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ABSTRACT
         The Board of Directors of National Educational Radio
(NER) established a Task Force to study how radio might best be
utilized for instruction in the years ahead. After ten months of
study the Task Force presented its recommendations. Among these were
that radio should be considered as a means of solving pressing
educational problems in a cost effective way, and that to accomplish
this goal, immediate and concerted action by all concerned agencies
was necessary to improve facilities and provide adequate financial
support for educational radio stations and audio production centers
devoted to serving the instructional needs of their communities. The
Task Force report also presented guidelines for achieving their
recommendations and offered supplementary information for in-depth
consideration of certain specialized aspects of their assignment.
(JY)

RADIO'S ROLE IN INSTRUCTION

Report and Recommendations of the

Instructional Radio Task Force of

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a division of
the

National Association of Educational Broadcasters

Washington, D.C.
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INSTRUCTIONAL RADIO TASK FORCE

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PREFACE

    Early in 1971, the newly-appointed staff of National Educational Radio (the radio division of the National Association of Educational Broadcasters) became concerned about the large proportion of their member stations which were undertaking no instructional programming whatsoever. While the training of students in broadcasting was a broadly accepted station objective, and while a rapidly increasing interest in "public" programming was evident, not more than 25% of the 200 noncommercial educational radio stations belonging to the national professional association were using their facilities to provide instructional materials to students in classrooms, on campuses, in places of business, or at home.

    At the same time, those stations devoting their resources almost entirely to instructional programming seemed to be getting inconsistent results. In some areas, school broadcasting's impact on educational achievement appeared to be somewhat uncertain and support inadequate. In others, results in terms of learning achievement were significant and support was much stronger. In still others, educational results were commendable but support was not strong enough to allow full utilization of the medium. And it seemed as if virtually every school system and college in the country was beset with budget troubles of serious proportions.

    The profile of general financial support of educational radio across the country also seemed to defy interpretation. Of the total of $9,392,433 provided for operating noncommercial radio stations during the 1969-1970 academic year, those licensed to school systems received only 3%. University-licensed stations received 71%. Among university stations, only 3.2% of their support came from schools or state boards of education. But among state-licensed radio systems, 18.5% of support funds came from school districts or state departments of education. Even though these figures reflected other facts as well, it still seemed clear that educational radio was neither very heavily involved in providing instructional services, nor very strongly supported

by formal education because of an expectation of instructional services.

Meanwhile, the concept of the Telecommunications Complex, involving all media in the service of education was gaining acceptance. The U.S. Office of Education was strongly encouraging the use of technology to help solve some of education's problems. And the Corporation for Public Broadcasting began to talk about "telemedia education."

Faced with this array of factors, the Board of Directors of National Educational Radio (NER/NAEB) established a Task Force to provide direction to those striving to determine how radio might best be utilized for instruction in the years ahead. The Task Force was asked to "study these matters and make specific recommendations concerning the role of educational radio in instruction....to insure radio's proper participation in American education in the future."

Early in its existence, the Task Force found many persons other than radio station managers interested in its deliberations. Officers of state education agencies, university officials, specialists in other media, television people wondering whether radio might become a less expensive partner, extension and adult education deans concerned with reaching the independent student -- all showed interest and concern. The Task Force therefore broadened its assignment in order to direct its recommendations not only to those already in radio, but also to those who are in any way concerned with the problems of education.

This report is a result of extensive activity over a ten-month period. In October 1971, "hearings" were held at the convention of the National Association of Educational Broadcasters in Miami; nearly 50 persons took advantage of the opportunity to appear in person before the Task Force and express their own views, questions, and biases. NER member stations were invited to furnish input on two other occasions. Informal statements on any aspect of radio instruction were solicited by mail at the beginning of the Task Force's work in the fall of 1971. In January of 1972, stations were requested to return a questionnaire explaining various aspects of their own station's instructional activities -- or lack of them -- and reasons therefore An additional invitation to respond by questionnaire was extended in April.

The Task Force personally visited stations, and talked with other station managers, in Iowa City, Iowa; Newark, New Jersey; Madison, Wisconsin; Long Beach and Pasadena, California; and Brooklyn, New York during concurrent business meetings of the group in those locations. Personal discussions were also held with representatives of National Public Radio, the Corporation for Public Broadcasting, and the National Instructional Television Center, as well as with the Instructional and Professional Services Board of the NAEB.

While the efforts of a volunteer Task Force necessarily cannot be as thorough as might be desired, still we believe we have been afforded a representative view of activities in instructional radio today and clear directions have emerged regarding what must occur if American education is to realize the potentials of this unique medium. Appreciation must be expressed to the station managers, teachers, school broadcasting coordinators, educational administrators, and others whose letters, reports, and contributions have enabled us to frame the conclusions and recommendations which follow. Special appreciation is also due to those who prepared the supplementary papers appended to this report, to William Dale, Director of Instructional Services of the NAEB, and George Hall, Research and Development Associate at NAEB, who provided valuable staff assistance along with our own Director of NER, James Robertson. Without such devoted staff work, no Task Force can be effective.

What we have learned and what we recommend are summarized in the pages immediately following this preface.

Guidelines for effective audio instruction are provided in Part II.

More extensive treatment of major elements of our report and recommendations are found in Part III.

Supplementary papers appended to the report include a detailed discussion of questionnaire results, a review of all of the narrow-band audio technologies on the horizon, and other specialized topics which hopefully will be of interest to professionals in the field.

Washington, D.C.
May 19, 1972

PART I

FINDINGS AND RECOMMENDATIONS

The unquestionable conclusion reached by the NER Task Force on Instructional Radio is that <u>a profound discrepancy exists between evident potential and actual use -- between the PROMISE</u> which audio possess for improving educational quality and the <u>RESPONSE</u> of those educational institutions and agencies charged with the responsibility for providing quality education to all of our many and diverse publics. <u>Radio broadcasting and associated audio technologies are seriously under-utilized in American education</u>, despite their wide and effective use by educators elsewhere in the world.

Some of the reasons for this state of affairs and some of the dimensions of the problem are dealt with in subsequent sections of this report. To begin with, however, the Task Force submits the following recommendations which have emerged directly from our ten-month study. Our avowed purpose in making these recommendations is to bring about a more productive relationship between the needs of American education and available low-cost technological potential. Our study has further convinced us that audio offers effective, innovative, and inexpensive opportunities to those who are willing to try it and who employ it for clearly-defined educational purposes.

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<u>We recommend that in order to help solve their communities' most pressing educational problems, educational administrators and educational broadcasters together take specific steps to develop cooperative working relationships.</u>

This recommendation may seem trite, but our study leads us to the realization that all too often it has not been practiced. Today's problems in education require close association of people qualified in various fields but working together toward practical solutions. Involvement of top officials and commitment from them is essential if the real strengths of technology are to be employed extensively and effectively. No educator can do it alone, no broadcaster

can do it alone, no single medium -- not even print -- can do
it alone in these times. And if effective cooperation is
to be achieved, each professional must know more about the
potentials of his associates.

While every broadcaster acknowledges himself to be a
specialist in communications, he is less likely to know the
fine points of learning theory or the systems approach to
the development of instructional materials. He can improve
his ability to assist the educator by familiarizing himself
with current literature in these fields, by visiting effec-
tive instructional radio operations, and by participating in
instructional design workshops and training sessions.
Managers of radio stations and audio production centers also
should seek out and utilize those educators in the community
who are trained and experienced in learning theory, curri-
culum design, media utilization, and related fields.

Similarly, educators can readily identify their prob-
lems at whatever level they exist in the educational enter-
prise, but are less well equipped to comprehend how audio
technologies might help to solve them. They need not become
practitioners, but some exposure to what can be done with
radio, tapes, cassettes, FM subcarrier -- indeed, what some
of their colleagues in other communities are doing -- will
aid them in preparing for their own effective use of these
media. Moreover, just as broadcasters can learn through
association with well-trained and widely-experienced educa-
tors, so educators similarly can learn through association
with well-trained and widely-experienced audio professionals.

