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A study of instructional closed-circuit television and its acceptance by college instructors

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BOSTON UNIVERSITY
SCHOOL OF PUBLIC RELATIONS AND COMMUNICATION

Thesis

A Study of Instructional Closed-Circuit Television
and Its Acceptance by College Instructors

by

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PREFACE

In the face of increasing enrollments and insufficient instructor-power, several institutions of higher learning have pioneered the use of closed-circuit television in the college and university classroom.¹ However, problems have arisen both of a mechanical and psychological nature. While many of the former are rapidly being overcome, there appears to be less progress in the psychological field--particularly in the area of instructor and student acceptance.

Researchers have found that people's attitudes can greatly influence the effectiveness of a proposed change.² Studies have shown, too, that groups with attitudes which are inconsistent with the formal procedures and goals of an organization can manipulate its activity to coincide more closely with their viewpoint.³ Administrators and managers have become aware, especially in this era of spreading automation, that attitudes of people play a major role in the acceptance of change.

The acceptance by faculty members of instructional closed-circuit television in institutions where it may be used is considered by some authorities to be a problem in education to

1. These will be discussed in Chapter V.

2. See, for example, F.J. Roethlisberger and W.J. Dickson, Management and the Worker, (Cambridge, 1939).

3. Studies of informal organization have demonstrated this. See Henry Kraus, "Incipient Organization," and Charles H. Page, "Informal Behavior in the Naval Bureaucracy," in Human Relations in Administration, ed., R. Dubin, (New York, 1951).

day. It is the purpose of this study to investigate the acceptance of this medium in the classroom among a sample of college instructors and to see if several pre-determined factors appear to be related to acceptance.

The problem of increased enrollments and relative decrease in instructor-power will be discussed first. This will be followed by a review of investigations and experiments in the use of television in education. Finally, a study concerning the acceptance of closed-circuit television instruction among a sample of New England college and university instructors will be reported.

CHAPTER I

The Outlook for Colleges and Universities

Impetus for higher education. More young people today than ever before are passing through the portals of higher education. Statistics indicate that one will be able to make this same statement without much fear of contradiction for at least the next thirteen years.¹ What are some of the factors responsible for this surge for education beyond the high school level?

C.C. Fiernas, Chancellor of the University of Buffalo, notes that this upward trend in enrollments, with no sign of reversal in sight, is "simply because higher education has changed from being a luxury to a national and individual necessity for a substantial portion of the population."² Other factors that have been named as contributors to this situation are "the unparalleled economic prosperity of post war America, the rise in family incomes, the increasing demand for college-trained people in business, government and the professions, and the growing tendency for a college education to be equated with higher earning power."³ To these suggested influences on college enrollments might be added: the relatively low cost of education in comparison to its dividends, the desire for the

1. See below, pp. 5-6.

2. "More College Presidents Discuss the Rising Tide," Educational Record, VI (1955), 267.

3. Teachers for Tomorrow, The Fund for the Advancement of Education, Bulletin Number Two, (New York, 1955).

prestige of a degree, and the factor of population growth which makes more people available for higher education.

Few would argue that the tremendous growth of interest in higher education benefits individual students alone. Undoubtedly individuals do benefit from advanced education, but this extends more broadly and benefits society as well. Benjamin Franklin suggested this when he said: "The good education of youth has been esteemed by wise men in all ages as the surest foundation of the happiness both of private families and of Commonwealths." Timasheff has stated it another way: "Higher education contributes to the survival and quantitative expansion of the culture of a society." It does this, he adds,

...by continuously supplying new and adequately trained human material to the active centers of the particular fields of culture. It trains the experts on whose existence and performance the maintenance of the individual fields depend.⁴

In a special study conducted by Pennsylvania State University, this dichotomous advantage of higher education, i.e., for personal and societal benefit, is further underscored:

The educational requirements of a democratic society as well as the needs for increased amounts and quality of knowledge, skills and general culture necessitate for the people expanding opportunities for study beyond the public school levels, in colleges, universities, professional schools and during adulthood.⁵

4. N.S. Timasheff, "Higher Education for What?" Journal of Educational Sociology, XXIX (1955) 77.

5. C.R. Carpenter and L.P. Greenhill, An Investigation of Closed-Circuit Television for Teaching University Courses, (University Park, Penna., 1955) 1.

The enrollments ahead. With these incentives and benefits of higher education to individuals and society in mind, another aspect of the situation must be considered: the number of persons affected by these stimuli. There are varying estimates concerning future enrollments in our colleges and universities.⁶ During the academic year 1955-56 the figure was about 2.8 million. U.S. News and World Report has estimated a fifty per cent increase in number of students during the next ten years.⁷ That would mean that by 1965 our student population would number approximately 4.4 million--equivalent to the entire population of Denmark.

Commager is less conservative about the outlook for the next ten years. Writing in The New York Times Magazine he says: "...we may confidently anticipate an increase from 2,000,000 to 4,000,000 students in the next ten years, and perhaps to 6,000,000 in the next twenty."⁸ The various estimates of change between the 1955-56 academic year and what is

6. The estimates appear to be based on two different formulæ. One takes into consideration population growth alone, while the other is based on population growth and an increase in the ratio of college students to persons in the eighteen to twenty-one year old age bracket. This proportion has increased from four per cent in 1900 to 29.5 per cent in 1954. See Teachers, p. 11. U.S. News claims the percentage is now thirty-four. See "When the Real Crush Hits Colleges," Sept. 23, 1955, p. 34. See Appendix A for a graphic view of the enrollment rise.

7. "Does It Pay to be a Teacher?" U.S. News and World Report, Nov. 25, 1955, p. 98.

8. Henry Steele Commager, "The Problem Isn't Bricks--It's Brains," New York Times Magazine, Jan. 29, 1956, p. 11.

expected in the 1965-71 period range from thirty-three to one-hundred per cent increase. The college enrollment in New York, for example, is similar to other states; it is expected to double within fifteen years.⁹

U.S. News predicts the enrollment increase will come in this manner:

Each year for the next thirteen years the number of youths seeking a place in college will be larger than the year before. The rise in college population between now and 1960, however, will be gradual, averaging about 100,000 each year. After 1960, the rise in college students will accelerate. In 1965, the first of the post war baby crop will "hit colleges like a tidal wave." By 1968, total enrollment will soar above 4.6 million. The increase of 1.6 million students, in the eight years from 1960 to 1968 will exceed the total college enrollment of 1940.¹⁰

Instructor-power. The expansion of enrollments appears, on one hand, highly desirable; yet, on the other hand, rather severe obstacles to this trend toward more education for more people have developed and are continuing to develop. Commager comments that while almost all discussions of the future of higher education have focused on material problems,

Far and away the most serious problem... is one that has received curiously little attention. It is the intellectual problem, the problem not of books or bricks but of brains...Where are we going to find the brains and skills that will be required to serve the needs of four to five million

9. Benjamin Fine, "Education in Review," The New York Times, May 6, 1956.

10. "When the Real Crush Hits Colleges," p.34.

mature students? First rate colleges and universities try to maintain a proportion of one instructor for each ten students; if this is to continue we will need in the next decade or so, between four and five thousand scholars competent to teach at the university level...that there are half a million first class minds capable of teaching at the university level is doubtless true, but that the universities will be in a position to command their services is wildly improbable.¹¹

An incident at Pennsylvania State University perhaps is indicative of what the future may hold. After registration one term, it was found that a course in the Psychology of Marriage had an extremely heavy enrollment. The professor in charge requested that the class be divided and that sections be assigned to another teacher. None was available. This is the type of problem that is said may become frequent as enrollments increase.¹²

The Fund for the Advancement of Education sponsored research on the subject of college teachers in 1955. In its report¹³ the organization arrived at a conclusion similar to Commager's: the problem of securing a sufficient number of readily able teachers overshadows the need for buildings and money. The report says:

Growth is nothing new in American education...What is new in the present situation is a sharply accelerated rate of growth in

11. Commager, p. 11.

12. Carpenter and Greenhill, p. 13. The classes were subsequently taught by closed-circuit television.

13. Teachers for Tomorrow.

enrollments coupled with a severe shortage of well-qualified teachers--a combination which threatens to cause a progressive deterioration of quality at all levels of education over the next two decades.¹⁴

How many college level instructors will be needed to meet what has been termed the "tidal wave" of students? Again, as before in the estimate of enrollments, the statistics vary, but the general picture remains clear. In order to maintain the current student-instructor ratio, which is approximately thirteen students for every instructor,¹⁵ our colleges and universities will have to add more teachers in the next fifteen years than in all previous history combined.¹⁶ For every ten now employed, the Fund asserts, somewhere between sixteen and twenty-five new ones must be found between now and 1970. In 1970, we will need a total of between 377 thousand and 495 thousand instructors.¹⁷ Of course, these statistics indicate quantity needs, without regard for degree status or quality of instructors. The Fund's report also sees the possibility of the proportion of all college teachers with a Ph. D. degree declining to near the twenty per cent

14. Teachers for Tomorrow, p. 7

15. *ibid.*, p. 19

16. *ibid.*, p. 19

17. See Appendix A for a year by year estimate by Fund officials of the instructor requirements through 1970 according to both methods of estimating future enrollments. (See also footnote six in this chapter.) Between 1956 and 1970, 337,000 to 484,000 new teachers will be needed to compensate for additional enrollment and four per cent replacement. See Teachers for Tomorrow, p. 55.

level by 1970. This would represent a major retreat from the pre-World War II ratio of Ph. D. instructors to total number of instructors, which was approximately sixty per cent.¹⁸ The conclusion is reached that:

Our colleges will find it impossible in the course of the next fifteen years to hire new teachers of the same quality and educational preparation as their present faculty in great enough numbers to maintain present student-teacher ratios. This means that the typical college students in 1967 or 1970 will most certainly encounter fewer really able teachers than today's student.¹⁹

Although the critical years are yet ahead, there is evidence that shortages are already occurring. One college placement service reports that in 1955, 2,164 college teaching positions were reported, an increase of forty-three per cent above the previous year.²⁰ A study group at Pennsylvania State University reflects the general viewpoint of many educators: "It seems highly probable that colleges and universities will not be able to build their faculties adequately to meet the expected increased enrollment of 1958-60 and forward."²¹

18. If every recipient of the Ph. D. degree during the next fifteen years went into college teaching, this would represent but roughly thirty-five per cent of the instructors needed. Furthermore, it would be unrealistic to suggest that all would enter education. See Appendix A for the employment distribution of 1931-1940 degree holders as of Sept. 1940 and the expected Ph. D. recipients year by year through 1970.

