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ABSTRACT

A number of preliminary research findings from the El Salvador Television and Education Reform Project's first year (1969) are reported. Results for student achievement and aspiration gains in television classroom as compared to traditional controls are encouraging, but detailed analysis is necessary, as well as better control of student assignment to the classes. Studies of cognitive growth and of teacher attitudes towards television and other educational reforms are also discussed. (RH)

RESEARCH AND EVALUATION

IN THE EL SALVADOR PROJECT OF EDUCATIONAL REFORM:

Some Preliminary Research Findings from the First School Year, 1969

Emile G. McAnany

Research Memorandum No. 5

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.

February, 1970

Introduction

The following is a preliminary report on a number of the areas of research for the El Salvador Television and Education Reform Project. The preliminary form of the analysis and interpretation of data gathered during the first school year (February-October, 1969) makes any final statements impossible at present. A full final report, including all of the major areas, is planned for publication by July 1, 1970. It is suggested that this report be read in conjunction with Research Memorandum No. 4, "What Is Being Tested and Why?", in order to understand the rationale behind the research design for the past year.

A note of clarification needs to be added before beginning this brief report of findings. The role of television in the total Reform Project is a critical one. Yet too narrow a conception of this role might lead to an exaggerated expectation of its effects apart from such major concomitant factors as accompanying printed materials, the teacher retraining program, new curriculum, the new plan of supervision, and reorganization of educational structures. The change has not been the simple addition of a television set to a number of seventh-grade classrooms. Rather it has been a systemic one in which television has played a catalytic role for introducing innovations at many levels of teaching, learning, evaluation, and supervision within El Salvador's school system.

One of the chief purposes of the research in the first year was an attempt to begin mapping the educational system in a number of ways. Thus measurement of student achievement, although an important consideration, was not the only area of change studied. Factors affecting this achievement were also measured by general ability and reading tests as well as by a number of socio-cultural measures like age, sex, SES, level of urbanization, family occupation and education, etc. A set of three cognitive studies began to trace the developmental curve of concept formation in varying social and school environments over the first seven grades. Attitude measurements of teachers as well as students helped to ascertain the reactions of two important groups to the many changes that are taking place. Student aspirations are an important measure of a country's future and El Salvador needs to know how their students see their future education and careers. Measures and comparisons of various aspirations of different groups were also part of the research and results are partly reported here.

General ability and reading tests

N.B. Most of the findings at this time will be put in the form of general statements with only a minimum of data cited since more complete analysis and interpretation will be included in the final report.

1. Results of the General Ability and Reading tests show a marked relationship to such factors as sex, level of urbanization,

parental education and occupation, media availability, as well as positive relationships with ETS achievement scores in math, science, and social studies.

One of the stable predictors of how a student will do in school has been the general ability test. If this is also true of El Salvador (and significant correlations between general ability and the October or after measures on ETS achievement tests seem to indicate this), then the important question remains whether television and the total educational reform will help to lessen the influence of socio-economic barriers to higher learning and achievement. The strong relationship of certain social factors on general ability and reading are seen in the Appendix. Scores obtained from this year's single measure of general ability are positively related to such factors as father's education (r. 27), mother's education (r .25), father's occupation (r .27), the availability of television in the home (r .16), of books in the home (r .18), and of living in the more urban areas (r .26). The sex difference although relatively small (r .03 in favor of boys) represents a much larger relationship since boys were generally from poorer families and should have been at a disadvantage as a consequence. All of the same observations can be made of the reading test with slightly lower correlations (except for sex where boys do even better at r .10). No comparisons are yet available across several years of general ability and reading results, but these obviously will be the interesting ones to see if over two or three years of the new system social and economic factors

become less important predictors and educational opportunity becomes more truly universal.

N.B. We need to note here that the comparison between the four TV and their four matched Control classes will be difficult to make with any confidence. Analysis of results on general ability for these two groups reveals that all of the television groups are significantly higher than their control groups. This seems to indicate that despite efforts to obtain experimental equality a random assignment of students to TV and Control groups within schools did not take place. Despite this problem, analysis of results will be made with general ability scores as a control variable. The real value of this type of classical experimental design depends on better control of the field situation than was possible during the first year. Through cooperation of school officials, the 1970 school year will see a much more completely controlled experimental situation, with random assignments of students and random selection of schools (stratified by level of urbanization).

