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AN EVALUATION OF CLOSED-CIRCUIT INSTRUCTIONAL TELEVISION IN LOS ANGELES CITY COLLEGE AND LOS ANGELES VALLEY COLLEGE. FINAL REPORT.

LOS ANGELES CITY SCHOOLS, CALIF.

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THIS REPORT SUMMARIZES FINDINGS OF A 5-SEMESTER STUDY OF CLOSED-CIRCUIT INSTRUCTIONAL TV IN 2 JUNIOR COLLEGES. 5008 STUDENTS HAD ENROLLED IN, AND 3931 COMPLETED, AT LEAST 1 OF 47 COURSES TAUGHT BY TV. DESPITE MINIMAL CONTROLS FOR CLASS SIZE, CLASSROOM ENVIRONMENT, INSTRUCTOR VARIABLES, AND METHOD FAMILIARITY, THESE WERE GENERAL CONCLUSIONS--THE ATTRITION RATE DECREASED DURING THE EXPERIMENT TO WHERE IT COMPARED FAVORABLY WITH THAT OF NON-TV CLASSES, BUT REMAINED SOMEWHAT HIGHER THAN THE COLLEGES' OVERALL RATES. ACHIEVEMENT OF TV AND CONTROL CLASSES WAS ESSENTIALLY EQUAL. WHILE STUDENTS STILL SEEM TO PREFER CONVENTIONAL COURSES, ACCEPTANCE BY THEM OF INSTRUCTIONAL TV IS INCREASING, AS MEASURED BY QUESTIONNAIRE AND ENROLLMENT ANALYSIS. TV INSTRUCTORS WERE GENERALLY FAVORABLE, BUT THEIR OPINIONS VARIED CONSIDERABLY. (LH)

An Evaluation of Closed-Circuit Instructional Television in Los Angeles City College and Los Angeles Valley College

Final Report

Prepared under the supervision of
Evaluation and Research Section—Office of the Superintendent

LOS ANGELES CITY SCHOOL DISTRICTS
DIVISION OF EXTENSION AND HIGHER EDUCATION
Experimental Programs—Educational Television

1959

AN EVALUATION OF CLOSED-CIRCUIT INSTRUCTIONAL TELEVISION IN LOS ANGELES CITY COLLEGE AND LOS ANGELES VALLEY COLLEGE

- Final Report -

Summary.

This report is the third and last to evaluate a just-concluded five-semester experimental closed-circuit project for direct instruction by TV in two colleges of the Los Angeles City Junior College District. It has attempted to summarize the principal findings of the two previous annual reports and to add any new material from the 1958-59 school year.

During the five semesters of the Los Angeles City College's participation 3011 students registered for 29 courses taught by television, and 2357 completed the courses. At Los Angeles Valley College during four semesters, 1997 enrolled in, and 1574 completed, 18 courses. Thus, during the experiment a total of 5008 students enrolled in, and 3931 completed, at least one course of 47 in which direct instruction was given by television. The attrition rate decreased during the experiment to where it compared favorably with that of control (non-TV) classes, but remained somewhat higher than the colleges' overall rates.

The achievement of TV classes, while not as high when compared with non-TV classes as that reported in most other studies, was essentially equal to that of controls.

Replies to questionnaires and analysis of enrollments in TV classes indicated that, while students still seem to prefer conventional courses, acceptance of instructional television by them is increasing.

Reactions expressed by TV instructors to their work were generally favorable, but with considerable variation. Most believed that instructional TV experimentation should be continued under a variety of formats. They agreed that TV instructors require special training, and that their effectiveness on TV would parallel that in their non-TV classes. Instructors suggested many ways to improve the classroom TV presentation. Reactions of faculty members who had not taught on TV were generally less enthusiastic about its value.

The present study indicates that, in appropriate situations, direct instruction by television can enhance the college educational program, can save time, or both. Its future use will undoubtedly depend upon the findings of later investigations.

Background.

On February 4, 1957, the first classes in the Los Angeles City Schools to receive work by television began their instruction, when about 500 students of Los Angeles City College registered for some one or more of the four courses offered by closed-circuit television. Between that date and June 19, 1959, when the formal experimental phase of college ITV[1] was discontinued, over 5,000 students of two colleges had received a portion of their instruction by television. Of these, about 600 had completed two or more such courses.

After the first semester, in September, 1957, TV instruction was expanded to include Los Angeles Valley College. Thus there have been five semesters of experimental television at Los Angeles City College and four at Valley College.

A detailed report of the first semester's activities and findings was published in September, 1957[2]. A similar analysis of the 1957-58 school year was issued in October, 1958[3]. The present report brings up to date findings from the fall, 1958, and spring, 1959, semesters, and summarizes the entire study.

Courses Offered.

In Table I is presented a listing of course numbers and descriptions of work offered by TV. A fairly wide variety of courses was provided, including offerings from the physical and biological sciences, communication, English, social studies, and fine arts.

Selection of Courses.

The following criteria influenced selection of the various courses to be

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[1]Instructional Television. This term has been used throughout this study to mean direct instruction of classes by television, in which the instructor's image and words are transmitted to one or more classrooms in another place. Students receive instruction by observing a television set, or "monitor." ITV differs from the more general term ETV (educational television), which usually is considered to include any TV presentation thought to have educational features.

[2]Los Angeles City School Districts, An Evaluation of Closed Circuit Television for Teaching Junior College Courses. Los Angeles: Los Angeles City School Districts, 1957.

[3]Los Angeles City School Districts, An Evaluation of Closed Circuit Instructional Television: Report No. 2. Los Angeles: Los Angeles City School Districts, 1958.