19. Teachers for Tomorrow, p. 25

20. "Jobs for Graduates--Plentiful, Pay Rising," U.S. News and World Report, March 9, 1956, p. 98

21. Carpenter and Greenhill, p. 3.

From the above discussion several facts seem apparent:

1. Higher education benefits our society and culture and individuals within our society; hence, an increased enrollment in colleges and universities is desirable.

2. More than thirty per cent of college-age young people are seeking education beyond the secondary level and the trend appears to be toward an even greater proportion. Combined with the increases in population, this means a skyrocketing of college and university population in the next twenty years.

3. Perhaps one of the most crucial obstacles to more education for more people is the present and pending shortage, both numerically and qualitatively, of instructor-power.

Some suggested approaches to the problem. In general, there seem to be two ways of meeting the "tidal wave." Some institutions feel they can benefit education best by not expanding enrollments appreciably. President Griswold of Yale University believes that "Every American college and university bears an obligation to do all it can to meet the increased demand for higher education in the United States." However he opposes quantitative expansion.²²

Russell D. Cole, President of Cornell College, finds his institution in this predicament: "On the one hand, we at Cornell want to remain a small college. On the other hand, we want to assume our share of the responsibility for the increased load which will be placed on higher education."²³

Another approach, too, is being taken by other institutions. Rather than limit, they are expanding enrollments and are attempting to spread the influence of their instructors

22. "More College Presidents Discuss the Rising Tide," p.280.

23. Ibid. p. 266.

over more students. Harold F. Clark, Economic Analyst at Columbia University's Teachers College, has emphasized this latter approach:

Some ways will have to be found to use teachers more efficiently than they are now being used. This means on the average that teachers will probably have to handle more students. The only alternative seems to be a great increase in the number of teachers. No such increase is available without lowering quality.²⁴

Speaking about the teaching profession in general, James E. Allen, Jr., New York State Commissioner of Education, commented in this same theme:

Almost every other profession has developed methods and practices which permit the successful practitioner to be of wider service. By employing assistants and utilizing modern labor saving devices and professional aids, members of other professions have been able to extend the sphere of their services and influence and improve the quality of their work. In the teaching profession, generally speaking, the opposite has been true. We have tended to limit rather than extend the services of good teachers. Faced with a shortage of qualified personnel, we can no longer afford this limitation. Rather we must devote our attention to devising ways of extending the talents of the good teachers we already have...The situation makes it imperative that we think in terms of maximum efficiency in the use of a limited number of teachers available to us.²⁵

Several alternatives designed to increase the scope and efficiency of the better instructors in the face of increasing enrollments and relatively static instructor-power have been proposed. These include:

24. Teachers for Tomorrow, p. 38.

25. ibid. p. 30.

1. Greater use of graduate assistants.
2. Greater use of instructors of less-than-desirable calibre.²⁶
3. Fewer lectures and "paraphenalia" such as tests, attendance taking, grades, etc., with more responsibility and independent study for students.
4. Greater use of large auditoria for lectures.
5. Greater use of audio-visual aids and television.

The newest of these possible aids appears to be the use of television--more specifically, closed-circuit television--in instruction. Siepman has observed the educational potential of the medium. He has stated:

...let me assert that I believe that educational theory is probably sound when it claims that education or instruction is best when you have intimate, two-way communication between a brilliant teacher and a responsive and intelligent student. But, if we are realists, we know that such conditions are as rare in practice as in theory, however much we would wish them to arise frequently. The number of outstanding and gifted teachers are few. Necessity alone drives us to the conveyor-belt operation of "sections." Television relieves us of the necessity. Television makes possible the conservation of skill by the opportunity it offers one man with a high degree of skill to disseminate that skill which at present, as bounded by a classroom, cannot be done...It is one of the many assets that television has to offer.²⁷

26. Naturally, it would be best to increase the number of good teachers rather than have to extend the influence of the present number. A report from the National Education Association and the American Association of School Administrators recommends doing this by using some retired instructors and encouraging more women and minority group members toward college teaching. See "Colleges Are Urged to Double Capacity," The New York Times, July 1, 1956.

27. Charles Siepman, "Educational Television in the United States," Symposium on Television Training and Training Research, (Port Washington, L.I., N.Y., 1952), p. 16.

Knowles has indicated that visual aids might be useful in pressures for more instructor-power. He says:

It is reasonable to expect that in the future effective teaching may be done with a higher student-teacher ratio than is now considered essential in some institutions. This will result from the recognition of the fact that many impersonal explanations may be given more effectively by use of audio-visual aids and other new techniques of communication than by lectures and demonstrations by the individual faculty member himself.²⁸

Pennsylvania State University is one of the several institutions where classroom television has been getting an extensive investigation. A report from the school says:

It seemed possible last year (1954), and the possibilities are now increased, that closed-circuit or instructional television may be appropriately employed as one means of partially solving problems of the anticipated large increases of student enrollment and shortages of faculty competencies by making it possible for available instructional manpower to present courses to large numbers of students.²⁹

Because of such observations on the potentialities of television in the enrollment situation by competent authorities, and because it is one of the newest approaches, the remainder of this paper will be devoted to its further exploration.³⁰

28. Asa S. Knowles, "How Can Colleges Meet the Impending Teacher Shortage," Educational Record, XXXVI (1955), 132.

29. Carpenter and Greenhill, p. 8

30. This should not be construed to mean that this method is considered by the author to be the best approach; but that this alternative warrants investigation.

CHAPTER II.

Television in Education

Types of television in education.¹ There are two general ways in which television has been used in education. Neither method pretends that television is the teacher. For, as Kelly has expressed it, "The electronic gadgetry that makes up television is not a teaching machine. It may become the arm of teaching but not the brain."²

The first of these ways consists of broadcasting courses through the facilities of regular commercial or educational broadcast television stations. These may be received by all those persons with sets within the range of the telecasting station. The "reward" for taking such courses varies from situation to situation. In some instances full college credit is offered; in others certificates are awarded; while in still others no formal acknowledgement of course completion is made.

The second way of using television in education is in the application of closed-circuit systems. This method restricts the audience to those having access to the predetermined receiving sets within the system. Instead of transmitting the picture and sound freely into the air, the audio and video are distributed by microwave and/or cable systems. This usage is the one of concern in this paper although results of studies in broadcast courses will be added to closed-circuit results.

1. "Education" shall refer to regular academic courses rather than general "educational" programs broadcast by stations.

2. George A. Kelly, "Television and the Teacher," The American Psychologist, X (1955), 591

Applications of television to education. Agencies of the Department of Defense and civilian educational institutions alike have been active in the exploration of the uses and effectiveness of television for teaching purposes. Some of the applications of the medium were discussed and demonstrated in a symposium at the Navy's Special Devices Center attended by military and civilian personnel, including psychologists, educators and television specialists.³ Among the capabilities exhibited were:⁴

1. The ability to bring the student close to the subject matter through the use of closeups;

2. The ability to "spread out" components of demonstration units where few such items are available because of cost or general shortage;

3. The ability to incorporate latest techniques easily and quickly into a presentation;

4. The ability to take advantage of the better instructor by "spreading" him out over more people than would be feasible in an in-person situation.

McIntyre and Greenhill, in their list of potential uses of television for classroom instruction, include the presentation of experiments through the medium. They write:

Experiments in psychology are frequently described but not performed because it is impractical or impossible to bring the laboratory equipment into the classroom, and [labs] are not set up to accommodate more than a few students. These experiments or demonstrations could be performed in the labor-

3. Symposium on Television Training and Television Research.

4. E.G. Sherburne, Jr., "Television at the Special Devices Center," Symposium on Television Training and Television Research, pp. 35-36.

atory and televised to the classes in other buildings...Selected clinical interviews could be televised so that students could watch and discuss the techniques of an experienced therapist or another student and, of course, observe the behavior of the client.⁵

In their discussion of presenting lectures through television, McIntyre and Greenhill suggest four ways in which these might be offered, other than direct, one-way, non-participating television lectures. These include:⁶

1. Lecture plus recitation, where one instructor lectures on television to multiple classes for "n" hours per week, with a classroom instructor conducting individual classroom sessions in whatever way seems best to satisfy the student needs.

2. Lecture plus discussion panel, where one instructor lectures for "n" hours per week with a rotating panel of students discussing particular questions raised from the presentation. This latter part would also be televised.

3. Lectures in an auditorium with television receivers placed advantageously among the students. This would be primarily for demonstrations of material and equipment.

4. Rotation of students from the television originating room to the television receiving room, allowing all students to participate some of the time, i.e., while they are in the originating room.

5. Charles J. McIntyre and Leslie P. Greenhill, "The Role of Closed-Circuit Television in University Resident Instruction," The American Psychologist, X (1955), 599. That these uses are applicable to other types of courses should be apparent. Paulu describes one application of television by the medical profession: "The camera was suspended above the operating table...and the visibility was excellent. The camera could be focused, pointed and directed from the control room which was adjacent to the operating theater...I could get the approximate view that is had by a medical student if he gets on the little catwalk which surrounds many operating theaters." See Burton Paulu, "Survey of Developments in Education," Symposium, p. 72. The Browning movement and other demonstrations in physics are being shown students through television at Cornell University. See Sherburne, p. 31.

6. McIntyre and Greenhill, p. 598

Another technique that has been attempted involves the use of microphones in the receiving rooms to allow viewing students to question the instructor presenting the televised course.⁷

Summary of chapter. Television for direct teaching of courses and for training information has been used in two general ways:

1. The telecasting of instruction over regular broadcast television stations;
2. The presentation of courses through closed-circuit television systems.

Television has been applied in several ways to teaching, which include using the medium to transmit:

1. Lectures, with variations of techniques;
2. Demonstrations, experiments and closeups of equipment.

7. See below, p. 29 for a description of this system at the State University of Iowa.

CHAPTER III.

Television Courses

Scope of subjects. More than twenty different college-level subjects have been taught through the television medium. Some have been telecourses¹ while a number have been taught in the classroom--resident instruction--through closed-circuit systems. Among the courses that have been presented through either or both methods are:

Education	Speech
Guidance	Languages
Psychology	Art Appreciation
Philosophy	Music Appreciation
Religion	Natural Science
Literature	Biology
Economics	Physics
Commerce	Chemistry
Government	Medical courses
History	Geography

In addition to these college courses, others, including home-making, sewing, first aid, and various military subjects of both a technical and non-technical content, have been presented.

As of May 1955, fifty-five colleges and universities were known to be offering courses for credit through the facilities of regular television stations. These schools were offering a total of approximately 186 college-level courses for academic credit.²

1. Telecourses are courses offered through television stations.

2. Letter from the American Council on Education. The number of closed-circuit courses is somewhat less and will be discussed more fully in the next two chapters. (See I.R. Merrill, U.S. TV Credit Course Enrollment, (East Lansing, 1955).