Further, those involved in the use of other telecommun-
ications media, notably instructional television, may find
it enlightening to re-examine the special characteristics of
radio and associated audio technologies as means of achieving
cost effectiveness as well as learning objectives. There is
no doubt that for certain types of instruction, television
and other visual media are very effective. It is equally
true that in other cases -- particularly in dealing with
abstract ideas and concepts -- radio may be preferable.
Accepting the rule of thumb that radio costs less than
one-tenth what television costs, it would appear wise to
re-examine the appropriate use of each of these media (along
with others) to accomplish specific learning objectives. It
may frequently be found that part of the educational job
should be done visually, but that audio technologies can
accomplish other parts effectively at far less cost.

The Task Force also laments the lack of media training
of an effective nature in most teacher education institutions,
at least in the past. Far too many teachers are coming
into classrooms with a wholly inadequate understanding of
the role which various media can play in the learning exper-
ience. Those responsible for teacher education will do their
profession a great service as they increase their own compre-
hension of these matters and provide far better preparation
in this regard for those entering the field.

Cooperative working relationships in which professionals
in one field share their expertise with those in associated
fields must be strongly encouraged at all levels of both
broadcasting and education. While normally the initiative
in these affairs should be taken by the radio manager, such
initiative may come from anywhere -- classroom teacher,
principal, superintendent, university faculty member or
extension worker, community leader, minority representative,
or specialists in other media. Without this sharing of
professional competence, radio and associated audio tech-
nologies cannot demonstrate their full potential.

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We recommend immediate and concerted action by all
concerned agencies to improve facilities and provide
adequate financial support for educational radio stations
and audio production centers devoted to serving the in-
structional needs of their communities.

In recent years, with very few exceptions, instructional
radio has been unable to demonstrate its capabilities due
to fiscal neglect. Sometimes this has been the result of
a lack of leadership, sometimes the result of seemingly
higher priorities. Some communities have no educational
radio station at all. In others, local broadcast frequencies
are used primarily to train students in the art of broad-
casting, a praise-worthy objective, but a goal different
from that assigned to this Task Force. As revealed in the
Task Force survey, the major emphasis today is on "public
radio" as an alternative program service comprised of infor-
mational and cultural broadcasts for general listening.
This development, too, certainly deserves strong support
for its own good reasons. Often the "public" station
through the financial assistance available because of its
general programming objectives is strengthened and thus is

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enabled to serve formal education more effectively also. On the other hand, the recent emphasis on "public" radio has not always enabled the station devoted primarily to instruction to upgrade itself.

We believe it is time that those charged with the responsibility for the improvement of formal education in this country be called upon to find the funds to support adequately those stations dedicating a substantial part of their activity to instruction. And we direct this challenge specifically to the U.S. Office of Education, to every state school officer and State Department of Public Instruction, to regents and trustees of colleges and universities both public and private, and to regional agencies as well as local school boards.

The recommendation applies most directly to those institutions which hold licenses to operate noncommercial educational radio stations. Is a noncommercial radio licensee fulfilling his responsibility if his station's program service contains no instructional programming? Members of the Congress and of state legislatures furnish support for educational broadcasting in the belief that such stations are assisting in the general educational process in our country. According to station information furnished on the Task Force questionnaire, more than half of the stations responding are offering nothing which in their own terms can be defined as instructional. Yet they point to lack of attention on the part of their administrations, lack of funding -- in a word, lack of support. The national figures bear out their lament.

If radio and associated audio technologies can offer as much to formal instruction as our study shows, the major funds to finance these audio activities should rightly come from educational budgets. To the student of today and tomorrow -- child or adult -- the FM receiver or the cassette may equal the book in importance and utility.

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We recommend that NER/NAEB, in conjunction with National Public Radio (NPR) and other concerned and qualified agencies, develop a new system to serve more effectively the needs of present and potential users desiring instructional audio materials from other-than-local sources.

To this Task Force, it is clear that the former NERN "Instructional Package" now offered by NPR is inadequate and largely unacceptable both to contributing stations and to users. Yet stations need materials from outside sources to offer to local educators, both as models of what can be and as augmentation of what may be produced locally.

We believe that a new system to answer this need should encompass activities on three levels:

(a) <u>Planning, development, and production of new materials</u> of exceptional quality which respond to curriculum needs broadly recognized across the country.

(b) <u>Acquisition of materials</u> already produced or planned for production locally but which lend themselves to effective use elsewhere.

(c) <u>Duplication, distribution, and promotion</u> of instructional audio program units and associated materials through one central source in an effective manner.

All such materials should be measured against the criteria which are implicit within the body of this Task Force report and specifically expressed in the guidelines for effective audio instruction proposed in Part II.

The Task Force recommends that NER/NAEB take the lead in securing action on this matter since it already represents most of the noncommercial educational radio stations interested in such a service, and it maintains continuing relationships with most, if not all, of the agencies most likely to become involved.

The interest of National Public Radio (NPR) in the recommendations of this Task Force is particularly encouraging. It is to be hoped that the results of this study in general and the direction of this recommendation in particular, will be given serious consideration by NPR. During the work of the Task Force, stations repeatedly and urgently expressed a great need for an improved instructional program service. Since NPR already offers its general tape program services not only to its interconnected members but to <u>all</u> noncommercial educational radio stations, and since its administration recognizes the needs of many of these stations

in the instructional area, this may well be the threshold from which to step into a new era of more-than-local instructional audio materials.

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> We recommend that national, regional, state, and local agencies concerned with educational improvement give high priority to funding Demonstration Projects using radio and associated audio technologies which are designed specifically to provide comprehensive measurement of results in terms of both learning objectives and cost.

This challenge is directed to the same agencies named in Recommendation 2 and also the NER/NAEB and to all other professional organizations which may be in a position to initiate or encourage such funding.

Despite the evident value of many instructional radio projects over the years and the convincing testimony of classroom teachers concerning ways in which radio broadcasts have helped their students to learn, there is an obvious lack of empirical research in this field. There does not exist in radio the great body of studies which does exist in television.* Thus we urge the establishment of several kinds of demonstration projects, set up in accordance with guidelines furnished in Part II of this report, with accompanying research designed to provide the kind of data which responsible educators have a right to expect. Funding of a few such projects could break the logjam of uncertainty which is hampering many educational decisions today.

Some of these projects should be concerned with instructional broadcasts on main channel radio stations, some with use of the FM subcarriers, others with audio cassettes, tape recordings, variable-rate audio devices, control-scan/video, facsimile, and the like. Some should take place in urban centers, some in rural areas. Some should occur at the preschool and elementary levels, others at the secondary and junior college level, still others in post-professional education. Demonstrations are needed to show what really can

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*A listing of major research in the instructional radio field will be found in Supplementary Paper #1 appended to this report.

be done; careful research is needed to document what really happens to the learners.

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We recommend that all institutions and agencies concerned with technology in education initiate action at all levels to reserve spectrum space on satellites and in cable franchise agreements and licensing procedures to assure adequate provision for radio signals and other narrow-band services for educational purposes.

Without similar reservations of television and FM radio broadcast frequencies at the behest of educational and civic leaders in earlier years, education today would be without adequate TV and FM broadcast channels. In future years, communications satellites and ground-based community-wide cable systems may well be the primary sources of a whole array of telecommunications media. Cable ordinances now being studied by cities and counties, regulations now proposed by states, rules regarding both cable systems and satellites promulgated by the Federal Communications Commission, all will tend to shape our future access to these systems. Educators and broadcasters must involve themselves in every level of policy formation so as to help insure the best design outcome.

NER/NAEB already has filed comments with the FCC with respect to these matters, as have CPB and other agencies. The desirability of such alertness will be clear from a reading of the chapter on the future which will be found later in this report.*

These five recommendations have been stated at the outset in order to emphasize what the Task Force believes must be done if the potential of audio technology is to be realized.

The guidelines which follow, in Part II, are an effort to provide a yardstick for those now engaged in instruction by radio and those considering such activity.

The chapters in Part III and the supplementary papers in the appendix furnish additional examinations of certain

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*Also see Supplementary Paper #6, "A Review of the Newer Narrow-Band Technologies," appended to this report.

aspects of the Task Force assignment which may be of further interest to some readers on a selective basis.