TABLE I

COURSES AND COURSE DESCRIPTIONS OF WORK OFFERED BY CLOSED-CIRCUIT TELEVISION AT LOS ANGELES CITY COLLEGE AND LOS ANGELES VALLEY COLLEGE FEBRUARY, 1957, TO JUNE, 1959

Course and number	Course description and units	Number of classes offered		
		LACC	VC	Total
Anthropolopy 1	Physical anthropology (3)	2	2	4
Biology 1*	General biology I (3)		2	2
English 2	Introduction to literature (3)		2	2
Geography 1	Physical elements of geography (3)	3	2	5
Health 10#	Health Education (2)	8	4	12
History 11+	Political and social history of the United States I (3)	4	2	6
History 12+	Political and social history of the United States II (3)		2	2
Music 32	Music appreciation I (2)	2	2	4
Physics 11*	Introductory physics (4)	3		3
Speech 1ϕ	Public speaking I (3)	2		2
Speech 3ϕ	Voice and diction (3)	3		3
Speech 4ϕ	Interpretation I (3)	1		1
Speech 16ϕ	Speech critique (1)	1		1
Total		29	18	47

*Lectures only, three hours per week, were taught by TV. Laboratory sections were taught conventionally.

#Health 10 is listed by LACC and by some other colleges as Physical Education 10. It is required for graduation.

+Completion of courses in U.S. history and government is required for graduation. Most students fulfil this requirement by electing History 11 and 12.

ϕApproximately one-third of total class sessions were offered by TV.

offered by television:

Apparent adaptability of course to TV methods
Number of prospective students
Day of week and time of day
Availability of classroom
Availability of instructor and receiving room instructor
Willingness of instructor to prepare and conduct ITV course
Number of times ITV course had been offered previously.

Enrollment and Attrition.

Table II presents a breakdown, by semester and college, of the number of students enrolling in, and number completing, each course offered by ITV. Each total is in turn broken down into number taking instruction in the "Receiving Room" and the number in the "Studio." Students in the receiving room observed the instructor's presentation on 21-inch TV sets, or "monitors." Some instructors assigned up to 36 students to the studio, where they were able to observe the instructor in person while he presented his lesson. Other instructors preferred to work without students present, or developed various plans for rearrangement of student groups during the semester. The studio contained cameras and microphones, and was connected with the receiving room's monitors by coaxial cable. A unique and highly successful feature was a series of push button switches by which the instructor was able automatically to change camera and sound for himself[4].

Also shown in Table II are percentage figures representing the number of students in each class who received a final mark in the course and the number who were present at the beginning of the semester. These percentages may be compared with similar data for the first and last semesters of the experiment. During the first semester 67 per cent of ITV students and 85 per cent of controls completed their courses, but by the last semester these proportions had become 75 and 77 per cent respectively. This suggests that students' satisfaction with a course taught by television increased during the two-year interval to the point that students were no longer unduly concerned with its quality[5]. This

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[4] Los Angeles City School Districts, An Experiment in Instructional TV in the Los Angeles Junior Colleges. Los Angeles: Los Angeles City School Districts, 1959, pages 10 - 17.

[5] Dropout rates of both ITV and control classes (23 and 25 per cent respectively) were, however, higher than published overall figures for the colleges (20 per cent for Los Angeles City College and 17 per cent for Los Angeles Valley College.)

TABLE II

NUMBER ENROLLING IN, NUMBER COMPLETING, AND PER CENT COMPLETING COURSES OFFERED BY INSTRUCTIONAL TELEVISION FOR FIVE SEMESTERS

College	Course	Number enrolling			Number completing			Per cent completing	
		Recvg	Studio	Total	Recvg	Studio	Total	TV class	Control
				SPRING SEMESTER, 1957					
LACC	Health 10	91	36	127	70	25	95	75	87
	Health 10	63	33	96	78	00	78	81	74
	Geography 1	107	31	138	62	33	95	69	92
	Physics 11	109	36	145	36	33	69	48	—
	Total	370	136	506	246	91	337	67	85
Semester total		370	136	506	246	91	337	67	85
				FALL SEMESTER, 1957					
LACC	Health 10	112	36	148	98	32	130	88	
	Health 10	162	00	162	103	00	103	64	
	Geography 1	81	00	81	66	00	66	81	
	Physics 11	79	36	115	57	26	83	72	
	History 11	159	36	195	156	31	187	96	
	Total	593	108	701	480	89	569	81	
Valley	Health 10	84	35	119	77	31	108	91	
	Health 10	87	36	123	79	33	112	91	
	Geography 1	110	9	119	98	00*	98	82	
	History 11	85	36	121	99	00*	99	82	
	Total	366	116	482	353	64	417	87	
Semester total		959	224	1183	833	153	986	83	
				SPRING SEMESTER, 1958					
LACC	Health 10	84	12	96	63	8	71	74	
	Health 10	151	26	177	161	28	189	87	
	Geography 1	80	18	98	69	00*	69	70	
	Physics 11	71	20	91	48	00*	48	53	
	History 11	134	36	170	130	25	155	91	
	Total	520	112	632	471	61	532	84	

*Indicates students moved from studio to receiving room during semester.