Evaluation of effectiveness. Much of the evaluation of the effectiveness of courses offered through the facilities of television stations has been in terms of total telecourse enrollment and listenership. In some instances, evaluations based on attained marks have been made.

Evaluation of closed-circuit television courses and measurement of student achievement in these courses appears to have been more systematic, perhaps because more control has been possible in these situations. In addition to considering marks attained, several studies have taken into account the level of information before and after exposure to the lessons and the amount of material retained. (It should be noted that proponents and opponents of television in education suggest that statistics do not always give a complete picture of television's effectiveness.)

Some of the uses, evaluations and results of television in teaching situations will be discussed in the following two chapters.

CHAPTER IV

Case Studies of Television in Education--Military Training

Special Devices Center, U.S. Navy. The Special Devices Center at Port Washington, Long Island, has contributed several studies to the investigation of closed-circuit television. In one study, eight one-hour lessons concerning the operation of an infantry division were given to three thousand reservists in groups of 160 over a period of eight weeks. The groups, composed of officers and enlisted men ranging from colonel to private, were tested before each lesson, again immediately after, and again three to six weeks later. According to one report,¹ "All grades of officers and men made significant learn-gains after receiving televised instruction. Tests on retention showed that both officers and enlisted men retained a substantial amount of material over a period of from three to six weeks."

In another study by the same organization, three groups, each composed of one hundred Naval air reservists, were given two series of eight lessons each. One group received in-person instruction, another got the same material televised, and the third group was taught by means of television kinescopes. To its own question: "Do men taught by television learn as much as men taught by conventional classroom instruction?"--the Center reports that eighty per cent of its comparisons show television instruction to be as good or better than local

1. Carpenter and Greenhill, p. 71. See also Clifford Seitz, "Summary of Military Television Research," Symposium, pp. 137-145.

instructors. In comparing the kinescope recordings with the television presentation, the organization says that ~~eighty-four~~ per cent of the comparisons show the recordings to be as good as the direct television instruction.²

Seitz of the Center's Human Engineering Division concludes:

As a result of these studies³ and experience, it is our firm conviction that training can be successfully undertaken through the medium of TV...We have done what might be called the preliminary research which indicates fairly clearly that one can teach effectively by television.⁴

U.S. Naval Academy. In another study conducted at the United States Naval Academy at Annapolis, two classes of students were divided so that half would receive conventional classroom instruction while the second would receive its lessons via television. For the second lesson the groups were switched. The instructors in each situation were briefed beforehand in an effort to make the course uniform for both groups, thereby reducing the possible differences. These men were given prognostic tests before the instruction, a fifteen minute achievement test immediately after and an achievement test about six weeks after the evaluation program.

2. Seitz, pp. 137-149.

3. In his text he refers to studies in addition to the two reported in this immediate section. Some of these will be discussed below.

4. Seitz, p. 138. Italics in original text.

The Academy's report notes that:

The final advantage, in terms of attained learning as demonstrated by scores on the retention test, was in favor of the groups taught by television in both cases; ...this in spite of the fact that the prognostic tests showed both non-TV groups to be better prepared at the outset of the tests than the groups scheduled to receive TV instruction.⁵

The report suggested that even better results might be obtained after more experience with the techniques of television teaching had been acquired. It was further noted that television was not to be regarded as a substitute, but another aid or tool with which the instructor can present lessons more effectively. In addition, it said, there were other advantages to television instruction which could not be accounted for in quantitative terms.⁶

Human Resources Research Office. Another organization which has been active in television research for training is the Human Resources Research Office (HUMMRO) of George Washington University. In its study at Camp Gordon, Georgia, it compared in-person instruction effectiveness with televised instruction effectiveness. Two companies of men, approximately two hundred in each company, were divided in half and matched

5. The difference was small, being of the order of two per cent computed on the basis of a maximum attainable score. See Evaluation of the U.S. Naval Academy Educational Television as a Teaching Aid, (Annapolis, 1954), p. 14.

6. Ibid. p. 2. Television as an instructional aid has been used at the Academy since 1953-54.

according to Army intelligence test scores. Half of the group received fourteen hours of basic training instruction directly from the instructor in a large lecture hall. The other half was divided into nine sections which received the same lessons televised. Two instructors were alternated between the lecture hall and the television assignments to reduce the influence of differences attributable to instructors. At least three conclusions were drawn from the results:⁷

1. Televised instruction by the method used was at least as effective as regular instruction.

2. Television instruction was more effective for lower aptitude groups.

3. Televised instruction was remembered at least as well as regular instruction.

Another study by the same organization involved three thousand men over a period of three months. Matched groups were given in-person and televised lessons in electronics. Instead of giving each test group the same presentation as had been done in previous experimental situations, the television instruction utilized special techniques such as closeup pictures which were appropriately inserted in the video portion of the lesson. It has been reported that the teaching was either improved or was the same as the regular instruction.⁸

Other Army studies. The Signal School at Fort Monmouth, New Jersey, conducted another study from which it concluded

7. Carpenter and Greenhill, p. 72

8. See Appendix C for source.

that television instruction was just as effective as regular instruction. The School used pre-tests, post-tests, questionnaires, observations and discussion in evaluating the programs. Sub-courses of a technical nature, radio and radar primarily, were presented in the conventional manner and by television. Although the actual test results were in favor of televised instruction, it was thought by the investigators that this difference might be the function of differing instructors' capabilities.⁹

One hundred-twenty-eight ROTC students at the University of Houston were the subjects for another television and conventional type teaching comparison. The subjects were divided into two groups. "According to M. Robert Allen of the Quartermaster Command of Fort Lee, Virginia, there was no statistical difference between the amount of learning absorbed by the two sections."¹⁰

At Fort Slocum, N.Y., the Army Chaplain School experimented with a single instructor teaching two groups--one receiving televised instruction and the other in-person instruction--simultaneously. The trial resulted in no noticeable difference in amount of information retained by the student groups.¹¹

9. Carpenter and Greenhill, p. 71.

10. W.K. Cummings, This is Educational Television, (Ann Arbor, 1954) p. 118

11. *ibid.* p. 83

Another extensive research program is being carried out at the Signal Schools (Camp Gordon, Georgia and Fort Monmouth, New Jersey) to evaluate the effects of intensive use of the medium for teaching. Trainees are being exposed to thirty-eight hours of continual television instruction spread over five days in an electronics subject.¹²

U.S. Air Force. The United States Air Force conducted tests at Keesler Air Force Base, Mississippi, with the expressed object--

To evaluate the effectiveness of closed-circuit television as an instructional medium in comparison with conventional methods of presentation.¹³

Two matched groups of 120 Air Force trainees each were given a three-day segment of an electronics fundamentals course. One received conventional, the other televised instruction, with controls used to guard against differences due to instructors. The experiment phase of the eight-week course was carried on for four successive training groups with a fifty item multiple choice achievement test used as one basis of evaluation. An excerpt from the Keesler report reads:

From the results of these experiments, the implications are that television is an economical medium for conducting mass training. Certainly, it is not advocated that instruction by television should replace the "learn

12. Information from a letter from Joseph Kanner of the Army Pictorial Service Division. A report is expected later in 1956.

13. Ernest C. Dowell, An Experiment in Training by Television, (Keesler Air Force Base, Miss., 1954) p. 8a.

by doing" process nor is it desirable to eliminate the highly beneficial "face-to-face contact between instructor and student." The premise is that one outstanding instructor with imagination and the ability to arouse interest will be more effective in teaching large numbers of students through the use of television than will several mediocre instructors, working directly with small groups.¹⁴

Television was again tested by the Air Force at the Mississippi installation as an aid in demonstrating a complex and dispersed system of radar, with no television instructor involved. No statistical appraisal was made.¹⁵

14. *ibid.*

15. E.C. Dowell, Closed Circuit Television Demonstration, (Keesler Air Force Base, Miss., 1955).

CHAPTER V.

Case Studies of Television in Education
Colleges and Universities

Pennsylvania State University. One of the most complete and fully reported investigations in the use of television for instruction was a project at Pennsylvania State University, sponsored by the Fund for the Advancement of Education during the 1954-55 academic year.¹ Courses were taught in General Psychology, Psychology of Marriage and General Chemistry. Scores of groups receiving lectures from standard lecture rooms, television receiving classrooms and television originating lecture rooms were compared, and instructors, students and observers were asked to evaluate the experiment's results and the effectiveness of the relative teaching situations. The general conclusions from the study appear to be favorable to closed-circuit television instruction on the college level. Some of the findings include:

Objective One: To compare the relative effectiveness of conventional instruction with the same instruction presented over closed-circuit television for a full academic semester.

Relevant Finding: The overall comparative measurements did not yield significant differences in informational learning by students in two different courses of psychology and the lecture demonstration part of general chemistry...

Objective Six: To explore the possibilities of using closed-circuit television to extend the power and influence of good and superior instruction to large numbers of students.

Relevant Finding: Practical use of two systems suggests that the potentialities are very great for using single or

1. Carpenter and Greenhill, An Investigation of Closed-Circuit Television for Teaching University Courses.

multiple systems of closed-circuit vidicon television for channeling excellent instruction from a single source or sources to a very large number of university students.²

After a full academic semester of closed-circuit television, the Pennsylvania report said:

It is logical to conclude that there is no basis in the evidence found on information learning for rejecting the use of instructional television for teaching courses and students like those used in this experiment. The degree to which this conclusion can be generalized to courses, methods and student populations other than those sampled in this project still remains to be determined.

The evidence available indicates that decisions to use or not to use instructional television in such courses as studied in this experiment and for defined student populations must be made on the basis of administrative policies, acceptability of televised instruction to students and faculty, and other practical considerations. Such considerations cannot be made only on the basis of difference scores in the amount of informational learning by students taught directly by several conventional methods compared with televised instruction.³

The Pennsylvania study outlined the philosophy it suggests for employing closed-circuit television in these terms:

The central justifiable purpose of employing closed-circuit television is to maintain or raise standards of instruction, to serve an increasing number of students and to accomplish these objectives within severe limitations of the number and quality of available faculties as demands on them are increased.⁴

2. Carpenter and Greenhill, page unnumbered in beginning.

3. *ibid.* p. 48.

