

43. How frequently do you talk to your parents about the careers you might have?

- never
- from time to time
- frequently
- very frequently

44. When you finish your studies, with whom would you like to work?

- the government
- a large company
- a small company
- on my own
- with someone in my family

45. When you finish your studies and begin to work, where would you like to live?

- in a small town
- in a city other than San Salvador
- in San Salvador
- outside the country

46. When you finish your studies, would you be willing to live and work in a small town?

- completely willing
- more or less willing
- more or less unwilling
- completely unwilling

47. What monthly salary do you believe is necessary to live decently?

- from 100 to 200 colones (1 colone equals \$.40 U.S.)
- from 200 to 300 colones
- from 300 to 400 colones
- from 400 to 500 colones
- from 500 to 600 colones
- more than 600 colones

48. Do you work in addition to attending school?

- work for a salary outside of the home
- work with parents or relatives and receive a salary
- work only on household chores
- do not work regularly

49. If at the end of Plan Basico you were to be offered a good paying job but one that would not permit you to continue your studies, would you take the job?

- Yes
- No
- Undecided

50. What kinds of things do you like to do most in your spare time?

1. _____
2. _____
3. _____

Section V

51. How will life be for the majority of students in your class?

- very similar to that of their parents
- almost like that of their parents
- generally different from that of their parents
- very different from that of their parents

52. What is the best way to get ahead in a job?

- to be intelligent
- to work hard
- to work a long time in the same place
- to know how to work well with other people
- to have friends or relatives who have influence

53. Consider each one of the following occupations and mark down whether you would be happy or unhappy to do that kind of work.

	<u>Happy</u>	<u>Unhappy</u>
A. Bookkeeper	_____	_____
B. Day-laborer	_____	_____
C. Engineer	_____	_____
D. Small farmer	_____	_____
E. Brick-layer	_____	_____
F. Doctor	_____	_____
G. Industrial technician	_____	_____
H. Chauffeur	_____	_____
I. Lawyer	_____	_____
J. Accountant	_____	_____
K. Architect	_____	_____
L. Electrician	_____	_____
M. High school teacher	_____	_____
N. Nurse	_____	_____
O. Bilingual secretary	_____	_____
P. Insurance agent	_____	_____
Q. Primary school teacher	_____	_____
R. Business manager	_____	_____
S. Soldier	_____	_____

54. Getting a good education is worth the sacrifice of being away from one's family.

_____ Completely Agree Undecided Disagree Completely
agree disagree

55. In general, it is better to accept a good job when it is offered, rather than continue one's education with the hope of getting a better job in the future.

56. Did you ever have to repeat a grade?

_____ Yes
_____ No

57. What career do you think is most important for the development of El Salvador?

Appendix C

CLASSROOM TEACHER SURVEY, NOVEMBER OF 1970

Section I: Educational Television (ETV)

1. Students learn more with ETV than without it.

<u>completely</u> ¹ agree	<u>agree</u>	<u>undecided</u>	<u>disagree</u>	<u>completely</u> disagree
---	--------------	------------------	-----------------	-------------------------------

2. It is more difficult to maintain classroom discipline when using ETV.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

3. Classroom teachers improve their methods by watching the teleteacher.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

4. ETV diminishes the importance of the classroom teacher.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

5. ETV classes are an obstacle to the interpersonal relations between the classroom teacher and his students.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

6. Students learn to study better by themselves when they receive their classes by ETV.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

7. Classroom teachers learn to organize their schedules better with the ETV system.

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

¹All of these questions (1-27) have the same five alternatives.

8. There is a serious obstacle to learning by ETV because students cannot ask questions until the program has ended.

9. It is possible to teach more with ETV during the year, because ETV can cover more material.

10. Instruction by ETV makes the student more passive in class.

11. The ETV schedule does not allow enough flexibility for the classroom teacher to teach his material.

12. ETV helps parents become more interested in the education of their children.

13. Instruction by ETV gives information, but it cannot transmit values.

14. Students would learn more if they didn't have ETV.

Section II Teaching and Education

15. Teaching is not a profession that gives much satisfaction.

16. All youngsters should have the opportunity to finish Plan Basico (Jr. High School).

17. Increases in enrollment reduce the quality of secondary education.

18. The fundamental goal of education is to form the character of the child.

19. I would encourage my best students to become teachers.

20. Only the best students should continue studying after primary school.

21. In El Salvador, teachers are much respected.

22. The majority of jr. high school students is not very interested in learning.

23. I would remain in education even if I found another job with a better salary.

24. Many students do not respect their teachers.

25. The most important goal of education is to develop reasoning.

26. The great majority of students is motivated to make good use of jr. high school education.

27. The current Educational Reform is moving toward high quality jr. high school education.

Section III: The Prestige of Occupations

28. Please indicate your idea of the prestige of each one of the following occupations (mark your answer with an "X" in the appropriate space).