All of these materials illumine and support our over-riding conviction: that American education, currently in deep trouble, may find a number of ways to help solve some of its difficulties through use of comparatively inexpensive yet effective audio technologies.

Radio has been with us for more than fifty years. It has had many effects upon our nation, but somehow it never has been harnessed in the service of education to any great extent. Hopefully the work of this NER Task Force will enable American educators and broadcasters to join forces in doing so.

PART II

GUIDELINES FOR DEVELOPING

EFFECTIVE AUDIO INSTRUCTION

We know how this section of the report will end, but we
are perplexed about how to start it. For while whoever reads
this report presumably wants to move toward the goal of
effective use of radio and associated audio technologies in
the service of education, readers are at very different
points of their mutual pilgrimage. The Task Force is an-
ticipating that those who begin this chapter may be radio
station managers, radio producers or writers, radio performers,
adult educators, school board members, classroom teachers,
college professors, industrial educators, college presidents,
school superintendents or principals, univeristy regents or
trustees, state or federal education officers, community
leaders concerned with both the quality and the cost of
education, members of state or federal legislative bodies or
executive departments, specialists in other media, those
concerned with statewide or regional telecommunications, not
to mention the pioneers in radio instruction who have been
laboring in the somewhat arid vineyard for forty years and
those who, on the other hand, have never before considered
radio as a purveyor of anything but news, weather, rock
music, Beethoven, or baseball.

Whoever the reader may be, whether involved in instruc-
tional radio for years or considering it seriously for the
first time, we believe the guidelines which follow are
applicable. They should not be considered necessarily as
sequential steps, for sometimes they overlap or several
occur almost simultaneously. Some projects may require
thousands of dollars in outside funds and a large staff;
in others the staff will be one or two individuals using
funds from an existing budget. In all cases, it is the
approach taken and the principles involved that are deemed
important, not the size of staff or resources.

No plan of this sort has merit until it is studied,
modified to suit local conditions, and applied with un-
swerving vigor. And every road map can be mis-read, or
may not show some detours which may be necessary and

desirable along the way. It is our conviction, however,
that these guidelines represent the best thinking and the
richest experience of those who have already traversed
this path, either successfully or unsuccessfully, and that
if carefully and purposefully followed, they may help
to make progress possible.

1. Get right with your environment.

     Effective use of audio in instruction requires the
abilities of many specialists, and too often they do not
know each other. Curriculum specialists are often totally
unacquainted with school radio people. University station
managers do not know the learning theory experts on their own
campus. Television people avoid hobnobbing with audio-visual
types and vice versa. In too many cases the institution
which holds the FCC license to operate a non-commercial ed-
ucational radio station has never conceived of the station as
a potential aid to instruction. Where are the state depart-
ments of public instruction, the libraries, community groups
presuming to desire better quality instruction for their
children? Wherever the individual finds himself in this mix,
undoubtedly there are capable people nearby with whom contact
must be made, common goals need to be shared, differences
understood. Whatever the institution he represents, avenues
must be opened up toward other institutions and agencies,
bridges must be built -- sometimes over great chasms -- if
all possible partners are to share in the use of radio in
instruction.

     Within one's own institution there is another kind of
environment worth examining. Which of the people on staff
possess abilities and interests which would be useful in
exploring the possibilities of radio and associated audio
technologies? In a radio enterprise, which staff members
have background or experience in instruction; in education,
which staff members have knowledge of media? What physical
facilities or equipment might be available, given proper
advance planning, for an instructional radio project? Where
are additional facilities or equipment which might be used
if arrangements were properly made in advance? Might the
same approach be made to seek personnel from related depart-
ments or agencies, if the conditions were right?

     Beyond the outer boundary of these two environments
is the community at large. What are its characteristics,
its interests, its vital concerns? Who are the decision-

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makers in the community; are there some key people who might become interested in instructional radio if they knew more about it? What is the role of education committees of the Chamber of Commerce, local service clubs, PTA, and the like? Are there possible allies here if they are alerted to the potentials of instructional radio?

2. <u>Identify specific educational needs in your area</u>.

In company with those who already are involved in determining your community's most pressing educational needs, identify the "crisis problems" which are presently bothering those who carry the public responsibility for solving them.

Keep in mind that radio can serve community educational needs that may exist outside of classrooms and away from campuses as well as those within the walls of educational institutions. You may find evidence in your community of urgent educational needs which traditional institutions are unable to answer.

It seems necessary to emphasize at this point that by "radio" we mean not only the kind of broadcasting common to most people but also the use of the FM subcarrier frequencies for special transmission to those with special SCA receivers, plus all of the non-broadcast applications of audio technology: tape recordings, cassettes, and the like. This reminder must be kept in front of educators and broadcasters alike, for it is easy to think of radio as only the main-channel broadcast mode. All types of audio technology must be employed in response to many different kinds of community needs.

There is a growing awareness in our rapidly changing society that education is a lifelong process. Many persons in a community who have received maximum years of schooling still find themselves poorly informed even about their own professional fields. In assessing specific educational needs in your area, therefore, do not ignore the special problem of the doctors, pharmacists, lawyers, nurses, who struggle to keep abreast of latest trends in their professions. Another field to explore is industrial training, where retraining of manpower to accomodate to new techniques is frequently a major problem. And let us remember that inservice training for teachers to keep them abreast of changes in education itself is identified by many as a pressing educational need.

One result of an assessment of an area's educational
needs by community leaders, educators, and audio specialists
should be a new respect for the capabilities of those in
radio and a recognition of the role which radio may be able
to play in responding to these needs.

3. Assess radio's capabilities to respond.

Once community needs are established, it is necessary to
determine which of them can most effectively be served by
radio and associated audio technologies...in particular, by
the radio station or audio production facility at hand. Some-
times it is necessary at this point to make a special effort
to overcome prior judgments and to appraise objectively the
strengths of the medium -- both broadcast and non-broadcast
 -- and the deployment of personnel and facilities which
either are already available or may have to be acquired if
there is to be a reasonable chance of success in attaining
the defined educational objective.

The appraisal of local capability should include
physical facilities and equipment, station coverage (if FM
this involves availability of receivers on the part of the
intended audience), special capabilities of both station
and educational personnel, availability of broadcast time
to reach target audience or practicability of tape or
cassette distribution, convenience for the intended user,
capability of evaluating the project, and -- of the greatest
importance -- the funding required to assure reasonable
success in achieving the mutually determined goal. No
project can succeed with inadequate tools. Costs must be
assessed in consideration of ultimate results desired.

4. Develop a project proposal in detail.

Whether the project is a complete in-school service for
a state or regional network or merely a few instructional cas-
settes, careful advance planning is essential. Development of
any project should be assigned to a properly qualified team
with adequate time and resources to put together a comprehen-
sive plan for submission to those most vitally concerned.
Whether the "team" is one or two people or a dozen, together
they should possess extensive knowledge or experience in the
following fields:

Project writing: now a highly developed skill.

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Funding: knowledge of various funding sources and the kinds of projects most appropriate for each.

Production: experience in putting together elements into creative productions; ability to work with others in the most effective ways toward common goals.

Curriculum: experience with all aspects of the curriculum for the particular age level for which lessons are being designed; some knowledge of the client group's characteristics; specialized knowledge of the particular curriculum area to be featured; some understanding of the characteristics of the audio medium.

Evaluation: knowledge of procedures and techniques for evaluating the effectiveness of instruction.

Although there may be an individual who possesses all of these capabilities, it is generally assumed that to bring these various kinds of knowledge and experience to bear on the project, several persons will be selected to work together. The result of their activity should be a carefully developed and written proposal delineating the project's objectives, the design for achieving them, the means to be used for evaluation, and a reliable estimate of the cost.

A systematic approach should be used in developing the project. Although each project will be different and emphasis in some cases may be on certain steps and in other cases on others, the following steps of a systematic approach are considered standard:

(a) Identify the specific curriculum problem which can be met by the use of radio or associated audio technology.

(b) Identify and describe the target population.

(c) Specify the objectives of instruction in behavioral terms; also include other related objectives not so easily measured.

(d) Describe how the program units will be developed and who will be involved.