4. *ibid.* p. 68

During the fall semester of 1955, Pennsylvania's Instructional Research Program consisted of a large number of comparative and developmental experiments. In the comparative field, major emphasis was given to different types of television presentations and their relation to student achievement. In all, seventeen experiments were conducted involving nine different subjects and were concerned with the following main problems:⁵

1. The effect on student achievement of varying the size of classes in the television rooms;

2. The effects on achievement of the use of proctors to supervise teleclasses;

3) The effects on students' achievement and attitudes of several different patterns of instruction designed to provide for students' questions, discussion and problem solving;

4. The use of a "free choice" situation as a measure of students' attitudes towards the value of televised instruction.

In the reported results, no significant differences existed in any of the students' achievements under the variable situations noted above.⁶ In one comparison of students receiving instruction in the originating room of the televised lesson with those in the rooms equipped with the television sets, again, no significant differences were in evidence.

By spring 1956, 3,300 students were receiving closed-circuit instruction at the University.⁷

5. C.R. Carpenter, Penn State TV Research Project, Progress Report, (University Park, 1956).

6. One of the experiments in the third category listed above did not have an achievement score analysis completed when the report was issued.

7. "Education News," The New York Times, April 8, 1956.

University of Toronto. In a study at the University of Toronto, financed through a grant by the Fund for Adult Education, four groups of students were checked for effectiveness of different methods of lesson presentation. One group received the instruction televised; another received it broadcast by radio; a third was present for the lesson in the studio receiving it directly from the instructor; and a fourth group studied mimeographed copies of the lesson for a comparable span of time. All groups received the same lesson from the same instructor simultaneously. On test questions, those exposed to the televised lessons achieved the best marks, with radio and manuscript exposure following in order. The studio group, which did poorest, was eliminated from the comparisons because it was thought that its performance might have been hindered by studio distractions.

One report says that the University's E.S. Carpenter has expressed the opinion that "the research showed the unembellished lessons on television are at least as effective as lectures in-person to a reasonably small group."⁸

The State University of Iowa. At the State University of Iowa an exploratory course was taught by closed-circuit television, incorporating an audio talk-back system to allow students to ask questions of the instructor presenting the television instruction. Kelso writes that this preliminary study, involving a course in comparative government, had satisfactory

8. Cummings, p. 118

results. In his own words:

This exploratory course successfully accomplished its purpose by demonstrating that, with the techniques used, one professor can teach successfully a sizeable class on a decentralized discussion basis. The presence of the "talkback" sound circuits for student response captures a great deal of the normal classroom situations and certainly approximates the atmosphere of the small discussion class.⁹

A further experiment of this type was planned for the 1955-56 academic year. Incorporating more controls, this test was arranged on the assumption that students can learn from a television lecture. No results have been announced.¹⁰

Other college studies. In 1951, Syracuse University experimented with teaching via closed-circuit television. In its investigation, one group of students attended a course in citizenship taught through television, while another group took the same course in the studio. The television group was reported to have done "as well" as the group receiving direct instruction when each was tested.¹¹

Chicago Teachers College called television "gratifying" as a practical aid to instruction and "more than a gadget or interesting novelty" for showing small parts to classes.¹²

9. H.E. Kelso, "Classroom Discussion Via Television," Education Digest, XXI. (1956), 39.

10. Educational Television Newsletter, No. 11 (Washington, 1955), 2.

11. Cummings, p. 83.

12. Phillip Lewis, "Closed-Circuit TV, New Tool for Teachers," Chicago School Journal, XXXV (1953), 69.

Another Iowa institution, Iowa State College, has been experimenting

to determine whether closed-circuit TV can be used to extend the skill and experience of a senior professor to more students for more hours, while at the same time maintaining (if not improving upon) the quality of instruction now given by more conventional methods in freshman chemistry.¹³

At present no results are available from these recent experiments.

Stephens College has inaugurated a system in which one professor lectures simultaneously to fifty classrooms where students meet in small groups. It operates with this philosophy:

These lectures provide the initial stimuli for independent discussion which takes place in each classroom under the leadership of two faculty members. The ideas introduced by television make possible a common experience directly linked with wholly independent discussions developed by class section.¹⁴

New York University initiated an experiment during the 1955-56 academic year with a supporting grant from the Fund for the Advancement of Education. The study, centered around courses in college composition and the Literature of England, was directed

toward determining whether or not educational television can actually be useful to 1) extend the effectiveness of the individual teacher and improve the quality of instruction, 2) meet

13. Educational Television Newsletter, No. 11, p. 3.

14. ibid.

teacher shortage, and 3) enable the teaching profession to share more fully the improved standard of living of the American people by extending individual effectiveness through technological devices.¹⁵

During the week, two periods are devoted to several senior faculty members who deliver the televised lecture-demonstrations. During a third hour, small groups of students meet with their section instructor throughout the term for tutorial sessions. New York University expects to have a report available before the 1956-57 academic year.

Medical uses. The medical profession has been utilizing television extensively in its instructional programs. Much of the application is for demonstrations and observations of operations, although lectures and explanations have also been presented through the medium. A number of medical schools maintain their own closed-circuit systems. The American Dental Association has reported that eleven dental schools are using television in their instruction. Of these, six have closed-circuit installations with others expected to have them in a few years.¹⁶

Closed-circuit television conference. In February 1956, a conference on closed-circuit television was held under the joint sponsorship of the Committee on Television of the Ameri-

15. ibid.

16. Educational Television Newsletter, No. 13, p. 4. Medical and Dental schools with television facilities are listed in Closed Circuit Television Installations at Educational Institutions, (Washington, D.C., 1956).

can Council on Education and the State University of Iowa.

The consensus of the eighty-five persons attending, representing fifty-eight institutions and sixteen organizations and foundations, was

that teaching by television can be done effectively and with as good results or better than by usual methods of instruction... but all are concerned with exploring further methods and evaluation of the present experiments.¹⁷

17. Higher Education and National Affairs, V (1956), p. 3.

CHAPTER VI.

Case Studies of Television in Education--Telecourses

Introduction. Early in 1956, the New York Times carried a news item containing the following excerpts:

An educational experiment [inspired] by rapidly expanding enrollments and a shortage of teachers and classrooms was announced this week by San Francisco State College...The experiment will use television to teach students at home... An evaluation program will measure television students against those receiving instruction in the classroom...

"We are not undertaking this project with the idea that it will provide any ready-made solutions. However, the problems which face higher education are so staggering and their solution so important to the future that we believe every means of increasing the effectiveness of the college teacher needs to be exposed.¹

Presenting courses through mass media is, of course, not new. Harvard, the University of Chicago and others have offered courses over radio for several years. In various parts of the country a number of universities and educational television stations have already started broadcasting off-campus extension college courses. These have been offered with and without academic credit and with differing administrative and financial arrangements. In this paper, interest in these telecourses lies primarily in a review of their apparent effectiveness.

A Sample of Telecourses. The University of Houston offered courses in Elementary Psychology and Elementary Biology

1. "College Courses by TV to be Tested," The New York Times, Feb. 5, 1956. Quote by Paul Leonard, President of San Francisco State College.

and found no significant statistical difference in student grades, whether they studied using television instruction or attended the conventional classroom. The mean scores were higher for those studying psychology by television, but lower for those studying biology in the same manner.²

Husband has reported that persons taking a telecourse in General Psychology, presented by Iowa State College, received better grades than three other groups "presumably exposed to the same materials."³

Western Reserve, one of the pioneers in telecourses, has entered its third year of televising regular classroom instruction. White has noted that:

Even in this short time, it is safe to say the experiment has been successful in every respect and shows bright promise for the future. Further, it is also safe to say that the medium has passed its initial test as a teacher.⁴

To this the institution's president, John S. Millis, adds

I think we have demonstrated to our present satisfaction that, subject to future drop-off in interest and success, television can be adapted, with relative simplicity, to formal education without loss either of integrity of the enterprise or of the standards we are familiar with or accustomed to...

2. R.I. Evans, H.B. Roney, and W.J. McAdams, "An Evaluation of the Effectiveness of Instruction and Audience Reaction to Programming on an Educational TV Station," Journal of Applied Psychology, XXXIX (1955), 277-279.

3. Richard W. Husband, "TV Versus Classroom for Learning General Psychology," The American Psychologist, IX (1954), pp. 181-183.

4. John F. White, "Telecourses at Western Reserve," Adult Education, III (1953), 116.

I think we have demonstrated to our current satisfaction...that what students get in terms of quality or quantity (which we measure by examination) is just as great as that obtained in the classroom...the television students perform as well, as a matter of fact, statistically much better.⁵

According to Siepmann, reports from Western Reserve said that instructors were amazed at the excellence of the written work. "The papers were stimulating, thoughtful and often refreshing."⁶

Morris Harvey College presented a course in Audio-Visual Education through the facilities of a West Virginia television station and found that ninety-seven of the 103 registered for the course completed it successfully. Of the ninety-seven, six did "outstanding" work and received "A" grades. Integrated into the telecourse were three campus meetings during the semester.⁷

Siepmann reports that television is being used in rural education in France and that "teachers generally express satisfaction and interest in the transmission."⁸ According to the report, television is being used in rural and adult edu-

5. John S. Millis, "Formal Education by Television," in A Television Policy for Education, ed. C.V. Newsom, (Washington, D.C., 1952), pp. 42-43.

6. Siepmann, "Educational Television in the U.S.," Symposium, p. 9.

7. Harry M. Brawly, "AV Telecourse," Educational Screen, February, 1956, pp. 54-55.

8. Siepmann, Television and Education in the U.S., (Paris, 1952), pp. 17-18.

cation where education is hampered by lack of funds and by a consequent scarcity of educational resources. The televised portions of lessons are usually followed by discussions guided by a village teacher. The system has been termed a success.

The Educational Testing Service, in a study for the American Red Cross, found that on a written test in a home nursing course television students did as well as students who received in-person instruction. However, they did slightly less well on a performance test.⁹

Summary of case studies. From these chapters on television instruction by military and civilian agencies, several summary points emerge. These include:

1. A number of colleges, universities and military researchers have experimented with television in order to make more efficient use of their instructors and demonstration equipment, extending both over a greater number of students.

2. An abundance of evidence and testimony gives considerable weight to the suggestion that students receiving televised instruction learn and retain as much information as those receiving conventional classroom instruction.

3. Some consideration has been given by educators to the fact that there are advantages and disadvantages in televised instruction which cannot be readily measured.

9. Carpenter and Greenhill, p. 72.

CHAPTER VII.

The Problem

The Pennsylvania State University report suggested that:

...decisions to use or not to use instructional television...must be made on the basis of administrative policies, acceptability of televised instruction to students and faculty, and other practical considerations.