(continued next page)

TABLE II (continued)

NUMBER ENROLLING IN, NUMBER COMPLETING, AND PER CENT COMPLETING COURSES OFFERED BY INSTRUCTIONAL TELEVISION FOR FIVE SEMESTERS

College	Course	Number enrolling			Number completing			Per cent completing	
		Recvg	Studio	Total	Recvg	Studio	Total	TV class	Control
		SPRING SEMESTER, 1958 (continued)							
Valley	Health 10	81	36	117	69	29	98	84	
	Health 10	89	30	119	86	22	108	91	
	Geography 1	120	00	120	97	7#	104	87	
	History 11	85	16	101	70+	12+	82+	81+	
	Total	375	82	457	322	70	392	86	
Semester total		895	194	1089	793	131	924	85	
		FALL SEMESTER, 1958							
LACC	Health 10	145	00	145	123	00	123	85	
	History 11	153	36	189	137	21	158	84	
	Anthropol 1	80	00	80	67	00	67	84	
	Music 32	33	00	33	26	00	26	79	
	Speech 1	32	22	54	21	22	43	80	
	Speech 3	41	00	41	29	00	29	71	
	Speech 4,16	26	00	26	18	00	18	69	
	Total	510	58	568	421	43	464	82	
Valley	Anthropol 1	129	00	129	105	00	105	81	
	Biology 1	83	36	119	60	30	90	76	
	English 2	71	26	97	44	22	66	68	
	Music 32	108	00	108	70	00	70	65	
	History 12	103	23	126	69	10	79	63	
	Total	494	85	579	348	62	410	71	
Semester total		1004	143	1147	769	105	874	76	
		SPRING SEMESTER, 1959							
LACC	Health 10	145	00	145	123	00	123	78	
	History 11	147	34	181	128	27	155	86	88
	Anthropol 1	72	00	72	59	00	59	82	83
	Music 32	75	00	75	51	00	51	68	81
	Speech 1	64	00	64	22	00	22	34	53

#Indicates students moved from receiving room to studio during semester

+Estimated. Data not available.

(continued next page)

TABLE II (continued)

NUMBER ENROLLING IN, NUMBER COMPLETING, AND PER CENT COMPLETING COURSES OFFERED BY INSTRUCTIONAL TELEVISION FOR FIVE SEMESTERS

College	Course	Number enrolling			Number completing			Per cent completing	
		Recvg	Studio	Total	Recvg	Studio	Total	TV class	Control
		SPRING SEMESTER, 1959 (continued)							
LACC	Speech 3	33	00	33	23	00	23	70	85
(contd)	Speech 3	34	00	34	22	00	22	65	
	Total	570	34	604	428	27	455	75	78
Valley	Anthropol 1	109	00	109	93	00	93	85	94
	Biology 1	114	00	114	81	00	81	71	
	English 2	50	00	50	36	00	36	72	68
	Music 32	89	00	89	53	00	53	60	
	History 12	99	18	117	78	14	92	79	78
	Total	461	18	479	341	14	355	74	73
Semester total		1031	52	1083	769	41	810	75	77
LACC, Five semesters		2563	448	3011	2046	311	2357	78	
Valley, Four semesters		1696	301	1997	1364	210	1574	79	
Entire experiment, both colleges, aggregate		4259	749	5008	3410	521	3931	78	

finding appears consistent with that reported below[6], in which it was shown that percentages of students enrolled in ITV classes in spring, 1959, and who had had previous TV courses, were as great as, or greater than, those for similar control classes. It will also be noted that studio classes have become less and less popular. Since instructors always have had the option of having or not having a class with them in the studio, the finding suggests that they have found that conditions are more efficient without a studio class present.

Achievement.

One of the most timely questions which the experiment attempted to investigate was that relating to the effectiveness of ITV instruction. To measure this, each student's standard score on a group test of academic aptitude[7], integrated with his standard score on a pre-test of knowledge of subject matter of the course, formed a factor which was held constant. For the first three semesters ITV and control classes were evaluated by making matched group comparisons. For the final two semesters groups were not matched directly. ITV and control classes were given a pre-test of knowledge of subject matter. By applying analysis of covariance techniques it was possible to correct for, or "hold constant," differences in the groups due to variations in background for the course, i.e., to "match" the groups. At the end of the course, therefore, one could be confident that presence or absence of statistically significant differences in achievement between ITV and control groups was due to classroom experiences, and not to sampling errors.

Previous publications[8] have analyzed in detail results of from two to seven tests in each of the twenty-two courses offered during the first three semesters. Since it became apparent that in almost every case trends remained highly consistent throughout a given course, final examination scores only, or letter grades when numerical scores were not provided, were considered in summarizing semesters four and five.

Table III provides a condensed analysis of TV courses offered for which

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[6]Table V (page 18).

[7]The Otis Quick-Scoring Mental Ability Tests, Gamma Form.

[8]See footnotes 2 and 3 (page 3).

TABLE III

COMPARISON OF FINAL EXAMINATION SCORES FOR ALL EXPERIMENTAL TV AND CONTROL CLASSES

College	Course and group		N*	M	σ	t-ratio# Recvg-Control	t-ratio# Studio-Control	t-ratio# Significant?
	SPRING SEMESTER, 1957							
LACC	Physics 11,	Studio	33	100.0	23.2	1.26		No
		Recvg	36	90.3	22.6		0.01	No
		Control	18	100.1	28.8			
	Health 10,	Studio	26	84.0	4.8	3.40		1% level
		Recvg	23	80.5	5.7		1.44	No
		Control	27	86.2	6.1			
	Health 10,	Studio	00					
		Recvg	31	69.8	14.2	1.08		No
		Control	17	74.2	13.6			
	Geog 1,	Studio	33	114.8	20.5	0.98		No
		Recvg	62	119.2	22.9		0.06	No
		Control	23	114.5	17.8			
	FALL SEMESTER, 1957							
LACC	Physics 11,	Studio	Not usable					
		Recvg	57	84.6	12.2			
		Control	Not usable					
	Health 10,	Studio	32	88.8	4.9	4.08		1% level
		Recvg	98	89.9	6.2		4.35	1% level
		Control	45	93.5	4.2			
	Health 10,	Studio	00					
		Recvg	103	72.9	5.5	1.00		No
		Control	49	73.9	5.8			
	Geog 1,	Studio	00					
		Recvg	66	122.2	9.5	1.82		No
		Control	27	118.1	9.8			
	History 11,	Studio	31	256.3	21.0	0.97		No
		Recvg	156	260.2	24.4		0.37	No
		Control	26	262.0	23.1			
Valley	Health 10,	Studio	31	98.6	5.9	0.50		No
		Recvg	77	99.7	5.0		1.04	No
		Control	31	100.5	8.3			