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(e) Describe the instructional strategies which will be used in the program units.

(f) Describe plans for utilization of the program units, including kinds of teachers' manuals, student workbooks, and other supporting materials; include also any associated optional materials in other media.

(g) Describe plans for evaluation, including performance criteria to be used, tests, and methods of compiling data.

(h) Include full details of cost, including personnel, materials, and facilities for all stages of project. Show actual dollar amounts required as well as any release time or transferred services, or any furnished at no cost.

During the project development stage, opportunities should be sought to try out some of the elements of the project with members of the target population -- grade school children in class, college students, adult learners, post-grad professionals -- so that the results can be used as supporting evidence in promoting the project.

Once the project proposal is completed, it should be reviewed by all agencies and institutions identified with it. It is essential that all parties be aware of the extent of their own commitment and that of everyone else, and that lines of responsibility be clear. Although the radio station or audio production agency may play a central role as coordinator, other equally important roles may be played either by other departments or divisions of the radio station's parent institution or by other agencies in the community. This is especially true in a project which properly should include not only advance planning, production, and distribution (either via broadcast or otherwise), but also publicity and promotion, utilization training, related media materials, field testing, evaluation, etc. Such firm understandings are important whether the funding is to come through allocation of existing or requested institutional budgets or from outside sources such as foundations or government agencies. Until all funding is clearly in hand, commitment of other resources is firm, and everyone involved knows who is doing what, the project's success cannot be assured.

5. Secure the Decision to "GO".

Upon approval of the project and a consequent decision
to proceed, it is useful to review the project proposal and
re-affirm the commitments of all agencies and individuals
involved. Sometimes months have gone by between the earlier
concurrence and "GO" day, and all parties will appreciate
one more go-around to be certain of their own obligations as
well as to gain reassurance that all cooperators understand
theirs. This is also the time to finalize on the calendar
of specific deadlines so that individual plans of work can
be accomodated to the overall needs of the project.

6. Proceed with implementation of the project.

Work now proceeds along three lines: production,
utilization, and evaluation.

Production will be undertaken by a specially selected
team, some members of whom may be the same as those who drew
up the project proposal. Although it is conceivable that in
unusual situations one gifted individual could be producer-
curriculum specialist-script writer-performer, the more likely
setup is to assign three persons to the first three roles.

The producer must be competent in audio production,
possess some degree of enthusiasm about audio's possible
contribution to instruction, and be able to meet practical
problems and make necessary adaptations without destroying
the integrity of the planned units themselves.

The curriculum specialist must understand the needs to
be met, knows the subject matter thoroughly (or supplies
someone who does), understands the philosophy of the educa-
tional community to be served, and also is enthusiastic
about the use of audio technology. In this position as in
all others, the ability to work with people is a great asset.

The script writer, in addition to knowing how to write
for the audio medium, must be acquainted with the possibili-
ties and limitations of the production conditions (in studio
or elsewhere), should possess an understanding of the age
and abilities of the target group, and be interested in the
possibilities of this particular project.

Together with others whom they may call in as resource
people and those staff personnel concerned with the specifics
of production, this team is the focal management group
responsible for turning out the materials.

Utilization activities must begin as soon as a "GO" decision is made so that every advance effort can be made to assure that the intended students are ready to make max-. imum use of the audio program units. Involvement of class-room teachers, adult group leaders, extension specialists, field workers or whatever cadre of professionals may oversee the use of the audio materials is essential at the earliest possible date to insure proper understanding of the total project and its objectives and the ways in which it may be of assistance to those already desiring the agreed-upon instructional objective.

. Innumerable case studies of in-school broadcasts, for example, indicate the difference in the attitudes of accept-ance of teachers who are involved early in innovative pro-jects and those who are not. Excellent guidance can be ob-tained from a group of teachers who will serve in an advis-ory capacity and who will try out some of the ideas in their own classrooms and then provide feedback to those designing and producing the materials. Excellent promotion also can be obtained as the advisory group of teachers talk to their colleagues about the project and their own first-hand exper-iences with it. This may, in turn, lead to even more input from the field which can be of help to those constructing the innovative materials. Teacher advisors, acting on the basis of their own experience, can assist in developing specific plans for subsequent utilization of the materials by other teachers and can also help with in-service activities. The chances are that teachers will communicate with each other and will respond better to discussions based on first-hand experiences.

Evaluation is an element which, sad to say, has been widely neglected in planning instructional projects. But with the current emphasis on what is called "cost effective-ness", any future project ought to include specific measures which ultimately will provide data showing what was accom-plished and at what cost. Both learning achievement and expense factors should be treated side by side. This can best be accomplished through careful planning of the research design prior to actual use of the materials in the field.

7. Maintain close watch during early stages.

As the level of activity rises on all three fronts -- production, utilization, evaluation -- it is important that

all those involved be kept aware of what is going on. Instruc-
tional radio people involved with the actual program materials
need to be informed on anything which utilization people are
discovering during preliminary experiments in the field, and
such information also may be of importance to those developing
the research design. If the target audience comes together in
groups, the production team will benefit from opportunities to
observe classroom use of some of the early audio program units
during field testing. Every possible measure must be taken to
secure all possible feedback from classroom teachers or field
workers. And someone up there must maintain overall control of
the total project to keep it focused on the ultimate instruc-
tional objective and to keep it within its assigned budget.

8. **Report results in terms of both learning achievement and cost effectiveness.**

As indicated earlier, ways must be devised in the origin-
al project to provide for evaluation and for keeping records
of costs. These methods may be modified during the process of
design, production, and utilization, but one must not lose
sight of the importance of the final assessment. At the end of
the project, specific information should be available to show
what has been accomplished in terms of the stated learning ob-
jectives, and how much it has cost to do this, pro-rated if
possible into cost per student. Any intangible gains, of
course, should also be included even though not so measurable.

A final section of the evaluation report should include
recommendations for future use, modifications needed, and
projected per-pupil cost as more and more students begin to
use the audio program units.

The Task Force is quite aware of the possibility that
these detailed guidelines may seem so complicated that some
broadcasters or educators will become discouraged before they
begin. This ought not to occur, for the guidelines, when
carefully followed, can act as insurance for the uninitiated.
The principles enunciated therein have become common practice
at successful instructional radio stations. They can be applied
as readily to the planning, production, and use of a short audio
cassette unit by one or two people as to an extensive instruc-
tional radio project requiring solicitation of thousands of
dollars in outside grant funds and the hiring of a large full-
time staff. We have gone into considerable detail in the hope
of clarifying both the "why" and the "how" of the systems ap-
proach. One may certainly start small and still anticipate
success if the principles of these guidelines are fastidiously
put into practice.

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PART III

SOME BASIC QUESTIONS

WHAT DO WE MEAN BY "INSTRUCTIONAL RADIO" IN 1972?

If instructional radio is important at all it deserves the dignity of a clearly defined language. Although this Task Force possesses neither the authority nor the expertise to set vocabulary for either the educational or broadcasting worlds, it has adopted the following terminology as "common usage" and employs it within this document.

"EDUCATIONAL or "PUBLIC"?

Not too long ago, broadcasting stations licensed by the Federal Communications Commission as "noncommercial educational" stations were always called "educational" stations, and what they did was called educational broadcasting. When the Carnegie Commission on Educational Television defined their concerns in 1966, they separated educational television programming into two parts:

> (1) <u>Instructional television</u>, directed at students in the classroom or otherwise in the general context of formal education, and (2) what we shall call <u>Public Television</u>, which is directed at the general community.

With new "public broadcasting" agencies emerging as a result of the "Public Broadcasting Act of 1967" and the creation of "National Public Radio" as a programming agency, the term "public radio" has come to mean pretty much what "educational radio" meant some years ago -- but with one outstanding ambiguity.

Does "public radio" include "instructional" programming? (Some will say yes, others no.) Or ought the term "public" be used as it was initially coined by the Carnegie Commission to denote those programs <u>not</u> in the general context of formal education and directed to the general community rather than the student in a given learning situation?