That attitudes of persons involved in such a change as would take place with the advent of closed-circuit television should be considered in order to obtain optimum cooperation and results has been demonstrated in several studies.¹ Corbett has indicated this in reference to the educational field. He says: "Lack of money, inertia and emotional responses to suggested changes retard new educational methods to a degree unknown to the field of technological change."² This problem of acceptance has been emphasized by a special Dartmouth College study group which reported:³

...to the extent that such differences between conventional and televised instruction exist, it is at least possible that they may be based less on inherent limitations in the medium itself than on certain psychological factors, and perhaps

1. For example see Kurt Lewin, "Conduct, Knowledge and Acceptance of New Values," in Resolving Social Conflicts, (New York, 1948); Herbert Hyman and Paul Sheatsley, "Some Reasons Why Information Campaigns Fail," in Public Opinion and Propaganda, ed. D. Katz, (New York, 1954); and Roethlisberger and Dickson.

2. Thomas E. Corbett, "Television for Educational Institutions," Educational Record, XXXI (1950) 178. Italics supplied.

3. "A Faculty Committee Looks at Educational Television," Educational Record, XXXV (1954), 298.

some human frailties, on the part of either teacher or pupil or both, which time and application may overcome.

McIntyre and Greenhill note that two major barriers appear to hinder the use of television for resident instruction:

One is cost...the other barrier may be referred to broadly as faculty resistance, meaning degrees of objection to TV ranging from mild apathy to rather strong protest.⁴

Because of the apparent importance of the attitudes of those potentially involved in closed-circuit television, it was decided that an investigation of one group--faculty members--be made to gather data concerning instructors' sentiments toward the resident use of the medium at schools where it is not yet used.⁵

One of the principal objectives of the study was to discover whether instructors would approve of television being used in conjunction with their courses. A second part of the research was aimed at discovering whether certain other factors or conditions appeared to be related to the expression of approval or disapproval. There were five original factors or conditions studied:

1. The instructors' familiarity with studies and experiments in which television had been used in resident instruction.

4. McIntyre and Greenhill, p. 600.

5. In its experiments of fall, 1955, Pennsylvania State University investigated the attitudes of students and faculty. However, its study was directed toward those who were already involved or in close contact with the use of closed-circuit television. The study has not yet been fully analyzed. (In this paper "instructors" will be used synonymously with teaching personnel rather than as an indication of rank.)

The suggestion that a relationship might exist came from a Dartmouth College committee report⁶ which stated:

Despite a profound skepticism widely shared at the outset within the [faculty] committee as to the usefulness of television to an institution such as Dartmouth; despite a fundamental reluctance to encourage an adventure by the college along a course which is not only untested in our own indigenous educational practices but is likewise largely untried, at least conclusively, in the entire sphere of American education; despite the difficulties of pinning down many of the facts, to say nothing of the issues; and despite knowledge of the very considerable outlay of funds and manpower inevitably involved, the committee has come gradually to the conclusion that the potentials of television in education are so enormous that it is likely that no institution of higher education will in the future be regarded as fully capable of realizing its purposes without having in some fashion made this instrument its servant.

The Dartmouth committee, in spite of its initial reluctance toward the medium, and after carrying out extensive investigations concluded:

1. Television is already one of the most powerful instruments at work in America for the communication of information and ideas...it seems probable that in the field of organized education, beginning at the primary level and carrying through higher education, television will assume an importance second only to the printed page.

2. ...educational institutions which...are unable to turn television to their purposes are likely to fall dangerously behind the procession.⁷

2. Length of time teaching.

The Pennsylvania study provided the hint for considering

6. "A Faculty Committee" p. 293

7. *ibid.*

this factor. In the report it suggested that among the determinants of acceptance were the "habit strengths and accommodations to accustomed ways of teaching and the ways of ~~gaining~~ satisfaction from teaching."⁸

3. The attitude of the educators toward commercial television.

Investigators have suggested that what is done or can be done under controlled educational television may be confused with what is done or can be done by commercial television. McIntyre and Greenhill indicate that feelings of educators might be a function of

some of the resentment and disdain directed by intellectuals toward commercial television, and some, too, of the resistance which usually occurs in the face of any social change.⁹

4. Academic work load.

It was considered possible that those instructors with the heavier academic work loads would be more likely to approve of closed-circuit television instruction for their courses than those with light schedules.

5. Subject taught by the instructor.

Because differences exist in course content which usually cause presentation methods to be different, it was thought that a difference in acceptability might show up between instructors of different courses.

8. Carpenter and Greenhill, p: 64.

9. McIntyre and Greenhill, p. 601

Hypotheses. From these five variables, the following hypotheses were derived for investigation. In general,

1. Instructor acceptance of closed-circuit television for resident instruction will vary according to the amount of information the instructor has concerning the use of the medium in this context. For example, the more information the instructor has, the more he will be likely to accept closed-circuit instructional television.

2. Instructor acceptance will vary in relation to the number of years teaching experience they have. For example, the instructors with lesser experience will be more likely to accept the medium in education.

3. Acceptance will vary according to the instructors' opinions regarding commercial television. If they are strongly critical of commercial television, there is less likelihood of their accepting closed-circuit systems.

4. There will be more approval of closed-circuit television by those instructors having the larger academic work loads.

5. Acceptance of closed-circuit television will vary according to the subject being taught by the instructor. For example, those instructors teaching courses with more visual potentialities--sciences and social sciences, such as psychology and sociology--will be most apt to condone the use of television in the classroom.

CHAPTER VIII.

Method of Investigation

Sample. A group of faculty members from four New England colleges and universities was selected as respondents for the study. These included instructors in the following subject areas: psychology, sociology, history, government, chemistry, physics, English and philosophy. College catalogs were consulted for the lists of faculty members in these departments.

The eight subjects were selected because they seemed to represent a cross-section of the types of courses generally offered by liberal arts colleges. The instructors were combined to reduce the number of groups from eight to four, with similar subjects paired. The final groups were:

Group 1. Psychology and sociology instructors

Group 2. Chemistry and physics instructors

Group 3. Government and history instructors

Group 4. English and philosophy instructors

Survey instrument. A questionnaire was developed to determine acceptance and opinions regarding the use of closed-circuit instructional television. Included in the questionnaire were questions intended to reveal the respondents' opinions of commercial television, familiarity with experiments and uses of closed-circuit television in education, and such general informational questions as length of time teaching, academic work load and subject that each teaches.¹

1. See Appendix B for a copy of the original questionnaire.

A cover letter giving a brief and general explanation of the project and requesting cooperation was included with a self-addressed envelope.

Data gathering. After the questionnaire was pre-tested on staff members at the investigator's university, it was reproduced and mailed to the instructors at the four schools. One month was allowed for returns to be received and included in the analysis.

CHAPTER IX.

Results of Investigation

Returns. A total of 306 questionnaires were sent to the four institutions, with 162 returned, or fifty-three per cent. Four of the questionnaires were not tabulated because of inadequate information. The returns for each school are listed in Table 1.

TABLE 1.
Percentage of Returns for Each School

<u>School</u> ¹	<u>Per cent returns</u>
I	53
II	41
III	78
IV	54

Acceptance-rejection of Closed-Circuit Television. One of the key questions of the study asked the instructors to specify whether they would approve of television for their own courses. The answers were heavily concentrated in the "undecided," "disapprove" and "strongly disapprove" choices. These categories were selected ninety-one per cent of the time while positive and "other" answers accounted for only nine per cent. Table 2 shows the distribution of answers.

1. School I has an enrollment of approximately three thousand male students and is located in a rural area.

School II has an enrollment of approximately 2500 female students and is located in a community of about forty thousand which is near several larger cities.

School III is located in a large metropolitan area and has a co-ed student population of approximately 13,000.

School IV is located in a large metropolitan area and has a co-ed enrollment of approximately 16,000.

TABLE 2.
All Instructors' Acceptance of Television for Own Courses

<u>Responses</u>	<u>N=</u>	<u>Per cent=</u>
Strongly approve ²	0	0
Approve	7	4.4
Undecided	67	42.4
Disapprove	38	24.0
Strongly disapprove	39	25.6
Others	7	4.4

When these statistics were broken down to determine if the institution in which the instructors were teaching appeared to have any influence on their views, no significant differences among the groups were found. (See Table 3.)

TABLE 3.
Instructors' Institution and Response

<u>Responses</u>	<u>Institutions</u>				
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>All</u>
Approve	3.5%	0.0%	7.0%	8.0%	4.0%
Undecided	53.0	28.0	50.0	39.0	42.0
Disapprove	17.5	36.0	26.0	28.0	24.0
Strongly disapprove	26	36.0	17.0	25.0	25.0
Others					5.0

(Chi square test: $p=$ between .50 and .30)

It might be noted that although a very small proportion of the respondents approved of television for use in their own courses, only twenty-nine answered that television could not be used effectively in lectures, lecture-demonstrations or close-ups--hence, virtually not at all. The most frequently named effective use of the medium was for closeups, with sixty-five instructors suggesting this application, or including this category within their choice, e.g., "all of these." As might be expected, those who approved of the use of television

². This category will be omitted from further tables since it was not checked by any of the respondents.

for their own classes all thought television could be used in one of the ways listed. At the other extreme, among those who strongly disapproved, twenty-one (sixty per cent) thought that television could not be used in any of the ways specified. The distribution of answers is shown in Table 4.

TABLE 4.
Opinions Concerning the Effective Use of Television

<u>Responses</u>	<u>Type of Application*</u>			<u>All</u>	<u>None</u>	<u>No ans.</u>
	<u>Lecture</u>	<u>Lecture- Demonstra- tion</u>	<u>Close- ups</u>			
Approve	2	3	0	3	0	0
Undecided	7	14	13	17	1	5
Disapprove	7	8	17	5	7	7
Strongly disapprove	4	0	7	3	21	8
Totals	20	25	37	28	29	20

(Chi square test: $p =$ less than .01)

*Respondents were allowed to check more than one.

Information level in relation to acceptance. According to the data from the returned questionnaires, sixty-three per cent of all the instructors were unfamiliar with any classroom closed-circuit television. Eighty-two per cent of those who strongly disapproved of instructional television checked that they were unfamiliar with it. On the other hand, only twenty-nine per cent of those approving claimed to be unfamiliar. Similarly, the groups between these extreme viewpoints had percentages lying between the eighty-two and twenty-nine per cent extremes. As the percentage of those claiming familiarity increases, the percentage of those approving increases. (See Table 4.) Only nineteen per cent of the instructors were familiar with or knew of closed-circuit instructional

television in their own academic field. (See Table 6.)