*N's are sometimes smaller than enrollment because of absences, etc.

#Express relationships between matched groups during first 3 semesters.

TABLE III (continued)

COMPARISON OF FINAL EXAMINATION SCORES FOR ALL EXPERIMENTAL TV AND CONTROL CLASSES

College	Course and group		N	M	σ	t - ratio: Recvg - Control	t - ratio: Studio - Control	t - ratio: Significant?
Valley (cont'd)	Health 10,	Studio	33	100.8	11.2		0.25	No
		Recvg	79	97.8	10.3	1.95		No
		Control	35	101.4	8.3			
	Geog 1,	Studio	00					
		Recvg	98	34.4	4.0			
		Control	00					
	History 11,	Studio	Not usable					
		Recvg	99	73.3	12.7	0.84		No
		Control	29	71.4	10.1			
	SPRING SEMESTER, 1958							
LACC	Physics 11,	Studio	00					
		Recvg	48	63.5	14.3	1.91		No
		Control	24	70.4	14.5			
	Health 10,	Studio	Not usable					
		Recvg	63	88.8	6.6	2.59		2% level
		Control	40	92.3	6.5			
	Health 10,	Studio	28	66.7	12.4		2.20	2% level
		Recvg	161	70.2	9.9	1.62		No
		Control	43	72.7	8.6			
	Geog 1,	Studio	00					
		Recvg	69	72.7	9.3	0.27		No
		Control	24	72.0	11.4			
	History 11,	Studio	25	61.3	11.5		0.76	No
		Recvg	130	57.1	15.3	0.90		No
		Control	35	59.1	10.4			
Valley	Health 10,	Studio	Not usable					
		Recvg	69	105.6	10.1	1.14		No
		Control	28	103.0	10.1			
	Health 10,	Studio	22	100.0	8.2		0.97	No
		Recvg	86	100.2	7.7	2.40		2% level
		Control	28	103.3	5.1			
	Geog 1,	Studio	Not usable					
		Recvg	97	76.8	16.1			
		Control	00					
	History 11,	Studio	Data not available					
		Recvg	Data not available					
		Control	Data not available					

TABLE III (continued)

COMPARISON OF FINAL EXAMINATION SCORES FOR ALL EXPERIMENTAL TV AND CONTROL CLASSES

College	Course and group		N	M	σ	F - ratio* Recvg - Control	F - ratio* Studio - Control	F - ratio* Significnt?
	FALL SEMESTER, 1958							
LACC	Health 10,	Studio	00					
		Recvg	106	70.0		3.02		No
		Control	38	71.7				
	History 11,	Studio	31	270.1		0.62		No
		Recvg	80	276.7			0.33	No
		Control	32	264.4				
	Music 32,	Studio	00					
		Recvg	25	123.8		13.05		1% level
		Control	60	127.2				
	Anthropol 1,	Studio	00					
		Recvg	63	60.0		5.66		5% level
		Control	33	65.4				
	Speech 1,	Studio	00					
		Recvg	19	79.2		0.10		No
		Control	22	81.6				
	Speech 3,	Studio	00					
		Recvg	32	89.9		0.44		No
		Control	28	90.9				
	Speech 4, 5, 16		Data not available					
Valley	History 12,	Studio	10	145.5	19.2		0.21	No
		Recvg	64	139.5	18.4	0.17		No
		Control	35	143.5	18.4			
	Anthropol 1,	Studio	00					
		Recvg	85	69.0	12.0	2.69		No
		Control	19	74.9	8.7			
	English 2,	Studio	21	3.1	0.6		2.21	No
		Recvg	40	2.9	0.7	3.41		No
		Control	28	3.3	0.7			
	Biology 1,	Studio	26	55.5	16.9			
		Recvg	53	50.5	15.1			
		Control	00					
	Music 32,	Studio	00					
		Recvg	59	50.0	5.1			
		Control	00					

*F-ratios express relationships between groups equated by analysis of covariance, with pre-test scores held constant. Means shown are values computed without adjustment for difference in pre-test score. This procedure was used during the last two semesters of the study.