Academic achievement in math, science, and social studies

2. Television classes showed gains in all three subject matters on the ETS 50-item objective tests over the first school year: math mean gain 6.31; science mean gain 6.45; social studies mean gain 8.79.

3. Mathematics showed relatively the largest gain since students began in February below the chance level of 12.5 and thus

made gains of over 50 per cent; relative gains for science and social studies were smaller since these started at higher levels in February testing (17.6 for science and 26.4 for social studies).

N.B. Inadequate randomization has made results of the TV-Control comparison on these tests problematic, although covariance analysis of these results (controlling on general ability and reading scores) will be made and reported in the final report. The more interesting comparison will be of the traditional classes, which more adequately represent the old system, with TV classes; this will be possible as soon as an accurate estimate is made of the questions common to both old and new curriculum on ETS tests. This subset of questions is now being drawn up in preparation for analysis. In the meantime there are several comparisons between traditional and TV classes that are possible.

4. The advantage in change of achievement scores of urban groups over rural groups is not so sharply marked for television as for the traditional classes; among television classes, the rural groups seem not to fall behind so much as do those for traditional classes.

5. TV and traditional classes both seem to show a slight widening of the gap in achievement scores to the advantage of boys by the end of the school year.

The same socio-economic factors affecting general ability and reading test scores also affect achievement. When we look at

one of the important factors, urban-rural differences, we note that television may be helping to narrow the urban-rural gap although the pattern is not entirely clear. The pattern that exists can be seen in table 1. Although absolute comparisons are not meaningful between TV and traditional classes until the subset analysis of questions common to both curricula can be made, nevertheless the gap between rural and urban groups for the two sets of classes are quite different; television classes generally show much less of a difference between urban-rural groups than do traditionals. Perhaps in a year or two we may be able to show that television narrows the gap significantly and be able to explain why (for the moment, one might say that it is because television provides a relatively uniform level of instruction to all students regardless of location of school whereas previously the rural areas generally suffered from less qualified teachers and a lower quality of instruction).

As we have stated, there is a strong relationship between general ability and achievement on such things as ETS tests. A more refined comparison between TV and traditional classes will have to wait subset analysis as mentioned above. However, we can see in table 2 that TV and traditional classes have a different pattern of relationships between groups that score high and those that score low on the general ability test when their ETS scores are examined. This pattern is similar to the one for urban-rural groups. What seems to be happening is that students in TV classes achieve well regardless of their general ability level, while in traditional

classes the gap on achievement between high and low ability groupings widens over the year. Again the trends must be watched closely over several years to see if this pattern is maintained.

Finally, the strong sex differences in achievement to the advantage of boys over girls in seventh grade is a finding at odds with general research findings in the United States. This difference seems to be a culturally related factor that television thus far has been unable to affect although there is a very slight advantage that girls in TV classes seem to have over girls in traditional ones. At the very least, an adequate awareness that such a bias exists in the school system will alert decision-makers to study the situation more carefully so that remedies may be sought.

Student aspirations and attitudes

6. Students in the study are already far better educated than most of their parents (average education for parents is a few years of primary school), aspire to education beyond the Plan Basico (or junior high school), and have career and salary aspirations that far outstrip the average parents' present level of occupation; in short, most children are aspiring far beyond parental levels.

7. Television classes show higher educational, career, and salary aspirations at the end of the year than at the beginning; they also show relatively greater gains on these aspiration factors than do traditional classes.

8. Attitudes of students in TV classes toward the use of instructional television remain at the same high positive level at the end as at the beginning of the year; if anything end-of-year results may be slightly more favorable than those at the beginning.

9. Students in traditional classes had less positive attitudes toward the use of television at the beginning of the year; they became slightly more positive although still sharply lower than the television classes at the end of the year.

10. Levels of aspiration in both TV and traditional groups for more education, higher salaries, and more advanced professional careers are all affected by factors like level of urbanization, sex, media availability, and other SES indicators, but to a less degree than achievement or general ability scores.

11. In a sample of ninth-grade students at the end of their Plan Basico training, aspiration levels remain about equal to those of students in first year although ninth-grade students represent a slightly smaller and more elite class on SES indicators. This may mean that they are more realistic than first-year students or that first-year students have and will keep higher levels of aspiration in relation to SES factors as they go through their course.