TABLE 5.
Response and Familiarity with Closed-Circuit Television

<u>Responses</u>	<u>Percentage of group claim- ing "unfamiliarity."</u>
Approve (N=7)	29%
Undecided (N=67)	59
Disapprove (N=37)	68
Stringly disapprove (N=39)	82

TABLE 6.
Familiarity with Television in Own Subject Area

<u>Subject Group</u> ³	<u>Percentage of group claim- ing "familiarity."</u>
1 (N=31)	16%
2 (N=42)	7
3 (N=37)	8
4 (N=48)	23

Almost the same number of respondents did not know the results of previous attempts to use closed-circuit television in the classroom as those who were unfamiliar with this use of the medium. Only two respondents answered that they knew of instructional television bringing poor results and these two were among the "strongly disapproved" group. The complete tabulation is shown in Table 7.

The most frequently named source of information about closed-circuit television was "popular literature, e.g. Look, Time, newspapers." Educational literature was mentioned next most frequently. As might be expected from the large numbers who said they had no information, there were many who checked "none" for this question. The frequency of answers for the different sources is reported in Table 8.

3. See above, p. 43.

TABLE 7.
Responses and Knowledge of Results of Closed-Circuit
Television

<u>Responses</u>	<u>Results of studies known</u>				<u>Don't know</u>
	<u>Good</u>	<u>Satis- factory</u>	<u>Incon- clusive</u>	<u>Poor</u>	
Approve	14%	14%	14%	0%	58%
Undecided	4	10	10	0	76
Disapprove	0	5	16	0	73
Strongly disapprove	0	5	8	5	79

TABLE 8.
Sources of Information on Closed-Circuit Television

<u>Source</u>	<u>Frequency*</u>
Popular literature, e.g. <u>Time</u> , <u>Life</u> , papers	32
Literature in the education field	21
No definite source, but have heard of it	16
Through colleagues involved in it directly	10
Others (less than ten each)	15

*Respondents checked more than one category.

Instructors' Course and Acceptance of Closed-Circuit Television. The returns from the instructors in this study indicate that their subject matter does not seem to influence their acceptance of closed-circuit television. The only major break in a rather even distribution appears in Group 1 (Psychology-sociology). In this group there is a greater proportion of undecided answers than is apparent in the other group distributions. This category accounts for sixty-nine per cent of the answers in the group. In the other three groups the category accounts for only forty-six, thirty-five and thirty-three per cent of the answers, respectively. However, a chi square test indicates no statistical significance in the over-all distribution. The results are in Table 9.

TABLE 9.
Course Taught and Response

Response	<u>Subject Areas</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Approve	6%	3%	5%	4%
Undecided	69	46	45	33
Disapprove	12	27	27	31
Strongly disapprove	12	24	32	31

(Chi square test: $p =$ between .95 and .98)

Experience and Acceptance of Closed-Circuit Television.

The replies to a question about the instructors' number of years teaching were placed into one of three categories to test for significance of response distribution. Group one included those having up through four years experience; group two, those with five through eight years; while group three encompassed those instructors with nine or more years teaching experience. The data categorized in this manner do not support the hypothesis concerning the relationship between experience and acceptance. No statistical significance was found to exist between these characteristics. (See Table 10.)

Table 10.
Teaching Experience and Responses

Responses	<u>Years teaching</u>		
	<u>1-4 (N=25)</u>	<u>5-8 (N=30)</u>	<u>9+ (N=95)</u>
Approve	8%	0%	5%
Undecided	44	40	46
Disapprove	28	33	22
Strongly disapprove	20	37	26

(Chi square test: $p =$.50 to .70)

Opinion of commercial television and acceptance of closed-circuit television. All of the respondents either

thought commercial television needed great or some improvement or did not answer the question. It was felt by the investigator that the survey instrument was not sensitive enough to discover differences in these expressions (if there are any) so consequently this hypothesis was not pursued further. However, the answers indicated that approximately sixty-seven per cent of the respondents do watch television two hours or less each week.

Academic work load and acceptance of closed-circuit television. The answers to a question concerning the instructors' number of teaching hours per week were combined into four groups: instructors with up to six hours; those with seven through nine hours; those with ten through twelve hours; and finally, those instructors with thirteen or more hours of teaching per week. Again, there was no statistical significance in the distribution of responses. The distribution is shown in Table 11.

TABLE 11.
Teaching Load and Responses

Responses	Hours			
	1-6 (N=27)	7-9 (N=43)	10-12 (N=46)	13+ (N=28)
Approve	0%	7%	7%	3.5%
Undecided	48	53	39	43
Disapprove	22	21	28	25
Strongly disapprove	30	19	26	28

(Chi square test: $p =$ between .80 and .90)

Opinions expressed about closed-circuit television instruction. In one part of the survey, the instructors were asked to select from fourteen statements of opinions regard-

ing closed-circuit television the ones that came closest to reflecting their own opinions. No restriction was placed on the number of selections. The most frequently checked statement was one which said that television would achieve less (than conventional presentations) because of the loss of some identification with the instructor. The following two statements most frequently selected were neutral in stand, indicating that effectiveness depended a great deal on the instructor and the subject being taught. The fourth most frequently expressed opinion was that television would create passive students. In these four highly ranked statements, then, it can be seen that opinion is generally neutral to negative. Table 12 shows the number of times each statement was checked.

TABLE 12.
Opinions Expressed Regarding Closed-Circuit Television
Instruction

<u>Frequency</u>	<u>Statement</u>
79-----	Taking into account television's advantages and disadvantages, using the medium will probably achieve less because of the loss of some personnel identification with the instructor.
71-----	The success of classroom television depends greatly on the subject being taught.
69-----	The success of classroom television depends greatly on the instructor and his approach.
68-----	Television helps create passive students.
58-----	Television would probably reduce the calibre of university courses.
41-----	Television, while not a panacea, can be helpful in the enrollment problem.
34-----	Television will necessitate courses being better organized.

TABLE 12 (cont.)

<u>Frequency</u>	<u>Statement</u>
21-----	Television provides an excellent chance to multiply our best instructors and gives many students the benefits to be derived from superior instruction.
20-----	Television will hinder the development of new instructors.
18-----	Television will probably work satisfactorily, but should not be used until absolutely necessary.
13-----	Television will hinder the development of new courses.
13-----	There is no place for television in education; it represents a threat to our academic life.
11-----	Television will develop "star" performers and simultaneously increase the teacher shortage.
6-----	Television will help put the burden of higher education where it belongs.

Differences in opinion do exist among those who have a positive, undecided and negative viewpoint on instructional television. Among those who favored television, statements (b), (f) and (m) were checked most frequently. Those who checked "undecided" checked (b) the most; undecided, (h) most frequently; and those who strongly disapproved selected (n) most frequently. The tabulation of most frequently checked statements by each set of the respondents and the point of emphasis for each statement is shown in Table 13.

TABLE 13.

Most Frequently Checked Opinions Concerning Closed-Circuit Television *

<u>Response</u>	<u>Statement</u>	<u>Frequency</u>	<u>Emphasis</u>
Approve	b	5	On instructor
	f	5	On courses
	m	5	(General)

TABLE 13 (cont.)

<u>Response</u>	<u>Statement</u>	<u>Frequency</u>	<u>Emphasis</u>
Undecided	b	32	On instructor
	e	29	On course
	m	24	(General)
Disapprove	h	26	Instructor-student
	e	25	On Course
	k	21	On student
Strongly disapprove	n	28	On course
	h	25	Instructor-student
	k	19	Student

*Statements can be found in Appendix B.

CHAPTER X. Discussion

One of the five original hypotheses appears to have been supported by the findings in this study. Apparently a significant relationship does exist between having information about closed-circuit television and acceptance of the medium in education. This would seem to hold true as long as the results of experiments such as those taking place at Pennsylvania State University, the State University of Iowa and at other institutions continue to uncover favorable results. It would seem quite conceivable that should an institution or foundation uncover data showing instructional television to be a significant drawback to the educational process for which it is used, a negative correlation might exist between acceptance and information, instead of the positive one shown in the results.

It is interesting to note that among the instructors who disapproved of television, eighty-two per cent claimed they were unfamiliar with its use. As we move away from unfamiliarity toward familiarity, we move away from strongly negative to the more positive positions.

Caution should be exercised, however, in placing too much emphasis on the information aspect of the problem. Hyman and Sheatsley, Katz and Lazarsfeld, Lewin and others have pointed out influences that may distort or act as barriers between the individual and the meaning of the in-

formation, so information per se, is not a panacea in the face of change.¹

Another fact worth noting in reference to the information of the respondents is that only two of the entire sample answered that they had heard of television working with poor results in experiments with the closed-circuit application of the medium. Most did not know the outcome or evaluations of past studies, including seventy-nine per cent of the "strongly disapprove" group. Among the "approve" group, fifty-eight per cent did not know the results of other studies.

In generalizing about the findings concerning the first hypothesis, it seems consistent to say that information concerning the applications and results of experiments and studies would sway a number of instructors toward acceptance of some use of the medium. On the other hand, because we have found from other studies that information alone is not always effective in changing opinions and attitudes, we can safely say that some instructors, regardless of empirical data, will continue to reject the educational use of the medium. Some, we can predict, will avoid information on the subject, such as the respondent who checked that he was unfamiliar with the use of closed-circuit television in education and "I hope to remain so."

1. See footnote 1 in Chapter VII. See also Paul Lazarsfeld and Elihu Katz, Personal Influence, (Glencoe, Ill., 1955); Wilbur Schramm, "The Nature and Behavior of Attitudes," and Joseph Klapper, "Mass Media and Persuasion," in The Process and Effects of Mass Communication, ed. W. Schramm, (Urbana, Ill., 1955).

The analysis of the data indicates that rejection or approval of closed-circuit television does not appear to be influenced by such factors as experience, academic work load or subject taught. In the data concerning the relationship between their reaction to commercial television and the use of television in education, no differences were found either in the expression of need for improvement of the former or in set ownership. While this latter "finding" may be accepted pending research with a more sensitive instrument, it and the finding concerning experience parallel the results of Murray's study² which found that among elementary school teachers the number of years teaching experience and the number of hours spent viewing television had no significant bearing on the teachers' attitudes toward television in education. He also concludes, in reference to our first hypothesis:

The comparative newness of television and the unfamiliarity of many educators with it may in a large measure be responsible for their cautious attitude toward its use as an instructional aid.³

It is important to note that while there appears to be some reluctance among ninety-five per cent of the sample to approve of closed-circuit television for their own courses,

2. C. Merrill Murray, A Survey of the Attitudes and Opinions Toward Television of a Selected Group of Elementary School Educators, (Bloomington, Ind., 1953). Unpublished Ph. D. dissertation, p. 30.