TABLE III (continued)

COMPARISON OF FINAL EXAMINATION SCORES FOR ALL EXPERIMENTAL TV AND CONTROL CLASSES

College	Course and group		N	M	σ	F - ratio Recvg-Contrd	F - ratio Studio-Control	F - ratio Significant?
		SPRING SEMESTER, 1959						
LACC	Health 10,	Studio	119	66.2	9.7			
		Recvg						
		Control	00					
	History 11,	Studio	27	68.9	13.4		1.14	No
		Recvg	128	67.5	16.1	1.14		No
		Control	35	72.3	12.1			
	Anthropol 1,	Studio	00					
		Recvg	58	60.3	13.6	1.95		No
		Control	26	66.1	9.4			
	Music 32,	Studio	3					
		Recvg	47	124.9	16.6	5.12		5% level
		Control	51	129.7	16.9			
	Speech 3,	Studio	00					
		Recvg	22	92.0	18.2	0.03		No
		Control	29	92.2	12.0			
	Speech 1,	Studio	00					
		Recvg	22	67.2	8.8	0.56		No
		Control	19	69.1	11.7			
Valley	Anthropol 1,	Studio	00					
		Recvg	91	31.9	5.9	1.15		No
		Control	25	33.6	6.1			
	Biology 1,	Studio	00					
		Recvg	81	56.8	14.4			
		Control	00					
	English 2,	Studio	00	*				
		Recvg	36	*				
		Control	21	*				
	Music 32,	Studio	00					
		Recvg	49	57.2	4.0	#		
		Control	00					
	History 12,	Studio	15	151.1			1.03	No
		Recvg	66	147.1		1.03		No
		Control	31	151.4				

*Letter marks only were awarded. Proportions of letter marks in TV and in control groups did not differ significantly (Chi-square).

#Proportions of letter marks do not differ significantly from distribution to be expected on the normal curve (.5P = .08).

final examination data were sufficiently complete to be useful for comparison. Of the 47 courses offered during the five semesters of the experiment, 35 furnished data by which receiving and control classes could be compared, and fourteen provided data by which studio and control classes could be compared. The significance of differences has been reported in terms of t-ratios for the first three semesters, during which ITV and control classes were matched by individuals, and in terms of F-ratios for the final two semesters, when covariance techniques were used.

Table IV is a summary of conclusions to be drawn from Table III. The findings show that throughout the experimental period there was a tendency for the achievement of control class students to surpass that of both receiving room and studio groups, but differences in most cases were slight. In receiving room-control comparisons only one out of five was statistically significant, while for studio-control classes the figure was fourteen per cent. The small, non-significant differences recorded for the other comparisons followed the same general trend.

Judging by reports such as those cited below, the degree of success in achievement in direct instruction by TV which Los Angeles college students have attained has not been as high as that in many other schools, colleges, and universities.

The University of California, Los Angeles, in an experimental course in engineering in spring, 1959, found that TV students made slightly better grades in quizzes than did a live audience[9]. This study was controlled by having half the class act as a studio group and the other half as a receiving room class; then at the mid-term the groups were interchanged.

The Washington County (Hagerstown), Md., schools, in a study covering the 1957-58 year of its well-known 1957-61 experiment[10], has reported that in elementary and high school subjects TV students in every instance "grew more" than did matched non-TV groups.

Philip Coombs, secretary of the Fund for the Advancement of Education, in that organization's first summary of uses of TV in the nation's public schools,

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[9] Los Angeles Times, July 6, 1959.

[10] Board of Education, Hagerstown, Md., Washington County Closed-Circuit Educational Television Project—Progress Report. Hagerstown, Md., Board of Education, 1959.

TABLE IV

SUMMARY OF COMPARISONS OF ACHIEVEMENT

OF TV AND CONTROL CLASSES DURING FIVE-SEMESTER EXPERIMENT

Item	Number	Per cent
Receiving room classes offered	45	100
Studio classes offered	22	49
Control classes offered	37	82
Receiving room - Control class pairs for which data were available	35	78
Studio - Control class pairs for which data were available	14	31
Achievement of receiving room class significantly higher than that of Control class	0	00
Achievement of Control class significantly higher than that of Receiving Room class	7	21
Achievement of Studio class significantly higher than that of Control class	0	00
Achievement of Control class significantly higher than that of Studio class	2	14
Achievement of Receiving Room class slightly, but not significantly, higher than that of Control class	6	18
Achievement of Control class slightly, but not significantly, higher than that of Studio class	20	61
Achievement of Studio class slightly, but not significantly, higher than that of Control class	4	29
Achievement of Control class slightly, but not significantly, higher than that of Studio class	8	57

has said recently that,

> of over 40,000 students of 223 elementary and secondary schools studied, in the 110 cases where the academic progress of groups of ETV students were [sic] compared with groups of students taught in the conventional manner, the TV students come out on top in 68 cases against 42 for controlled groups. In many of these instances, however, the differences were insignificant. Where the differences were "statistically significant" the TV students come out ahead 29 to nine. The probability of this happening by accident is one in 1,000[11].

How much of the reported difference in favor of TV may be traced to conscious or unconscious extraneous factors, such as novelty effect and class size, is still unanswered at the present time. Many investigators believe, however, that

> Large classes can be taught successfully when television is used as the medium of presentation, with proper and adequate followup of the telecast by the classroom teacher[12].

The fact that achievement of Los Angeles ITV students has remained essentially unchanged and at par over the five semesters of the experiment leads one to retain confidence in the results—that TV has had no effect on their college achievement as measured by examination scores.

A question is often raised as to the adequacy of conclusions on student achievement in TV classes based only on test scores, semester marks, and the like. It frequently is taken for granted that important parts of a student's college work are such experiences as the interplay of informal class discussion and the personal relationships he develops with his instructors and classmates. It is usually conceded that these "intangibles of education" are not subject to measurement, but the implication is that educators are agreed they exist. This contention raises important questions of educational philosophy as well as of evaluation, which are outside the scope of this report. But the following statement from the 1958 Los Angeles study still appears to be applicable:

> . . . If, indeed, something important, but subtle, undefinable, and unmeasurable, has become lost in the ITV process, we have not yet been able to evaluate it, and, until we can, it should not be introduced into the picture. Fortunately, the things we can

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[11] Reported in School Management, 3 (July, 1959), page 13.