12. Student attitudes toward the use of television do not seem much affected by any of those factors that strongly influence achievement and ability scores; the only factor of importance is being in a TV or traditional class.

Studies of cognitive growth

N.B. Partial analysis of data on three cognitive studies provides some insight into the pattern of growth in concept formation over four age levels and urban and rural environments. Further analysis will be done for final reports.

13. The ability to group objects on a more abstract basis increases over age for rural, urban poor and urban middle-class school groups; illiterates tested seem to make no such gain over age but largely remain with concrete or perceptible modes of grouping. Functional modes of grouping show marked gains over age for rural, urban poor and urban middle-class groups though the rates are decidedly slower for rural groups; again illiterates show little increase in this mode of grouping over age. These trends to increasingly use the more abstract mode of grouping are seen in table 3.

N.B. It should be noted that different seventh-grade groups were added to the three primary age groups to give a complete picture of the development on grouping from first grade through seventh.

14. The urban poor group does as well as middle-class urban groups in grades 1-6; this seems to be due to the high-quality of instruction offered in this particular slum school; this school takes students from an urban slum area but places a great deal of emphasis on non-rote teaching methods.

This latter may be an important finding since some of the data from this good school with urban poor indicate that achievement

is not related in this case to SES factors as in the other data. It seems to indicate that disadvantaged groups can achieve at high levels given the educational opportunity.

Teacher attitudes toward use of television and educational reform

N.B. Previous conclusions about the first three-month teacher retraining course will be found in Research Report No. 2

15. Classroom teachers using television maintained their strong positive attitudes toward TV at the end of their first year's experience as they had registered at the beginning of the year.

16. Teachers in the full year of retraining at the normal school had generally positive attitudes toward the use of television though these were slightly lower at the end than at the beginning of the retraining (similar to results in Research Report No. 2) which indicates, perhaps, a growing realism as to what television can and cannot accomplish in educational reform.

17. Classroom teachers with a year's experience are more positive toward its use than teachers after a year's retraining and before classroom use.

18. Priorities for aspects of the Educational Reform that teachers registered at the beginning and end of the year changed relatively little or not at all; for retrained classroom teachers at the end of their first year with television, top priorities were (in order): educational television, retraining of teachers, full-time

teachers, supervision, and building schools; for teachers at the end of the year's retraining course: retraining of teachers, supervision, educational television, building schools, and full-time teachers.

19. There was some discrepancy in how teachers and students evaluate the five TV subject matters: They agree that English is the best but there is disagreement on the rest, especially over Spanish (teachers ranking it second, students fourth) and science (students ranking it second, teachers fifth).

N.B. Data are still being gathered on attendance and dropout records for the groups included in the study. A classroom interaction instrument was developed and tried experimentally last year but awaits a more adequate test during the coming school year. An administrative record is prepared but will be issued as a separate report. All tables and statistical data will be presented in the final reports on each of the major research areas.

APPENDIX:

Levels of Urbanization	Television Classes			Traditional Classes		
	Math	Science	Social Studies	Math	Science	Social Studies
Urban	+10	+ 2	+ 8	-11	-10	-27
Intermediate	+37	+15	+81	-35	-52	-34
Rural	- 2	+14	+40	-52	-67	-41

Table 1. Percentage change in number of students in each category of urbanization who surpassed the overall test mean at the October ETS test administration as compared to the number who passed in February.

Levels of General Ability	Television Classes			Traditional Classes		
	Math	Science	Social Studies	Math	Science	Social Studies
High	+13	-17	+34	-33	-28	-20
Medium	+40	+43	+70	-59	-43	-34
Low	-28	- 4	+161	-58	-63	-57

Table 2. Percentage change in number of students in each general ability level who surpassed the overall test mean at the October ETS test administration as compared to the number who passed in February.