3. Murray, p. 163.

this does not rule out their acceptance of television in education in general. Whether this is a personal consideration in rejecting or being reluctant to accept it for their own courses, such as a feeling of inadequacy when confronted with the possibility of being in front of a television camera, or whether it is a reservation about the medium's effectiveness in any of its known applications is a matter for further investigation; but the data shows that only twenty-nine respondents, comprising twenty-one per cent of the sample, felt that television could not be used effectively in any of the suggested situations. Without including the nineteen respondents who failed to check any category, we can deduce that at least seventy per cent of the instructors responding would approve of television in some applications, but not necessarily in their own courses. An examination of the frequency of agreements with the opinions of others concerning the use of closed-circuit television sheds further light on this aspect. Of the three most frequently checked statements, two emphasized the influence of factors beyond television itself. For example, the second most frequently checked statement said that the effectiveness of television depends greatly on the subject being taught, while the third most frequently checked statement said that the effectiveness depended greatly on the instructor and his approach.

The most frequently checked statement expressed the feeling that television would probably achieve less because of the

loss of some personal identification between student and instructor. What is "lost" as a result of this restricted contact is something that we evidently cannot measure in an empirical manner. From the studies which have been reviewed in an earlier part of this paper, the evidence points to a comparable effectiveness in information transferal between the conventional and televised systems of instruction. Whether this lost, unmeasurable element can be compensated for in various systems of televised instruction being experimented with currently, or whether it is essential for all levels and kinds of courses, or whether it will ever be measurable in the end product--the "educated" student--are all matters of conjecture at this moment.

Among the respondents who strongly disapproved of instructional television, the focus of opinion was somewhat different from the other three categories. In this specific group we find a greater emphasis on television's effect on the course itself. The three most frequently checked items in each of the other categories were either more concerned with the motivational aspect (identification, passivity) or the effect of the course on the television presentation, but here we find among the strong disapprovers concern with the effect television might have on the course. In this respect, the last group seems to stand somewhat apart from the other three groups. It should be recalled that this group is the one which has the greater proportion of respondents who are unfamiliar with the workings of closed-circuit television. It

would seem from this sequence of findings that evaluations of the usefulness of television in education by at least one segment of instructors is based on preconceived, stereotyped notions rather than on an unbiased appraisal.

CHAPTER XI

Conclusion

From the evidence of this study, it seems possible to predict that institutions planning to adapt television to their instructional programs will encounter a sizeable body of uninformed instructors amid their faculties. In this investigation, many were undecided about their own use of the medium, but appeared to be favorable to the use of television in some way. There remains a core of instructors who reject television, a large majority of which are unfamiliar with its application in education.

Much of the current investigation in the field of closed-circuit television centers around eliminating the impersonal nature of televised presentations--a characteristic that half of the instructors in this study were most concerned with.

To assess the degree of acceptance that closed-circuit television would encounter in an institution would seem to be a difficult task. Either the characteristics investigated in this study were not influential, for the most part, in molding opinion, or factors leading toward approval-disapproval sentiments cancelled each other out.

More research might be done on the "products" of courses taught by television and those by conventional means, particularly in the larger classrooms or auditoria courses. This research should be directed in a field other than the statistical comparison of test scores. Whether the loss of personal contact in different degrees and in different level and

types of courses has an appreciable affect on the educational (as differentiated from the informational) development of the student is a point for further investigation, since, as has been pointed out, the generalized concern exists among educators that a loss (with no qualification) in contact will result in an inferior education.

CHAPTER XII.
Summary of Thesis

1. Colleges and universities in the United States are entering a period of tremendously expanding enrollments.
2. Although material shortages are evident, by far the greatest need in the years ahead is an increase in instructor-power which may be met through increasing the number of instructors or extending the influence of available instructors over more students. The former possibility is being regarded with much pessimism by many educational authorities.
3. Among the suggested means of extending influence is closed-circuit television, which, from studies conducted by civilian and military organizations, has generally proven satisfactory to excellent in comparison with conventional instructional techniques in the transmission of information.
4. In a survey of instructors of liberal arts subjects in four New England colleges and universities, there was a general reluctance to use closed-circuit television in the instructors' own courses, but seventy per cent of those surveyed believed that television could be used effectively in education.
5. Familiarity and unfamiliarity appeared to be the only factors differentiating the groups who approved, were undecided, disapproved and strongly disapproved of instructional television.
6. Most concern about televised instruction lay in the belief that a loss in instructor-student relations would hinder the education process.
7. Further study should be done on the "products" of televised instruction and large audience conventional instruction beyond the comparison of test scores to see if either contains heretofore unmeasurable elements which cannot be interchanged between the systems.

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APPENDIX A

ENROLLMENTS AND INSTRUCTOR-POWER

DIVISION OF COMMUNICATION ARTS
SCHOOL OF PUBLIC RELATIONS AND COMMUNICATION
BOSTON UNIVERSITY

April 16, 1956

Dear Faculty Member:

To help alleviate the problem caused by increased enrollments without an increase in faculty size, some colleges and universities are using closed-circuit television in their classrooms.

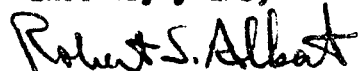
We are conducting research in connection with faculty attitudes in four New England institutions toward the use of this type of television in colleges and universities for instructional purposes.

We would appreciate your taking a few moments to answer the attached twenty questions so that your school will be properly represented in the sample.

As noted in the questionnaire, signing your name is optional. In any case, the replies will remain confidential and will be used only in this research.

A self-addressed, stamped envelope is enclosed for your convenience in returning the questionnaire.

Sincerely yours,

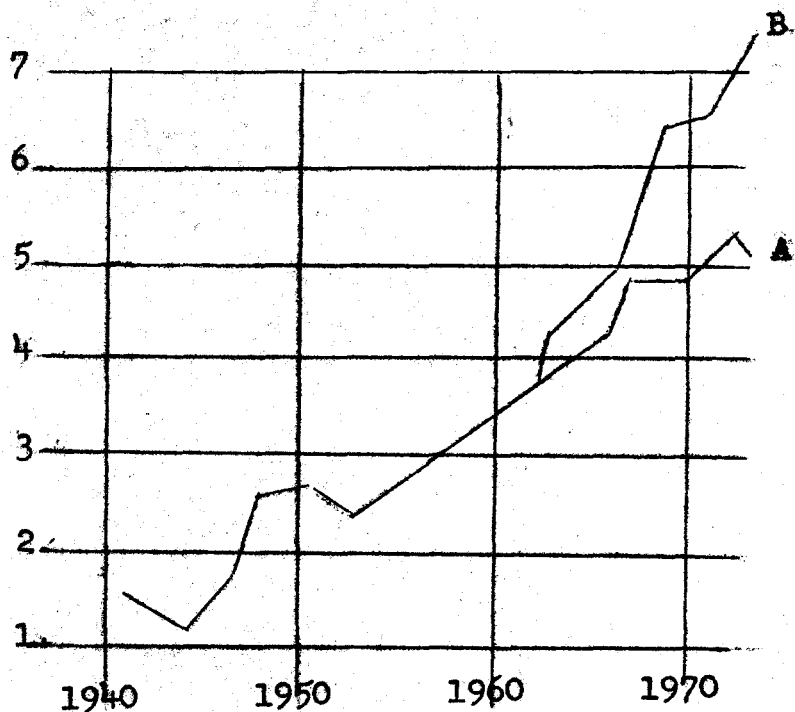


Robert S. Albert
Assistant Professor of
Communications

COLLEGE ENROLLMENTS, 1940-1975*

Enrollment in
millions

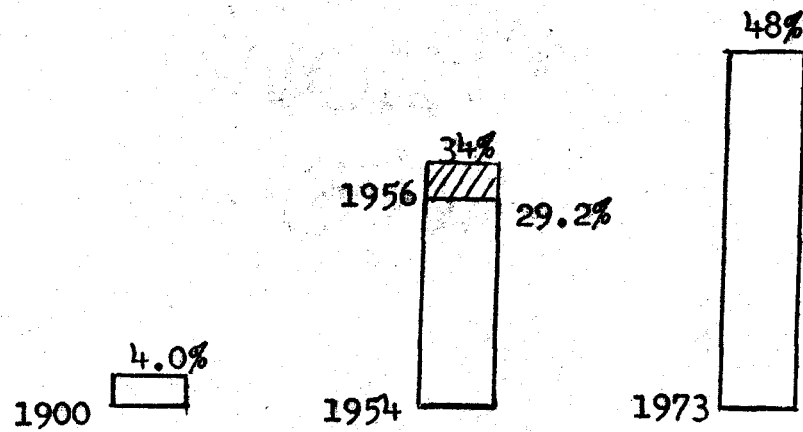
School
year
Ending



Note: Projection A is based on population growth with little rise in proportion of young people attending college. Projection B takes into account a population increase and an increase in the proportion of young people going to college. If the trend of the past fifteen years continues in the future, the percentage will be approximately forty eight by 1973.

*Teachers for Tomorrow, pp. 14-15.

RISE IN COLLEGE ENROLLMENTS AS
A PER CENT OF 18-21 AGE GROUP*



*Adapted from Teachers for Tomorrow, p. 11, and "When the Real Crush Hits Colleges" p. 34.

COLLEGE FACULTY MEMBERS NEEDED, 1957-1970*

<u>Year</u>	<u>Low estimate</u>		<u>High estimate</u>	
	<u>New Instructors Needed</u>	<u>Total Needed</u>	<u>New Instructors Needed</u>	<u>Total Needed</u>
1957	17,200	226,900	19,700	216,000
1958	16,100	234,000	19,300	226,600
1959	15,400	240,000	19,300	236,900
1960	17,400	247,800	22,500	249,900
1961	19,800	257,600	25,400	265,300
1962	27,100	274,500	35,700	290,400
1963	23,100	286,600	33,000	311,700
1964	21,200	296,400	31,100	330,300
1965	19,600	304,100	28,100	345,200
1966	38,500	330,400	50,700	382,200
1967	45,100	362,300	49,900	416,800
1968	15,700	363,500	53,400	453,500
1969	12,200	361,200	54,000	489,300
1970	30,600	377,300	25,600	495,300
	(336,945)		(483,960)	

* Adapted from Teachers for Tomorrow, The Fund for the Advancement of Education, Bulletin No. 2 (New York, 1955) p. 55. All figures rounded off to nearest hundred except totals in parentheses.