[12] Stoddard, A. J., and John J. Scanlon (ed), The National Program in the Use of Television in the Public Schools. New York: The Fund for the Advancement of Education, 1959, page 43.

> measure tolerably well are the things commonly used to evaluate the education, training, personality, and general status of school graduates[13].

Student Acceptance of ITV.

Degree of student acceptance of ITV was investigated in two ways: by comparing TV class reenrollment ratios with those of non-TV classes and by analyzing attitudes of students reported through questionnaires. Table V shows, for all classes at the beginning of the spring, 1959, semester, enrollments, number, and percentages of students who had had at least one previous course by ITV, and number and percentages of total former TV courses represented by these students. Similar figures are given for students of control classes.

Since the total of former TV students in a spring, 1959, ITV class amounted to sixteen per cent, and the total of former TV students in a control class was thirteen per cent, one might conclude that the former experience did not cause them to avoid instructional TV. If one compares TV students with controls in total number of ITV courses taken, the outcome for TV is even more favorable, with nineteen per cent of former ITV courses represented in present TV classes, as compared with fourteen per cent among controls. It should be noted that in neither case was there any known selective factor operating, or any pressure to enroll in either a TV or a non-TV class. The instructor and course content were, with the exception of elements inherent in the TV process of instruction itself, as similar as possible; all students, except late registrants, were able to select those sections of the course which suited their respective schedules. ITV sections were indicated as such in the class schedule.

Attitudes of students toward ITV have been thoroughly analyzed in the two previous studies, and their comments during the last two semesters have not suggested anything new. The following quotations from earlier reports are still applicable:

> [In spring, 1957] student acceptance of instruction by [closed circuit television] varied from enthusiastic to neutral to rejection. Most of the stated objections were based on inability of students to ask questions and otherwise participate in class activities, and on a belief that personal association with an instructor is an

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[13] Los Angeles City School Districts, An Evaluation of Closed Circuit Instructional Television: Report No. 2. Los Angeles: Los Angeles City School Districts, 1958, page 29.

TABLE V

NUMBERS AND PERCENTAGES OF TV AND CONTROL STUDENTS

IN SPRING, 1959, SEMESTER WHO HAD TAKEN ONE OR MORE FORMER COURSES BY TV

College and Section	Subject	Enrollment	Former TV Students		Total former TV courses	
			Number	Per Cent	Number	Per Cent
LACC - TV	Music 32	74	15	20	17	23
	Anthropology 1	67	12	18	13	19
	Speech 3	32	3	09	4	13
	Speech 3	34	0	00	0	00
	P.E.(Health) 10	146	17	12	20	14
	Speech 1	64	2	03	2	03
	History 11	181	11	06	11	06
	Total TV	598	60	10	67	11
LACC - Control	Music 32	67	6	09	7	10
	Anthropology 1	32	2	06	2	06
	Speech 1	21	2	10	2	10
	Speech 1	28	2	07	2	07
	History 11	38	1	03	2	10
	Total Control	186	13	07	15	08
Valley - TV	Music 32	73	18	25	28	38
	Anthropology 1	109	20	18	27	25
	History 12	108	23	21	25	23
	English 2	50	7	14	9	18
	Biology 1	111	35	32	42	38
	Total TV	451	103	23	131	29
Valley - Control	Anthropology 1	34	12	35	12	35
	History 12	39	7	18	8	21
	English 2	26	4	15	4	15
	Total Control	99	23	23	24	24
Both Colleges - TV	Total	1049	163	16	198	19
Both Colleges - Control	Total	285	36	13	39	14

important part of college work[14].

> There was found [in 1957-58] among students of ITV classes a general attitude of acceptability toward ITV but a preference for non-TV classes[15].

> No clear statement can be made [in 1958] about the general acceptability of TV as an instructional medium, as students' opinions vary with the situation[16].

In general, it has been difficult to get valid estimates of their ITV experiences from students because many of the items in questionnaires were necessarily based upon hypothetical situations, and because it was difficult to distinguish between items due to TV and items due to extraneous factors such as class size. A considerable number of students felt that improvement would be possible in such matters as textbook selection, guest speakers, films, tests, illumination, and ventilation, but these are not necessarily directly attributable to TV. At the same time, majorities considered ability to see and hear the instructor and to observe demonstrations to be at least equal to that of a non-TV class. Two-thirds of students believed, however, that the TV sound system hindered communication with the instructor. Most students preferred a TV class, if not too large, to an in-person large lecture-type class[17]. One might conclude that, after four or five semesters, there is an increasing and more or less general acceptance of ITV in the two colleges studied.

ITV and Other Factors.

During the five semesters of the study attempts were made to investigate a number of other items pertaining to TV instruction, using methods similar to those already described. Non-significant differences were found to exist between

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[14] Los Angeles City School Districts, An Evaluation of Closed Circuit Television for Teaching Junior College Courses. Los Angeles: Los Angeles City School Districts, 1957, page 13.

[15] Los Angeles City School Districts, An Evaluation of Closed Circuit Instructional Television: Report No. 2. Los Angeles: Los Angeles City School Districts, 1958, page 7.

[16] op. cit., page 9.

[17] Neither college ordinarily uses large lecture classes. Since students have had little or no experience in such classes, one wonders how valid their opinions are.

TV classes and matched control classes in retention of class material. Attitudes of acceptance of, and satisfaction with, ITV appeared to have no relationship to age, sex, units of college work completed, familiarity with commercial television, knowledge beforehand that the course would be taught by TV, class achievement, time spent in study, and time spent working on a job. No significant differences were found in respect to class achievement when students were grouped by ability, but there was an indication that TV might be more useful for low ability students.