We endorse the latter interpretation, and suggest that "educational" radio is what it always has been. "Public radio" thus becomes programming of a general educational,

cultural, or informational nature directed to listeners who
do not at the moment of listening consider themselves to be
students in the normal sense. "Instructional" radio thus
becomes material which is systematically presented for the
benefit of the student who is working for achievement of a
specific learning objective. It occurs to the Task Force
that however one may wish to use the terms "educational" and
"public", the meaning of "instructional" in this context
still remains clear.

But now we must deal with other ambiguities called
forth by the connotations of that term.

"INSTRUCTIONAL"

Because "broadcasting to schools" has been the dominant
form of instructional radio for so long, many assume that
"instructional" and "in-school" broadcasting are synonymous.
They are not. Instructional generally means formal or system-
atic education for credit or certification at any age level.
The varieties of instructional radio include pre-school pro-
grams, in-school programs for elementary or high school use,
college credit, continuing adult education, and continuing
professional education. In each case, the radio programs
may be utilized in learning situations which range from
formal classrooms to individual listening.

Surprising as it may seem, it is also necessary to ex-
amine what we mean by "radio", for although its basic meaning
may be unmistakable, it takes on additional ramifications in
these days of growing technology.

"RADIO"

Many professionals in both broadcasting and education
feel that because instructional people continue to talk about
radio they live in the dark ages, planning materials only for
main-channel broadcast and somehow hoping that newer forms of
audio technology will never impinge upon their transmitter.
Perhaps there are a few like this, but this Task Force did
not find any. Most instructional radio services today also
deliver programs by tape recording and are examining other
delivery systems.

The terms "audio teaching aid" and "audio technology" are
sometimes used to indicate a variety of delivery methods, but
have not yet gained broad enough usage to be meaningful. And
something called an "instructional audio aid" could be produced

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by a publishing house, whereas "instructional radio" identi-
fies the producing organizations. Perhaps the concept of the
"telecommunications center", where planning and designing of
materials to accomplish carefully defined learning objectives
takes place and where various technologies may be utilized
either in tandem or separately, eventually will solve this
dilemma.

Meanwhile, it is well to remember that field use of the
term "radio" is in a period of semantic transition. But there
is no apparent confusion about the terms "broadcast" and
"audio tape" and "audio cassette", and these are recommended
in exchanges about "instructional radio". For the purposes
of this report, we have adopted the somewhat ungainly phrase
"radio and associated audio technologies", which for you,
as for us, may be adequate in some circumstances.

"DIRECT TEACHING", "SUPPLEMENTARY", "ENRICHMENT"

Instructional radio people use several terms which repre-
sent differing philosophies about what instructional programs
ought to be and do. Over the years these terms have become
loaded with value judgments which are not intrinsic to the
activities. "Supplementary teaching aids" are sometimes thought
to be less important than "direct teaching tools" because
doing the teaching must somehow be more significant than help-
ing the teaching. Each form of instructional program has ad-
vantages and disadvantages to the producer and the user, just
as do the various media. Each has a relationship to the
subject matter. The following descriptions include some of
the advantages and disadvantages of the forms without an
evaluation of the forms.

Direct teaching describes a form of instructional unit
which covers material specified in the local curriculum. The
program teaches the lesson plan, conducts drills, gives tests.
All that is required of the teacher or instructor--or, in the
case of adult education, the independent student--is to fol-
low the directions explicitly. Language instruction, mathe-
matics, and science are often offered in the form of direct
teaching programs. This form of instructional radio may prove
difficult to design if differing school districts with
differing curricula are served.

Supplementary programs or audio units cover only a
portion of the material specified in subject matter curricu-
lum and are used by the teacher, instructor, or individual
student for his own purposes, depending upon the given learn-

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ing situation. This form is useful when a variety of school systems with a variety of curricula are to be served, but requires resourcefulness on the part of the teacher or instructor in adapting the program to the local lesson plan. The supplementary form is most often used for social studies, current events, racial and ethnic relations, current literature, or other subjects for which there are often no curricula.

Enrichment is sometimes used as synonymous with "supplementary", but this is not because enrichment materials are rarely related to the curriculum. This form usually brings to the learning situation resources not otherwise available. Interviews with major public officials who would find it impossible to visit every classroom, participation via radio coverage in some significant public event, or performances by artists or symphony orchestras especially for students are examples of enrichment experiences which cannot be classified as unimportant.

All three of these forms of instructional radio and associated audio technologies have value for certain subjects, certain purposes, certain needs. Selection of a form for a particular instructional project should be made on the basis of appropriateness. Those who avoid enrichment programs because that term connotes an educational frill may fail to provide the very element which the learning situation requires.

WHAT SPECIAL CONTRIBUTIONS CAN AUDIO MAKE

TO LEARNING ENTERPRISES?

Unless technology can make a significant contribution to the learning experience, it has no place in education. Much of this Task Force's time was spent in re-examining basic assumptions about radio in this context.

It was necessary, for example, to face the fact that although instructional radio has been around for forty years and in some places has proved itself beyond doubt as a valuable aid to instruction, it has not been generally accepted by American educators. Thus, the Task Force took the position that radio had to be examined again to see if, perhaps, it really did not have enough to offer. After extensive consideration, the only reasonable conclusion was the one stated earlier as our principal finding: that a profound discrepancy exists between evident potential and actual use.

The Task Force believes that the major reason for this
discrepancy is ignorance. As expressed by an administrator
of a well-established in-school service:

> "It's not that people are against instruc-
> tional radio. It's not that people refuse
> to support instructional radio. It's just
> that most people have never heard of instruc-
> tional radio!"

Part of our objective in compiling this report, therefore,
has been to express as clearly and as comprehensively as
possible the particular characteristics of radio and associ-
ated audio technologies which appear to possess special rele-
vance for the educational process.

Radio involves the student by stimulating his imagination.

It is not possible to listen to radio or to a tape record-
ing without conjuring up mental images. What does the speaker
look like? Where is he? What do his surroundings look like?
How old or young or beautiful or ugly is the person to whom
he is speaking? While listening to music or to other sounds,
most people find themselves transported in their minds to other
realms. Sometimes described as the "theater of the mind,"
radio demands the listener's creative participation and thus
involves him deeply in what he hears. Such involvement is
the key to learning.

Richard Kreisberg of the news staff of ABC (American
Broadcasting Company) puts it this way:

> "Radio is basically a more creative medium than TV
> because the listener must conjure up in his mind the
> pictures that TV lethargically places before him. And
> the human mind is far more imaginative than the tube.
> Practically, this is an added plus for radio both
> esthetically and commercially since each listener
> brings his own imagination at no cost."

How often does a classroom teacher yearn for a tool which
will penetrate deep into the creative imagination of those
students she faces?

Radio helps to teach listening skills.

Frank Gillard, longtime executive of the BBC (British
Broadcasting Corporation), has been quoted as saying, "It's a

shame Americans have forgotten how to listen." Many other ob-
servers agree, and many educators are attempting to develop
these skills in the young so that they can more readily appre-
ciate the audial arts and also the meaning of what is said to
them. Though any use of radio focuses on listening, special
programs have been designed specifically to develop listening
skills in the classroom. Careful research shows that students
normally remember only about half of what they have heard im-
mediately after they have heard it, and only about one-fourth
after a two month period. Practice in listening skills can
help students to become more adept at recalling, making infer-
ences from what was heard, critically analyzing what was heard,
and summarizing -- all valuable attributes in today's world.

Radio brings immediacy into the classroom.

Reading about an event is one thing; participating in it
by radio is another. Many public events of importance are not
carried by television because of time commitments, but the
less expensive medium of radio now covers key sessions of the
United Nations, Congressional hearings, and other aspects of
current affairs. Even a brief exposure by radio to these
events while they are in progress affords students a sense
of the reality of public affairs.

Radio implements newest curriculum approaches.

Radio can deliver to classrooms and to individual students
the educational content of current events or of quick changes
in any aspect of our society faster and cheaper than textbooks,
film, of even television. It can also incorporate changes in
educational philosophy and in curriculum far more readily than
any other medium. Radio's adaptability as an in-service train-
ing tool cannot be ignored here; supervisors can discuss and
demonstrate new instructional methods, new approaches, introduce
a new excitement to the teaching profession in a single broad-
cast instead of laborious and repetitious visits to school build-
ing after school building for faculty meeting after faculty
meeting. And the foremost authority can speak to all teachers
simultaneously--providing access that could never be possible
logistically on a face-to-face basis.