DOCTOR'S DEGREES, 1957-1970*

<u>Year</u>	<u>Low Estimate**</u>	<u>High Estimate**</u>
1957	6,880	6,600
1958	6,100	6,615
1959	7,010	6,750
1960	7,460	7,070
1961	7,550	7,520
1962	7,540	7,755
1963	7,890	8,205
1964	8,030	8,900
1965	7,990	9,970
1966	8,360	9,895
1967	8,970	10,350
1968	10,250	11,005
1969	9,710	14,370
1970	<u>9,640</u>	<u>13,755</u>
	104,880	121,675

*Teachers for Tomorrow, p. 59

**Projections A and B, respectively.

EMPLOYMENT STATUS, AS OF SEPTEMBER 1940, OF
LIVING RECIPIENTS OF THE PH.D. DEGREE, 1931-1940*

<u>School Year Ending</u>	<u>Recipients</u>	<u>In Higher Education</u>	<u>Other Education</u>	<u>Other**</u>
1931	1,910	60.0%	5.4%	34.6%
1932	2,070	60.2	5.4	35.4
1933	2,053	58.1	5.6	36.3
1934	2,290	56.0	5.9	38.1
1935	2,268	61.2	5.0	33.8
1936	2,183	60.6	6.0	33.4
1937	2,324	60.0	5.4	34.6
1938	2,300	62.2	5.0	32.8
1939	2,479	62.1	5.8	32.1
1940	<u>2,632</u>	<u>59.7</u>	<u>5.5</u>	<u>34.8</u>
	22,509	60.1	5.5	34.4

* Adapted from Teachers for Tomorrow, p. 61.

** Includes "In Non-Academic Pursuits," "Employment Status Unknown" and "Unemployed."

APPENDIX B

QUESTIONNAIRE

DIVISION OF COMMUNICATION
DEPARTMENT OF RESEARCH
BOSTON UNIVERSITY

1. Educators have issued different theories concerning the optimum size classes for college instruction. What size classes would you prefer for teaching lecture and/or demonstration courses?

- a. Under 10 students
- b. 11-20 students
- c. 25-40 students
- d. 41-60 students
- e. 60 or more students

2. What size classes would you prefer for discussion and/or lab courses?

- a. Under 10 students
- b. 11-20 students
- c. 25-40 students
- d. 41-60 students
- e. 61 or more students

3. In what department do you teach? _____

4. Fill out the appropriate columns. (Course title not necessary.)

<u>Class</u>	<u>Class hours</u>	<u>Lab hours</u>	<u>No. of students</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____

5. Circle number of years you have been teaching.

1 2 3 4 5 6 7 8 9 10 or more

6. In what cities have you taught within the past five years, other than your present one? _____

7. There is some concern in education these days concerning increasing enrollments and a corresponding shortage of competent faculty members. If there were a limited number of instructors and you had to choose between one of the following courses of action, which would you choose?

- a. Allow enrollment to increase and make other adjustments.
- b. Keep enrollment down by being more selective among applicants.

8. One type of adjustment to increased enrollments has been the use of closed-circuit television. Check the types of courses below that you have heard of or know of being taught by classroom television.

- a. Behavioral sciences, e.g. psychology, sociology
- b. Political science, e.g. government, history
- c. Physical sciences, e.g. chemistry, physics
- d. English or philosophy
- e. Others of a non-technical nature
- f. Others of a technical nature
- g. Unfamiliar with television in classroom instruction

9. From which of the following sources would you guess you obtained the most information on closed-circuit television in education?
- a. Literature in the education field
 - b. Popular literature, e.g. Look, Time, newspapers
 - c. Personal contact with institutions using it
 - d. Through colleagues who have been involved in it
 - e. Through colleagues who have not been directly connected with it
 - f. Have heard, but cannot pin down source
 - g. None
 - h. Other (specify) _____
10. In the situations I have heard about, closed-circuit television seemed to work
- a. With good results
 - b. With satisfactory results
 - c. With inconclusive results
 - d. With poor results
 - e. Don't know
11. Let's assume the administration of your school chose to allow the enrollment to increase, and to make other adjustments for instruction. Which of the following alternatives would you choose? (Select one.)
- a. Increase the number of classes per instructor
 - b. Increase the size of classes
 - c. Have small classes by making use of greater numbers of graduate students and instructors of lesser competence
 - d. Have small classes making use of closed circuit-television systems to transmit the material of the principal instructor
12. So far as closed circuit-television for any of my courses, I
- a. strongly approve
 - b. approve
 - c. am undecided
 - d. disapprove
 - e. strongly disapprove
13. I think that closed-circuit television can effectively be used for
- a. Straight lecture courses without demonstrations
 - b. Lecture courses with demonstrations
 - c. Close-ups principally for lab and demonstration courses
 - d. All of these
 - e. None of these

(continued on next page)

14. The following statements reflect the opinions of some educators concerning the use of closed-circuit television in classroom instruction. Please check the ones that come closest to your opinion.

- a. Television provides an excellent chance to multiply our best instructors and gives many students the benefits to be derived from superior instruction.
- b. The success of classroom television depends greatly on the instructor and his approach.
- c. Television will develop "star" performers and simultaneously increase the teacher shortage.
- d. Television will help put the burden of higher education on the students where it belongs.
- e. The success of classroom television depends greatly on the subject being taught.
- f. Television will necessitate courses being better organized.
- g. Television will hinder the development of new courses.
- h. Taking into account television's advantages and disadvantages, using the medium will probably achieve less because of the loss of some personal identification with the instructor.
- i. Television will probably work satisfactorily, but should not be used until absolutely necessary.
- j. Television will hinder the development of new instructors.
- k. Television helps create passive students.
- l. There is no place for television in education; it represents a threat to our academic life.
- m. Television, while not a panacea, can be helpful in in the enrollment problem.
- n. Television would probably reduce the calibre of university courses.

15. What is your view toward the relationship between education and commercial television? Do you believe commercial television should

- a. Attempt to educate while it entertains
- b. Focus primarily on entertainment
- c. Have entertainment and educational programs but not try to mix

16. In my opinion commercial television, in general, needs

- a. Great improvement
- b. Some improvement
- c. Very little improvement
- d. No improvement

17. Check the categories in the following list that you think need improvement, if any, in commercial television.

- a. Public affairs and news
- b. Situation comedy
- c. Regularly scheduled drama
- d. Quizzes
- e. Variety
- f. Musical
- g. Educational-cultural, e.g. Omnibus, Richard III

18. Check the categories in the list that you think we need more of.

- a. Public affairs and news
- b. Situation comedy
- c. Regularly scheduled drama
- d. Quizzes
- e. Variety
- f. Musical
- g. Educational-cultural

19. Do you have a television set in your home?

- yes
- no

20. Approximately how many hours a week do you watch television programs?
Circle one.

1 2 3 4 5 6 7 8 9 10 11 12 or more

Name (optional) _____

Age bracket: 20-25
 26-30
 31-35
 36-40
 41-45
 45 and over

APPENDIX C
INFORMATION SOURCE

Army Tests Prove Television Is An Excellent Teaching Tool

The effectiveness and economy of television as a tool for teaching basic and technical subjects have been proved by extensive and exhaustive tests made by the U. S. Army Signal Corps involving 15,000 trainees.

This research was performed for the Army by the Human Resources Research Office of George Washington University, Washington, D. C. on a contractual basis.

Comparisons between television and regular instruction under matched conditions showed that television instruction was:

- Generally more effective than regular instruction.
- Particularly effective for lower aptitude individuals
- Remembered at least as well as regular instruction by trainees of all I.Q. ratings, and even better than regular instruction by those with low I.Q.'s.

Comparing kinescope and regular instruction under matched conditions indicated that:

- Kinescope instruction was as effective as regular instruction.
- Decreases beyond a certain point in kinescope quality were accompanied by decreases in learning.

The Signal Corps found that kinescopes are effective for reviewing a subject before final examination.

Even after a month's lapse from the time the course had been completed, reviews by kinescope were so effective that trainees scored higher on their tests than they did immediately after completing the course.

The test score of low aptitude trainees receiving the one kinescope review approached those of high aptitude trainees following initial instruction.

These conclusions were reached after a study of over three months was made covering 12,000 trainees at Camp Gordon, Georgia. Camp Gordon was selected for the study of the effectiveness of television for teaching because it had a closed circuit facility and also because it conducted a basic

training program.

For the tests a general basic training company was split into two halves of equal aptitude by using basic army aptitude tests. Regular classroom instruction was faithfully duplicated on television: no additional television techniques were added. Instructors were the same for both regular and TV instruction. To appraise the effectiveness of television instruction compared to regular classroom teaching, trainees were tested immediately and one month after receiving each course.

The 14 hours of subjects taught during the experiment were: map reading, signal communications, mines and booby traps, light machine gun disassembly, defense against air and armor, military justice, squad tactics and M-1 rifle functioning.

These courses involved a range of training material from simple rote learning to performance tasks. Using such a variety of training tasks made it possible to determine later the effectiveness of television instruction for different types of training material.

The second part of the Signal Corps study had four general objectives:

- To see if television could be used to decrease training time, but also maintain or increase teaching effectiveness.
- To extend TV training methods from basic to technical subjects.
- To test equipment such as the Tele-Q.
- To develop further criteria for the application of television in training.

This study involved 3,000 trainees over a three month period. The same system of groups matched by aptitude and with the same instructors was used.

The instruction was the same for both regular and TV classes. Electronics, a difficult course, was the subject, and it usually took 4 hours.

However, in contrast to the first test where the TV instruction was merely a faithful televising of the

classroom session, television in this test was, in effect, turned loose: visual aids, close-up pictures of objects, superimposition of pictures and other TV techniques were used.

By using television, the four hours of instruction time were reduced to about two hours, and the effectiveness of the teaching was either improved or was the same as regular instruction.

The use of the Tele-Q, a device which feeds out the text or outline of the instructor's remarks to cue his presentation to him, was highly successful. Inexperienced instructors quickly became proficient teachers by using the Tele-Q.

Reduced to oversimplification, these results were achieved by using time most advantageously and taking advantage of television's physical advantages for the lecturer or demonstrator. First, material irrelevant to the teaching objective of the lesson was eliminated. Material having to do with stating the objectives of the course was cut when it was found that this contributed little, if anything, to the end results. The Tele-Q reduced wandering remarks to a minimum. Analogies in teaching material were excised when it was found that they were ineffective. Question and answer periods were eliminated and the questions incorporated into the direct presentation of the instructor. Finally, the logistics, as the Signal Corps puts it, were reduced in television teaching since the cameras and films, not the instructor, do the moving about.

Instructors became increasingly alert to the time-saving moves; they were eager to improve their teaching techniques which under regular conditions would never have come under such close scrutiny.

The halving of teaching time in the difficult subject of electronics has wide implications, not just for the military, but for regular civilian schooling.

For the military, the time saved in basic and technical training is most important, for a trainee spends a large amount of time in training before the army can use him in his specialty. With TV some of this training time could be reduced.

Refresher courses, important in the military, could be given on kinescopes.