	<u>Very high</u>	<u>High</u>	<u>Aver- age</u>	<u>Low</u>	<u>Very Low</u>
A. Bookkeeper	_____	_____	_____	_____	_____
B. Day-laborer	_____	_____	_____	_____	_____
C. Engineer	_____	_____	_____	_____	_____
D. Small farmer	_____	_____	_____	_____	_____
E. Brick-layer	_____	_____	_____	_____	_____
F. Doctor	_____	_____	_____	_____	_____
G. Industrial technician	_____	_____	_____	_____	_____
H. Chauffeur	_____	_____	_____	_____	_____
I. Lawyer	_____	_____	_____	_____	_____
J. Accountant	_____	_____	_____	_____	_____
K. Architect	_____	_____	_____	_____	_____
L. Electrician	_____	_____	_____	_____	_____
M. High school teacher	_____	_____	_____	_____	_____
N. Nurse	_____	_____	_____	_____	_____
O. Bilingual secretary	_____	_____	_____	_____	_____
P. Insurance agent	_____	_____	_____	_____	_____
Q. Primary school teacher	_____	_____	_____	_____	_____
R. Business manager	_____	_____	_____	_____	_____
S. Soldier	_____	_____	_____	_____	_____

Section IV: Problems in Education

29. According to your personal experience, please indicate how you consider each of the following problems, answering with an "X".

Problems in the Classroom

A. Guides and workbooks don't arrive on time.

<u>Very serious</u>	<u>Serious</u>	<u>Minor</u>	<u>Very minor</u>
---------------------	----------------	--------------	-------------------

B. Lack of teaching materials.

_____	_____	_____	_____
-------	-------	-------	-------

C. Too many students in class.

_____	_____	_____	_____
-------	-------	-------	-------

D. Poverty of the students and their environment.

_____	_____	_____	_____
-------	-------	-------	-------

E. The behavior of students.

_____	_____	_____	_____
-------	-------	-------	-------

F. Technical problems in the reception of teleclasses.

_____	_____	_____	_____
-------	-------	-------	-------

Problems in the Educational System

G. Lack of supervision.

_____	_____	_____	_____
-------	-------	-------	-------

H. Lack of parents' cooperation.

_____	_____	_____	_____
-------	-------	-------	-------

I. The economic situation of teachers.

_____	_____	_____	_____
-------	-------	-------	-------

J. School administration.

K. The efficiency of the Ministry of Education.

L. Lack of teachers with a "vocation" for teaching.

M. Changes in the system of evaluation and promotion.

N. Method of appointing teachers.

Section V: Personal Data

30. Birthplace: City _____

Department of _____

Do you reside in the city where you teach? Yes ___ No ___

If you answered "No" above, where is your permanent residence?

City _____

Department of _____

Age _____ Sex: Male _____ Female _____

31. Mark in one of the following blanks how long you have been teaching with ETV:

First year I've taught with ETV ... _____

Second year I've taught with ETV _____

I don't teach with ETV _____

32. Mark in the blanks your classification as primary school teacher, if you have one, and for the other levels mark only those you have graduated from, except university.

Teacher classification:

<input type="checkbox"/> Class B	<input type="checkbox"/> Class A and High school
<input type="checkbox"/> Class A	<input type="checkbox"/> Class A and Accountant
<input type="checkbox"/> High school	<input type="checkbox"/> High school and Accountant
<input type="checkbox"/> Accountant	<input type="checkbox"/> Class A, High school and Accountant

Higher education:

No higher education
 Superior Normal
 1-2 years at the university
 3 or more years at the university

33. Date when became a teacher _____
Date when became a secondary teacher _____

34. Mark with an "X" the subjects you teach.

Mathematics
 Natural science
 Social studies
 Spanish
 English

Appendix D

CLASSROOM TEACHERS' FEEDBACK SURVEY, SEPTEMBER, 1970

INSTRUCTIONS:

In this questionnaire we ask you to evaluate the television courses you have been receiving this year. Each question is followed by a series of numbers ranging from 1 to 5. These numbers signify different opinions about a course: "1" is the lowest rating you can give; "5" is the highest. Please respond to each question by circling the number which corresponds to your personal judgment.

Learning

1. What students learn from (the subject you teach) with ETV.

1 2 3 4 5

2. What students learned from (the subject you teach) before the introduction of ETV.

1 2 3 4 5

Motivation

3. The motivation of the students in (the subject you teach) since the introduction of ETV.

1 2 3 4 5

4. The motivation of students in (the subject you teach) before the introduction of ETV.

1 2 3 4 5

Guides for Teachers of (the subject you teach)

5. The aid to teaching given by the guides of (the subject you teach).

1 2 3 4 5

6. The practical value of classroom activities suggested by the guides for (the subject you teach).

1 2 3 4 5

7. The relationship between the guides of (the subject you teach) and the teleclasses of (the subject you teach).

1 2 3 4 5

The Teleteacher of (the subject you teach)

8. The teleteacher's knowledge of (the subject you teach).

1 2 3 4 5

9. The teleteacher's ability to teach (the subject you teach).

1 2 3 4 5

10. The teleteacher's ability to make students participate.

1 2 3 4 5

11. The teleteacher's ability to teach (the subject you teach), in comparison with the majority of classroom teachers.

1 2 3 4 5

Student Workbooks for (the subject you teach)

12. The number of exercises generally included in the workbooks:

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Very insufficient	A bit insufficient	Adequate	A bit excessive	Very excessive

Teleclasses for (the subject you teach)

13. In general, the content of the teleclasses is:

1 2 3 4 5

14. The quantity of exposition by the teleteacher is:

1 2 3 4 5

15. The quantity of audiovisual materials (movies and slides) used in the teleclasses is:

1 2 3 4 5

16. The legibility of graphics (drawings, signs, etc.) used in the teleclasses is:

1 2 3 4 5

17. What the audiovisual materials (movies and slides) contribute to the effectiveness of teleclasses is:

1 2 3 4 5

Teaching

18. The help that ETV could provide (at its maximum) in the teaching of (the subject you teach):

1 2 3 4 5

19. The help that ETV, since its introduction, has given in the teaching of (the subject you teach):

1 2 3 4 5