Radio permits use of a variety of formats.

- Whether audio instruction is designed for teachers or stu-
dents and whether the listening will take place in a classroom
or at home, the range of formats for presentation are almost

limitless. Material need not be recorded in a studio; much
excellent material now is gathered on location through use of
inexpensive portable recording units. Actuality tapes bring
a sense of reality to the learning situation surpassed only
by the live coverage of a major event mentioned earlier.
Personalities and authorities whose busy schedule would never
permit them to visit a classroom in person can do so by radio
without leaving their office or place of work.

In addition to an endless variety of material to present,
the pattern for processing this material can be varied as
well. Consider these formats, all of which have been useful
in certain instructional situations:

Master Teacher: a content expert possesses such a pleasing
voice and attitude and is so experienced in dealing with the
target audience that it is wise to have him or her present
as well as prepare the programs.

Scripted Narrator: a capable professional voice is used for
maximum effectiveness in delivering pre-written materials ori-
ginated and prepared by content authorities. Several reader-
narrators may be used in a program to provide variety or emphasis.

Directed Activity: students are led to so something during the
program--sing, dance, draw, handle science or art materials--
assisted and observed by their own classroom teacher. This
format also is utilized in continuing education where the in-
dividual student can even be directed in the handling of items,
i.e., lessons in playing the guitar or testing fabrics.

Literature Adapted for Reader: A portion of a book or article
read by a single interpreter, or by several readers. This must
be done with care so as not to do violence to the author's work.

Dramatization or Semi-Dramatization: one of the most effective
ways to use radio's unique ability to stimulate the listener's
imagination and to appeal to everyone's natural interest in a
good story. When professionally produced with a well-written
script, radio drama is unquestionably a strong teaching tool.

Actuality Recording: material recorded on location to secure
realistic environmental background or to enable a subject to
talk on his own grounds, then edited and combined with appropri-
ate narration. Another method of bringing the real world into
the learning situation.

<u>Interview</u>: when undertaken by a skilled questioner after adequate research, this can be a most effective format, since it focuses easily upon the specific points to be brought to the learner's attention.

These, then, are the kinds of contributions which radio and associated audio technologies can make to learning enterprises -- <u>provided</u> those in charge use the medium effectively and with clear purpose in mind.

No single medium is best for all types of instruction. Rather, the learning objective must be established before selection of media is undertaken. As we have implied earlier in this report, television and other visual media are very effective and their higher cost is justified for certain types of instruction. Each of the media should be applied to the learning task in accordance with its own unique characteristics. When the task benefits from an auditory experience--music, sound, special effects, actors, on-the-spot coverage, actuality tapes--then audio techniques should be creatively utilized to gain and hold the attention as well as to fulfill the instructional purpose of the curriculum. Conversely, this means that radio should <u>not</u> undertake what textbooks, television, or other media can do more aptly.

Radio--as any other medium--should be employed only when the highest professional standards can be met. Pre-planning and design must be undertaken carefully at the outset. The quality of production, the acting, narration, technical quality, all must not detract from the content, or lead the listener away from the desired mood, or information, or attitude. Content itself must be reliable and in keeping with the best thinking in a subject area. Programs must exude liveliness and interest, often humor and good spirits, yet must always be in good taste and never talk down to any listener. And whenever appropriate, some kind of active response should be anticipated from the listener in order to re-enforce with him what he has learned from the program itself. These are standards not easy to achieve but essential if our goal is quality education.

<u>WHAT DO WE KNOW ABOUT</u>

<u>THE EFFECTIVENESS OF AUDIO COMMUNICATION</u>?

Long before television there was a generally accepted notion about one picture being worth a thousand words. All of

us have seen such pictures. And perhaps in the general tra-
dition that "more is better", there has been an assumption
that sound-with-pictures must be better than sound alone. On
some occasions it most certainly is. And the premise was sup-
ported some time back by researchers at the University of
Toronto who gave validity to the idea.

In recent years, however, equally reliable researchers
in educational communications have been led to doubt this con-
clusion. Whether they were impressed by the song of an unseen
bird on a May morning or the insistent crying of an unseen in-
fant in the next apartment, we do not know, but evidence of the
effectiveness of audio alone comes to us from many quarters.

The Wisconsin School of the Air in its early audio days
developed an elementary art program, "Let's Draw". Children in
classrooms throughout the state listened to stories, dramatic
skits, music and sound effects relating to "trains" or "the zoo",
and were then urged to draw what their imaginations had generated
in their own mind's eye. The assortment of locomotives and un-
limited wheels and animals with indescribable bodies and legs
were wonderful to behold! When classroom television became
available, the art instructors scarcely could wait to use this
new visual medium for a new series of art programs, but when
they did--employing films of trains or animals and providing
all manner of new visual stimuli--the children's drawings
which resulted looked disappointingly the same as what had
been shown on TV. Which was the better creative experience?

Marshall McLuhan, in "Understanding Media", reports an
unexpected result in a study comparing four methods of furnish-
ing language information to groups of university students. One
group received its materials by radio, one by TV, one by lec-
ture, and one from reading. The first time around the students
learned more from TV and radio than from lectures and print.
When the experiment was repeated using improved auditory and
visual aids, television and radio again ranked high above lec-
tures and print--but to the surprise of the teachers, radio
now stood significantly above TV! In this experiment, TV
seemed to perform less well as a teaching medium because there
was less opportunity for empathic audience participation.
Radio, on the other hand, tended to perform better because of
efforts to harness its inherent ability to engage the students.

Dr. Harry Skornia, in a recent survey paper, summarizes
the work of a number of researchers indicating that the addi-
tion of pictorial content reduces learning through aural chan-
nels. Most interference seems to occur in three-channel pre-

sentations--audio, print, and pictorial. Experiment after
experiment has revealed that adding a third and sometimes a
second channel does not necessarily advance learning, and often
interferes with it. The explanation, based on Skornia's docu-
mentation and also on Chu and Schramm at Stanford, appears to
be that one audio channel delivers information no faster than
the average individual can assimilate it. On the other hand, TV
visual information along with its audio channel produces a sort
of overload, apparently on the order of two or three times as much.

These conclusions are echoed by the considered views of
Dr. Charles A. Siepmen. Dr. Siepman's long experience profession-
ally in radio with the BBC, then with various American broad-
casting entities, then as professor of communications at New
York University, may perhaps invest his opinions with a special
value not necessarily afforded to others. Siepman is fully
convinced that

> . . . there's a point beyond which making everything
> easy on the eye may prove positivily harmful to true
> activity of mind and of imagination.

He applies this hypothesis to specific types of general broad-
casts such as news and discussion programs. With regard to
discussion programs he says:

> "The essence of discussion is the thought conveyed.
> Even the by-play of interest--in the looks and glances
> and reactions of the speakers--could be claimed, in
> however minor a degree, to be distractive. Radio,
> in the bygone, happy days when there was discussion on
> the air, taught us to listen and attend, without dis-
> traction to ideas."

Touching on one of radio's most evident characteristics,
Siepman bemoans the demise of radio drama.

> "Of all the losses resulting from relegating radio to
> use in the bedroom, the bathroom and the car, perhaps
> the most grievous is the demise of the radio drama.
> For here the seeming disadvantage of "listening blind"
> was converted into an asset. All you heard was language,
> some sound effects, and music...All the rest was filled in
> by the listener's imagination. For in radio the listen-
> er is part author of the play, the writer suggesting
> only what for the most part the listener creates in his
> own mind. The stage, in radio, is the listener's imag-
> ination.

"The educational, as well as the artistic loss involved
in the demise of radio drama is suggested by the fact
that in broadcasts to schools in Britain, the acceptance
of television by teachers there has been and remains re-
tarded. Whereas 30%, odd, of schools in Britain tune in
to television, 73%, odd, remain regular devotees of radio."

Dr. Siepman's comments about TV and radio usage in
British schools are remarkably parallel to documented experience
in some places in this country where both radio and television
school service have been offered at levels of comparably
high quality.