A limited study made during one semester suggested that control of sound should be of benefit to students of less than normal hearing acuity, but opportunity to investigate fully the possibilities of sound amplification and control was not made available.

Technical equipment performed quite satisfactorily throughout the entire life of the experiment, with practically no time being lost on account of malfunctions. On the other hand, many physical features definitely interfered with results. Among these might be mentioned size, shape, and placement of TV classrooms, studio, and control room; unsatisfactory ventilation; unsuitable illumination; necessity for devising and using makeshift facilities; and non-availability of studio and classrooms for purposes of preparation immediately preceding and following many TV classes.

Positive changes in the learning situation of the TV class included: flexible system for exhibiting films, filmstrips, and slides; facilities for showing demonstrations, especially of small objects; tendency to present class material in systematic style; ability to reach more students at one time with identical picture and sound; and use by instructors of an unusual degree of care in planning, preparation, and presentation made necessary by the demands of television.

Attitudes of TV Instructors.

Instructors of TV classes generally have been, since the beginning, supporters of TV's potentialities. As they gained experience, however, they have tended to advocate a greater degree of selectivity for its use. Of the 22 studio instructors and 29 receiving room instructors who participated in the five-semester experiment, the general attitude seemed to be that ITV is practical and worth while, but that its potentialities by no means have been sufficiently explored. More than one expressed regret that it has not been possible to experiment with various class sizes, with combination TV-non-TV sessions as appropriate, and with more sophisticated electronic equipment.

Instructors learned quickly to make use of sound and camera switches, and expressed themselves as pleased that control of their classes remained in their hands. They were well satisfied with the appropriateness and quality of supervision by the TV Specialist in charge, and gave high praise to the work of the technical and art staffs.

The consensus among all concerned has been that proper use of classroom TV will continue to require training and careful planning. Within these limitations TV instructors feel that any competent teacher should be able to make use of the medium acceptably, with a degree of success proportionate to his pedagogical efficiency in other respects.

Whether modifications of teaching procedures due to ITV are to be considered as improvements or drawbacks depends upon the educator's personal abilities, aptitudes and interests, his philosophy of education, and his point of view toward his professional responsibilities, rights, and privileges. Instructors are not at all sure that the present format, in which all meetings of most courses are presented on TV, will turn out to be the best manner in which to utilize it. Many are not convinced of the effectiveness of the lecture method in the typical lower division college class. A number have mentioned being disappointed because they have been unable to know their students more intimately than TV allows. Some have found the adjustment from years of face-to-face teaching to the formation of new and radically different habit-patterns difficult to accomplish. On the other hand, most join with the proponents of ITV in other school systems in believing that schools are obligated to explore the potentialities of ITV because it is becoming a familiar and inevitable part of the American educational scene.

At the beginning and again at the end of each semester each TV instructor and each receiving room instructor was interviewed concerning his personal ideas, attitudes, and conclusions about ITV. Samples of their comments on key matters are given below.

Material of the Course.

> TV is especially useful for presenting overviews and summaries.
>
> Students are not getting the "peripheral material" of the course. They are unable to ask <u>interpretative</u> kinds of questions, as distinguished from mere requests for something to be repeated.
>
> I feel I covered less than usual.
>
> My TV class not only keeps up with, but seems to surpass the control group.

Nearing the end of my first semester on TV, I am about three weeks behind schedule.

My course has been thoroughly satisfactory.

As receiving room instructor I got the impression that the studio instructor did not cover as much material as I think he does in other classes.

While some mechanical aspects are better and class organization perhaps sharper, there is so limited an access to student reactions that a TV class in music appreciation may become the cruelest form of take it or leave it. This is not education.

In music appreciation the coordination of sight and sound are limited only by the imagination of the instructor. Our students accepted TV instruction as a matter of course. I believe classroom TV is sound educationally, practical and inspirational.

Communication and Personal Contact.

I sensed a definite lessening of rapport, even in the studio class.

I do not agree with the majority of students that the vital personal contact was missing. For a lecture course, this type of instruction is ideal.

Communication was unsatisfactory. Also, in music appreciation, it is important to observe student reaction, because the work is a matter of "feeling" as well as of facts. Without a way of assessing this we never know our strengths and weaknesses.

I have not felt that lack of communication was a drawback. I find little need to ask or answer questions because by now my lectures anticipate almost every difficulty. The deliberate introducing of question-and-answer material into a lesson is usually a waste of time.

Educate students to ask only questions of general application.

Have a camera in the receiving room so that the studio instructor can observe student reaction.

Let the studio instructor ask a question and the receiving room instructor designate a student to answer it.

Control and Discipline.

I have been aware of a discipline problem in my receiving room.

I have had no discipline problems [in the receiving room].

Students do not give the TV set the courteous attention they

give an instructor who lectures in person. . . . The problem of disturbances in the receiving room is, I have been informed by other [receiving room instructors], common to all courses taught by TV.

Control and communication have been easily maintained.

I think my discipline problem springs from the communication difficulty.

In spite of an excellent receiving room instructor, the students reacted in an immature way. Perhaps the association of TV with entertainment is too hard to erase?

Adequacy of Equipment.

My chief dissatisfaction was due to faulty equipment.

The studio was adequately equipped with maps, boards, charts, and other needs.

Training and Preparation.

You have to plan more carefully how you are going to say things. I try to say each thing three times in different ways.

A new TV instructor needs three semesters to learn his work. His third semester should be his best. If he is unsatisfactory by then he should be replaced.

If an instructor prepares thoroughly for his regular classes, TV preparation actually isn't so burdensome.

