

THE USE OF EDUCATIONAL TELEVISION IN LARGE CLASSES OF PUPILS WITH ABOVE AND BELOW AVERAGE IQ'S

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Widespread interest and participation of school systems in the use of educational television has been evident recently in various sections of the United States. Seven county school systems in the Tampa Bay area of Florida have been utilizing educational television under a grant from the Ford Foundation's National Program for the Use of Television in Public Schools. Rothchild (2) reported on evaluation of pupil progress where television had been utilized in large classes (150 pupils) within the seven county area. In twenty-six comparisons made he found that results of achievement testing significantly favored those groups using television in large classes in seven instances, four studies significantly favored the control groups and in fifteen comparisons there were no significant differences.

Teachers using television in large classes have been heard to remark that television is or is not "good" for the "better" student or the slow learning student. Rothchild had not made an analysis of the data for various sub-groups in accordance of ability, but he had indicated a need for further study dealing with the effect of television and large classes within various sub-groupings of the pupil population. This study was an attempt to obtain more objective evidence as to the accuracy of these remarks.

Teacher comments have been posed in the form of the following questions for study:

1. Does educational television, when used as a resource in large class instruction, significantly affect the achievement of the above average pupils in regular size classes and not using television?

2. Does educational television, when used as a resource in large class instruction, significantly affect the achievement of the below average pupil when compared with groups in regular classes and not using television?

Sample

The test data used in Rothchild's study were used as the source data for the investigation. The sample consisted of those students from four

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of the seven counties for the areas of sixth grade social studies and seventh grade mathematics. These counties were chosen because the participating elementary schools were following the Stoddard Plan for reorganizing the school day to include television and large classes for sub-studies I and II. In sub-study III, the variable became class size since both groups, control and experimental, were using television. In sub-studies IV and V the variable under consideration was class size and the absence or presence of television instruction. Experimental groups were students from large classes with the presence of television and control groups were from regular size classes and absence of television. Only two counties participated in the seventh grade mathematics program. Other areas included in Rothchild's study were not included because of insufficient time to analyze all the data. These areas were two that seemed of most interest to parties concerned.

The following pre- and posttest scores were available on each pupil in the study:

Sixth Grade Social Studies

Sub-study I

Pretest

Pintner General Ability Test, Verbal Series
Intermediate Test, Form A
Metropolitan Achievement Test, Intermediate
Social Studies, Form B

Posttest

Project-made Social Studies Test

Sub-study II

Pretest

California Mental Maturity, Short Form
California Social Studies, Part I, Form CC

Posttest

Project-made Social Studies Test

Sub-study III

Pretest

California Mental Maturity, Short Form
California Social Studies, Part I, Form CC

Posttest

Project-made Social Studies Test

Seventh Grade Mathematics

Sub-study IV

Pretest

Pintner General Ability, Intermediate Test, Form B
Metropolitan Achievement Test, Advanced, Form B
Arithmetic Computation and Problem Solving Scores

Posttest

Stanford Achievement Test, Advanced, Form Km,
Arithmetic Computation and Reasoning Scores

Sub-study V

Pretest

California Mental Maturity, Short Form
California Arithmetic, Intermediate Form CC,
Fundamentals and Reasoning Scores

Posttest

Stanford Achievement Test, Advanced, Form Km,
Arithmetic Computation and Reasoning Scores

The samples were those students whose intelligence quotients (IQ's) were above 115 and below 85 or approximately one standard deviation above and below the average of 100 on the test norms. In sub-studies I, II, III, and IV, it became necessary to raise the maximum IQ for the slower groups from 85 to 95 in order to have a sufficient sample for results to be meaningful. Table 1 provides data for the five sub-studies for the slower pupils and Table 2 provides data for those whose IQ scores are 115 and above.