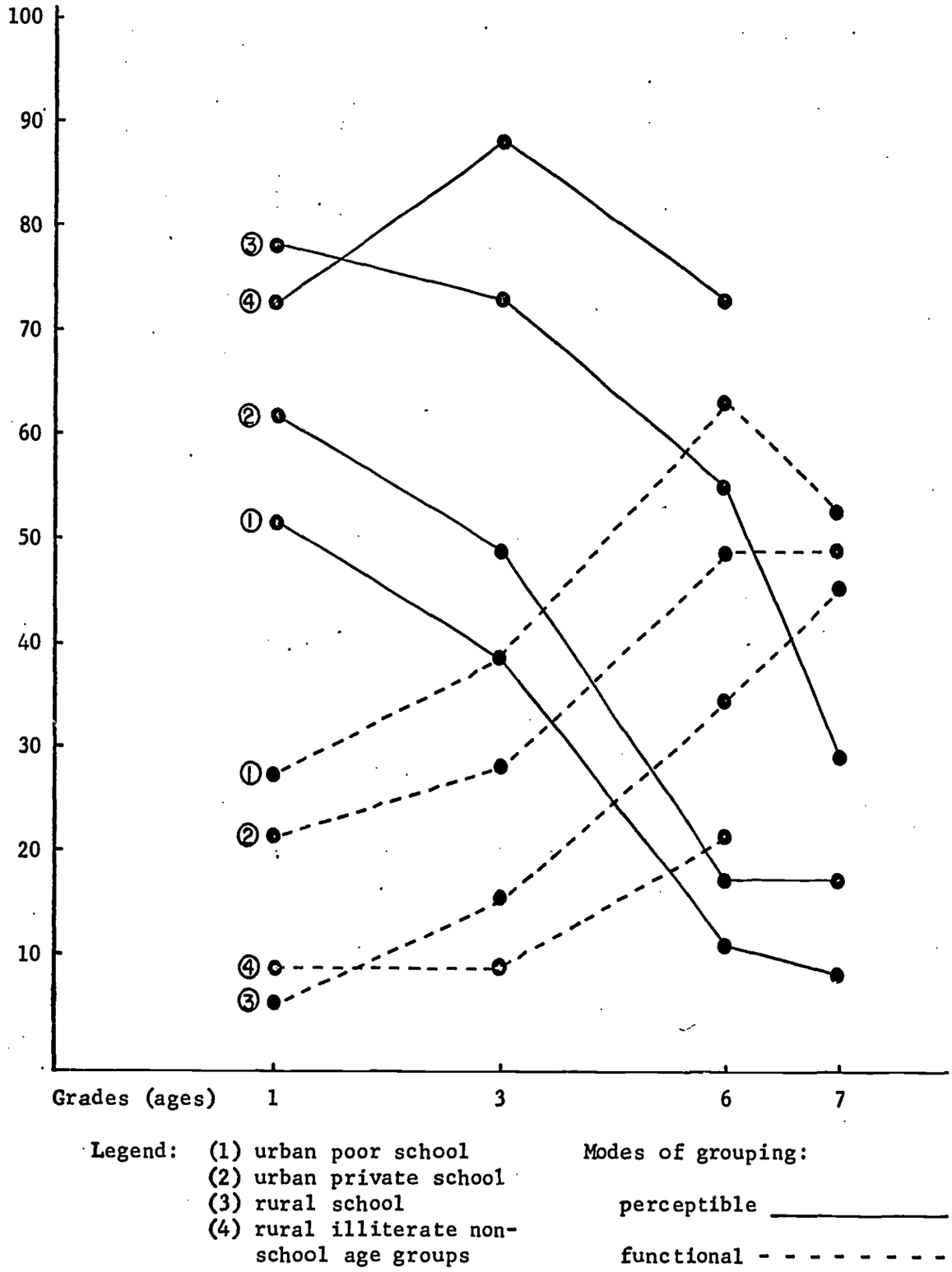

Table 3. Functional and perceptible bases for grouping on picture equivalence task; first of three cognitive studies for the El Salvador project.

	Sex*	Occupation of father	Availability of TV in home	Educational aspirations	Career aspirations	Salary aspirations
General Ability	.03	.27	.16	.26	.19	.11
Reading	.10	.18	.10	.25	.20	.14
ETS Feb. Math	.03	.19	.06	.16	.12	.11
ETS Oct. Math	.04	.20	.07	.23	.24	.18
ETS Feb. Science	.24	.04	.02	.14	.15	.06
ETS Oct. Science	.12	.18	.01	.19	.17	.10
ETS Feb. Social Studies	.23	.24	.00	.14	.14	.10
ETS Oct. Social Studies	.09	.15	.06	.08	.10	.10

Table 4. Zero-order correlations among socio-economic and aspiration factors and general ability and achievement scores (all correlations are positive).

*Positive correlations favor boys, negative correlations favor girls.