In a comprehensive study of the use of radio and of tele-
vision in all of the 2650 elementary schools in its state,
the Wisconsin School of the Air found that better than 82% of
all classrooms were using radio...voluntarily. In classrooms
where both TV and radio were available, use of radio has slight-
ly _increased_ since the advent of television. Since its incep-
tion in the 1930's, the Wisconsin School of the Air has made
liberal use of drama formats and has won numerous awards for its
effective use of radio to stimulate the imaginations of children.

Similarly, the New York City school broadcasting service,
also a consistent user of the dramatic format in radio instruc-
tional broadcasts, found that in 1970-71, after thirteen years
of available television for classroom use, the actual figures
stood as follows:

Number of classrooms using television: 13,544
Number of classrooms using radio: 21,248

The attributes of radio can be used for instructional pur-
poses to activate the mind of the student. It is a medium that
involves the learner and permits active participation through
spoken response and discussion, physical activity, creative
expression, inquiry, or it can quietly touch areas of deep
feeling.*

WHY IS AUDIO TECHNOLOGY CURRENTLY UNDER-UTILIZED?

The heading of this section suggests that this is where
the Task Force lays blame on those dastardly "others" respons-

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*A summary of research on instructional radio is provided in
in Supplementary Paper Number 1, appended to this report.

ible for what some consider instructional radio's present plight.

While our analysis necessarily uncovers some facts and attitudes which may leave some people a little uncomfortable (and if the shoe should fit, the old adage is worth considering), our intent here is to identify the factors which will help educators and broadcasters to make better use of this medium in the future as a practical aid to quality education. Holding up a mirror to an entire population, one is bound to reflect the images of some who have been leaders, some who have been followers, and some who have been laggards. But the purpose in looking at ourselves is not to blame well-intentioned people for what they have not done; rather it is to assist us all in working more effectively together toward common goals in the future.

It should also be noted that there are bright and encouraging signs in the situation, and that they are dealt with elsewhere in this report. The purpose of this particular chapter, however, is to delve into factors which may explain why the bright promise held in the two preceding chapters is not already upon us--why audio has as yet been unable to make some of its potential contributions to learning enterprises, and why research concerning its effectiveness has not been broadly applied.

The simplest and most straightforward answer to the question posed in this chapter's heading is that most educators and many broadcasters were unaware of the potential of any of the media for instruction until the irrepressible attractions of television came along and forced a consideration of new ways to use technology in the learning process. This has both helped and harmed consideration of radio and associated audio technologies. In the Wisconsin School of the Air study of the use of radio and TV in schools throughout the state, it was found that in classrooms where TV was available and used, radio use actually <u>increased</u>--suggesting that once teachers begin to grasp what one of the media can do for them, they become curious about other media. On the other hand, answers to the Task Force's own questionnaire survey brought comments from radio station managers like this:

> "We ceased all instructional broadcasting both formal
> and informal as TV is now available to our schools and
> material available to us was poor in quality and very
> dated."

Or:

> "The existence of (local ETV station) as an instruc-

tional medium precludes radio programming of the
same nature."

The same questionnaire brought in other data related to this
matter. Although at one time or another 59% of responding
radio stations had aired instructional programs, no more than
40% were doing so in 1971-72. And when asked to define the
primary purpose of their station, only 10% of the respondents
identified it as "instructional".

In all fairness, however, of the 19% of the stations ad-
mitting no current interest in instruction (which struck the
Task Force as an encouraging percentage), the reasons given
were usually budget and staff limitations. This was borne out
in another section of the questionnaire which showed that local
instructional production is more likely to occur in stations
with larger staffs and budgets and more extensive facilities.
Another echo of the same condition was found in these separate
comments:

> "We still have an interest but feel we can't get back
> into production until we obtain adequate help."

> "We are interested in developing instructional program-
> ming, especially utilizing SCA. However, I have not had
> access to comprehensive information which would enable
> me to compile the necessary material for presentation to
> our administration. I therefore look forward with
> great eagerness to the completion of your study."

> "We would very much like to pursue this avenue of ser-
> vice. Perhaps a sample program format would be of
> value as a beginning."

Frustrating the local radio broadcaster even further
have been certain other conditions in his work-a-day world.
Of more than 500 noncommercial educational radio stations now
licensed in this country, less than 25 are AM stations re-
ceivable on every radio set. While the advantages of FM
transmission are numerous, including the intriguing possibil-
ities of the subcarriers, still it has been difficult to
reach some Americans most in need of education who did not
until very recently own FM receivers.

Secondly, in radio we do not have the advantage that
was generated in the early days of instructional television
by its mere newness--the kind of excitement in high places
which led to the funding of the large class experiments in

educational TV, the Midwest Airborne Project, the Hagerstown Closed Circuit TV Project, the funding of three experimental libraries for the exchange of instructional TV materials, and the concurrent rush among educational researchers to see if it really was possible to teach by television. Social momentum, one might call it, gave the examination of television's potential in education a great lift and ultimately great amounts of money with which to demonstrate its capabilities. While educational radio has succeeded through the valiant efforts of some of its past and present leaders to involve itself in what is now called "public broadcasting" and while it is making its own gains in its own name and is now gradually climbing to an e-quivalent place with TV, still the past decades have not allowed instructional radio the same attention and consideration given to instructional television. Radio people have found themselves in a frame of mind similar to that of audio-visual specialists who have been trying for a quarter of a century to encourage liberal use of films in the classroom—and who are a bit ambivalent about the way in which television has increased interest in the film.

But all of the lethargy is not among those in radio. Station managers were asked on our recent questionnaire about the prevailing attitude among local educators concerning instructional radio. The question was:

"In your area, are educators at all levels of education generally aware of the instructional possibilities of radio? Why or why not?"

Responses indicated that approximately two-thirds were not. Reasons most often cited were:

Unfamiliarity with instructional potential of the medium.
Lack of interest in the medium.
Lack of promotion of the medium.

Other reasons less frequently mentioned were:

Television
Limited Staff.
Lack of time.
Lack of direction from the top.
Insufficient facilities.
No radios in the classrooms.
School board opposed to "modern technology".
Unaware of existence of the station.
Radio is an expensive "frill".

Individual comments shed a little more light on the nature
of the situation, at least as seen by radio managers:

"We continue to encounter resistance among classroom
teachers who regard radio programs as 'entertainment'
unsuitable to their busy, highly structured classroom
time. Language arts teachers who make periodic visits
to schools throughout the system work to alleviate these
fears and show the classroom teachers that the radio
programs help rather than threaten their plans and
activities."

"Let's face it, many excellent professors still cannot
thread a simple tape recorder. Machinery befuddles some
of them. They need to be enlightened in a democratic
manner...We explain and try to 'educate' our educators
whenever the opportunity presents itself."

"This school system has had a huge turnover...in the
past few years, and has managed to get itself embroiled
in Federal desegregation suits, massive and hastily
conceived curriculum changes, and a general chaos which
prevents sane presentations on almost any subject. The
only bright spot is that just recently I conducted a
short and sweet workshop for reading and language arts
consultants, talking up utilization. Many of them were
amazed at the good stuff we have and are proselitizing
in the classroom (we know because the teachers are
calling requesting radios)."

"Many of the faculty on our campus have not been made
aware, though this is slowly being remedied with soft
sell techniques...We invite department heads into our
studios weekly for coffee and a tour of the facilities. So
far we have not had much results but in time it may help."

"We are having an extremely difficult time convincing
our administration that it is necessary for us to explore
this possibility (of instructional radio). Yet we are
expecting 7500 students by 1975 to be educated in a
physical plant for 4000. We are trying to couple instruc-
tional radio with the concept of public radio as a ser-
vice of the school to the community. We need some help!"

"At a time of general economic constraints and austere
budgets, the economical means of distribution which radio
affords educators is ironically overlooked."

"As a broadcaster with a background in instructional media, I'm not sure that I am aware of the instructional possibilities of radio."

The impression gained by the Task Force from comments like these, from questionnaire results*, from statements submitted, from comments in the Miami hearings, and from station visits is that with a few notable exceptions and for whatever historical reasons, there is an astonishingly widespread lack of understanding of the ways in which radio and associated audio technologies may be employed to help solve some of American education's most pressing problems.