Analysis of Data

A chi square technique was used for the analysis of the data. This technique was employed by Rothchild and later described by its designers Kropp and Bashaw (1). This technique could be applied to the available data and was described as useful in testing "... the divergence of observed results from those expected on the hypothesis of equal probability (null hypothesis). The larger the chi square the greater the probability of a nonchance between the demonstration and the control groups" (2).

Table 1
 Number of Cases and Average IQ for the
 Slower Pupils in Experimental and Control Groups

Group	Experimental		Control	
	N	IQ	N	IQ
Sub-Study I	43	86.9	20	86.9
Sub-Study II	33	82.1	10	89.0
Sub-Study III	47	85.8	49	83.8
Sub-Study IV	35	88.1	69	86.2
Sub-Study V	65	79.4	82	77.5

Table 2
 Number of Cases and Average IQ for the
 Above Average Groups

Group	Experimental		Control	
	N	IQ	N	IQ
Sub-Study I	99	125.4	71	126.5
Sub-Study II	61	126.2	31	125.6
Sub-Study III	34	126.5	37	126.5
Sub-Study IV	79	122.5	135	125.2
Sub-Study V	75	122.3	123	123.9

Results

Table 3 shows the results of the analyses for the five sub-studies. Of the fourteen analyses made, three of the chi square results were significant at the .05 level of confidence. In the other eleven analyses, results of the chi square tests were not sufficiently large to be significant.

Observation of the chi square computational data showed in two of the analyses that the divergence of the obtained posttest frequencies from the expected frequency based upon actual pretest frequencies was in a direction that favored the experimental groups with low IQ's and those using television in large classes. These results were obtained in sub-studies I and II, sixth grade social studies. The third significant chi square result

was obtained in sub-study V for seventh grade arithmetic in the area of arithmetic reasoning scores. In this group the divergence was in a direction favoring a control group of pupils with IQ's of 115 or above.

Table 3
Results of Chi Square Analysis
by Sub-Study

Study	Chi Squares (IQ \leq 95)	Chi Squares (IQ \leq 115)
Grade 6 Social Studies		
Sub-Study I	7.868**	.732
Sub-Study II	9.650**	1.878
Sub-Study III	.285	.482
Grade 7 Arithmetic		
Sub-Study IV		
a. Reasoning	.111	.948
b. Computation	1.170	.306
Sub-Study V*		
a. Reasoning	1.762	7.12**
b. Computation	.585	2.27

*IQ's below 85.

**Significant at .05 level.

Further investigation of sub-studies I, II, and III revealed that groups in sub-study III used television. For those groups in sixth grade social studies and with below average ability results for two of the three comparisons were significantly in favor of groups using television in large classes and in the third comparison where no differences occurred, television was used in both groups. Of the two variables under consideration, television and class size, television seemed to be the more critical.

Summary

Teachers that have used television in large classes have from time to time remarked that this method of instruction is not appropriate for various pupils. The most frequent of these remarks have been aimed at either the pupils with above or below average abilities to achieve in school work. This study made use of available data to provide a more factual basis for these remarks.

The majority of the comparisons, eleven out of fourteen, showed no significant differences for the above or below average pupils. In two of the three comparisons made for sixth grade social studies and with pupils with low IQ's, 95 or below, significant results were found. Results favored the groups using television in large classes when compared with groups with similar ability and not using television and in regular size classes. This finding should be considered in light of the third comparison where pupils in both groups used television and thus the variable under consideration here became that of class size alone.

The fourth significant result was one of four comparisons made using seventh grade arithmetic for pupils with above average ability IQ's of 115 or above. This result occurred in the area of arithmetic reasoning. In one other comparison using arithmetic reasoning and in two comparisons using arithmetic computation, results were not significant.

References

1. Kropp, R. P., and Bashaw, W. L. Using chi square in your own classroom, Phi Delta Kappan, March, 1961, p. 262.
2. Rothchild, T. H. Evaluating pupil progress for an in-school television project. Florida Journal of Educational Research, 1961, 1, pp. 77-88.