TV Technician.

Superior.

I cannot say enough in appreciation. He was unfailingly helpful, even to rescuing me in my moments of absent-mindedness.

The Receiving Room Instructor.

I do not believe TV can be used without [someone in charge of] the receiving room. If an instructor is used, it is a frightful waste of professional talent.

The person responsible for the receiving room should not be an instructor. He should be of lesser rank, and his function should be only to maintain firm discipline.

As receiving room instructor I have always thought of the class as being the studio instructor's. I have kept in the background. I have not been unhappy, but would not care to

continue for another year, at least in the present format.

The studio instructor and the receiving room instructor should be from the same department. [As receiving room instructor] I can anticipate difficulties, write helpful material on the board, etc. If the receiving room instructor does his job properly he has in no sense been relegated to the inferior position of "baby sitter." He is just as important a member of the team as is the studio instructor.

It is hard to get a receiving room instructor who is both expert and enthusiastic. I prefer the out-of-department man who is sympathetic and cooperative.

Technical Improvement.

Develop brief film-clips.

Avoid taped lectures and other "canned" materials, which would not fulfil our needs.

The mechanical problems connected with questions and answers were intolerable, at least at first [at Valley College].

Due to lack of color and contrast I was unable to show things under the microscope.

I found slides projected on a small screen very useful.

Install a duplicate set of controls for the receiving room.

Arrange a code of buzzer signals for recurring situations, such as for: "Stand by; I'll stop for your question shortly."

The sound quality for music appreciation has been quite satisfactory.

Visual aids must be created by experts especially for TV use.

Why not set up TV as a communication center like audio-visual aids are usually handled? Then any instructor could reserve one or more hours as required.

Miscellaneous.

There should be a free period for both studio and receiving room instructors immediately before and after the TV class. The studio also should be free.

There should be a more definite understanding of the division of responsibility between studio instructor and receiving room instructor.

The potentialities of television for use in teacher training should be obvious.

> Skeptical at the start, I have been pleasantly surprised that ITV works.
>
> I'm glad the experiment is over. I'm glad I did it. I'm not sure I would want to do it again.
>
> I enjoyed the experience very much and would not be unwilling to offer such a course again.
>
> We know this will not be the end of instructional television. I hope that, when these other times and places appear, I may be included somehow in these new adventures.

The reader will have noticed that the foregoing comments of ITV instructors, like those of their students, follow no clear pattern of attitude. TV apparently is not as suitable for some courses and for some instructors as it is for others. It will not ruin an otherwise good course, and it will not "bail out" a weak instructor, but it may change the format of a school's administration or force a modification of its philosophy. It can provide the teacher with a new, flexible teaching device the potentialities of which, most ITV proponents are convinced, are unlimited and presently barely realized. Not all teachers will be equally effective when their presentations are being televised, but, of course, not all are equally effective otherwise. The truth of the statement made in an earlier report[18] is becoming increasingly evident: TV will not provide, magically, something that is not there, but it does seem to intensify—exaggerate, almost—the aural and visual elements which are fed into it. If this results in emphasizing the good and the weak qualities of instructors as they present their lessons, it will also enable administrators to allow greater specialization among their faculties. Instead of teachers presenting what they hope are comparable courses to groups of twenty, thirty, or forty students, television can enable one of them—the one who enjoys doing it and can do it best—to present the lesson and most of the others to be released. Whether these others are assigned to supporting duties intended to increase the school's teaching efficiency or whether the saving of teacher time will be returned to the taxpayers in the form of a reduced budget is a matter for policy determination.

Attitudes of Non-Participating Faculty Members.

Attitudes of faculty members of the two colleges involved who have not par-

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[18] Los Angeles City School Districts, op. cit., page 59.

ticipated in experimental classroom TV have been more difficult to assess. Administrators decided early in the experiment that no useful purpose would be served by attempting to circularize entire faculties for expressions of opinion on ITV, and such surveys as have been made public have been prepared by individuals and groups not connected with this study. Thus, the impression of a generally negative attitude which has seemed to the writer to characterize many non-participating faculty members, ranging from lack of enthusiasm through indifference to hostility, actually may not be representative of the true feelings of college instructors as a whole.

The Future.

Since practically all investigations of direct instruction by TV have reached the conclusion that it is practical, is often an improvement over conventional practices, and appears to offer great promise toward the fulfilment of constantly increasing educational needs, it may be worth while to mention some possible directions in which its future use may lie.

There are two basic types of ITV facilities: closed-circuit and open-circuit. The experiment discussed in this study has been entirely closed-circuit, that is, signals were not telecast, but were carried by wire to receivers. In an open-circuit plan, any properly equipped television set can receive the program. The ramifications of both types, and their advantages and weaknesses for local needs, have been thoroughly explored and made available for study. The chief criteria upon which to base the use of either type of ITV probably should be: (1) assuming the present student-teacher ratio were preserved, does the employment of TV add anything to the effectiveness of instruction? and (2) assuming effectiveness of instruction remains undisturbed, does TV save teacher time? Present findings have indicated that, under the conditions with which this study was conducted, the answers are: to the first question, sometimes; to the second question, yes.

There are now in the United States 44 open-circuit educational TV stations and hundreds of closed-circuit installations. In addition, many instruction-type programs, such as the series being conducted for the Los Angeles City elementary and secondary schools, are being televised over commercial stations. Operators of most of these projects are convinced that ITV is no longer in the experimental stage. If, in the future, additional local studies should be authorized, and were to confirm substantially these encouraging findings, a reexamination of ITV might well be considered appropriate.