There have, of course, been some failures. The Task Force compiled a list of reasons why some instructional radio projects have not been effective. Not necessarily in order of importance, the reasons are these:

(1) Failure to assess with care the community's most urgent educational needs and to undertake programming to meet those needs.

(2) Failure to define clearly the educational mission and to measure efforts against agreed-upon goals.

(3) Failure to keep administrators, budget analysts, decision-makers informed and convinced of the value of instructional radio as a whole and of their local operation in particular.

(4) Failure to keep the instructional radio service up-to-date by:

(a) continuing to broadcast programs after they have become inaccurate or obsolete.
(b) using old, tired formats for new materials.
(c) using obsolete educational approaches no longer in keeping with new curriculum.

(5) Failure to keep in contact with teachers (or adult students) who use the broadcasts to check vocabulary, content, approach clarity of presentation for intended audience, length of

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*A complete summary of the information gained from the Task Force's questionnaire study conducted by Richard Forsythe of Purdue University, using the facilities of the Measurement and Research Center of Purdue University, is provided in Supplementary Paper Number 2, appended to this report.

attention span, quality of broadcast signal, any other
practical problems at receiving end.

(6) Failure to train newer teachers in the use of radio
through teacher training institutions, workshops, util-
ization sessions, etc. Or failure to adequately orient
college faculty in the first place.

In the main, though, we are not facing a situation in which
instructional radio has failed. In a few striking instances
where its inherent characteristics have been understood and
purposefully applied, it is thriving. But in the great major-
ity of situations across the country, neither educators nor
broadcasters have managed to acquire adequate knowledge
either about the potential or the practical ways to go about
tapping that potential.

PART IV

THE FUTURE

In some respects, the future is already upon us. A few
instructional radio people already are working with the tools
of the future and others are rapidly discovering them. From
its explorations, the Task Force merely learned that what
others have been predicting will in all probability come to
pass, at least with regard to the following five matters:

Increasing use of FM subcarrier.

Audio services on CATV

Improved methods for exchanging audio
instructional materials.

Growing desire for and acceptance of
superior-quality materials produced
nationally for local adoption and use.

Adoption of the concept of the multi-
media "Telecommunications Center."

Use of the FM subcarrier by multiplexing the transmitted
signal is a technique long used by commercial FM broadcasters
to supply music service separate from their normal programming,
to stores, offices, and industrial plants. Multiplexing
makes possible the transmission of more than one "program" at
a time over the same transmitter. It makes stereophonic
broadcasting possible by "splitting" the signal so that sound
recorded on the "left" side as the audience faces the sound
source is transmitted separately from sound recorded on the
"right" side. The two separate streams of electronic infor-
mation arrive at the receiving set on two different portions
of the transmitted signal and are fed into the "left" and
"right" headphone or speaker respectively, thus re-creating
for the listener a multi-dimensional audio experience. By
using somewhat the same technique to split or multiplex the
signal emanating from the transmitter and antenna of the
broadcasting station, one program can be available on the
main channel to listeners using standard FM receivers (mon-
aural), and simultaneously an entirely different program for
a different audience using special SCA receivers can be avail-
able on one of the so-called subchannels or subcarriers. In
fact, the FM signal can be broken down into as many as four

separate channels, although the more one breaks it down the
more the quality of the signal is degraded.*

This special capability of FM radio is intriguing to
those concerned with audio instruction. A station can, for
example, serve a general audience with cultural features on
the main channel while providing on a subcarrier in-school or
college credit materials to listeners equipped with SCA re-
ceivers. Or by using the subcarrier, certain kinds of privi-
leged information or materials so highly specialized they are
of no public interest, can be aired just for the relatively
small or select listeners desiring them. The Task Force
members have sensed a definite growth in interest in SCA
across the country during their visits and inquiries.

Audio services on community cable are already a part of
a few CATV services which provide their subscribers with pro-
grams picked up from nearby FM stations, although this at
present is the exception rather than the normal situation.
Some educational institutions without broadcast licenses are
providing both television and radio materials to receivers in
their local areas through use of the local cable system.
Most of the experimentation so far attempted has been with
television. However, if--as some people predict--virtually
all of the radio and television programming received in the
average home in future decades will not come "through the
air" but instead will come "by wire", it behooves educators
and educational broadcasters alike to keep a wary eye on the
development of local ordinances intended to regulate cable so
that adequate future access for education may be assured.
This is the sense of Recommendation 5, page 10, of our report.

In addition to monitoring licensing, educators should
plan for cable delivery to local schools, colleges, libraries,
learning centers, and other public buildings where groups of
students may gather to pursue their education, formally or
informally. Entrepreneurs entering the community cable busi-
ness are sometimes in a frame of mind to furnish such facil-
ities free or at very reduced rates, presumably as an incen-
tive to further use of cable as a community service. Such

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*A detailed account on SCA...which denotes "Subsidiary
Communications Authorization", granted by the FCC...is dealt
with in Supplementary Paper Number 7 appended to this report.

largess should not be ignored--if the price is right.*

In future years when shopping, banking, and other similar activities may be carried on electronically through a home reception and transmission center, education also must be included in the console if lifetime learning is to take place under the circumstances of the future.

Improved methods for exchanging audio instructional materials are badly needed. The Task Force found decreasing use of the materials available in the old NERN Instructional Package now offered by NPR, and for good reason: it no longer includes the best of radio instructional materials produced by stations across the country. While a few instructional producers still provide their tapes gratis, most can no longer afford to do so. The result is that the best available programming is not available to others who may wish to consider using it.

If a dozen years of experience with exchange of instructional materials in television can tell us anything, it is that the initial feeling of local educators that they do not wish to use materials produced anywhere but in their own shop by their own people and for their own students gives way when truly excellent materials become available. Sharing of such materials not only lowers their cost on a pro rata basis; it also means that limited local funds can be concentrated on local production of other materials not available from libraries. Thus the locally-produced items improve in quality because they are backed by better-than-severely-limited resources.

We sense a strong need for new apparatus to deal with instructional radio materials exchange and distribution, and have expressed our concern in Recommendation 3, pages 7-9.

Superior quality materials produced nationally constitute a need not so frequently expressed directly as the need for "exchange." The Task Force believes, however, that in order to generate sufficient funding to pre-plan, design, and produce audio instructional materials of superior quality, it will be desirable to undertake such activities at the national level. This has been true in instructional television, where history shows that even the best instructional materials produced

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*A more detailed treatment of cable, along with variable rate change devices, printout possibilities, and other newer narrow-band technologies, is furnished in Supplementary Paper Number 4, appended to this report.

locally were not often satisfactory for national distribution. Moreover, curriculum needs appear not to be so very different from one community to another; certain needs are so consistent that carefully planned central production, funded on a high level because of its anticipated wide use, provides one way of solving the difficulties of enough money, enough planning, and enough eventual use to keep down the pro rata cost.

This thesis has been proved by the National Instructional Television Center, Bloomington, Indiana, which at the time of the Task Force investigations, was launching a $600,000 health education project planned and financed by a consortium of more than 30 educational interests (more than two dozen of them were state departments of public instruction). In the hope of learning something of this approach which might be applied to radio, the Task Force assigned two of its members to assist NIT in designing an audio component for this health education project. The audio component is an in-service aid for teachers, assisting them in preparing for their use of the project's visual materials with their students. It will be planned in cooperation with utilization experts from the consortium member agencies in order to be tailored to varying needs across the country. This kind of cooperative planning and design, we feel, must be encouraged within the field of audio instruction if ultimately we are to develop materials of the superior quality so desired by everyone.

Adoption of the "Telecommunications Center" concept is a very short step from what we have just discussed. Enough material has gone forth recently about the concept itself and mention is made elsewhere in the report so that further description here would be redundant. But the Task Force does feel compelled to predict that those now interested in using radio and associated audio technologies in the service of education will find themselves more and more involved with larger groups of planners: people representing other media, learning theory experts, educational psychologists, administrators, teachers, researchers. The watchword of the future is Togetherness, for only through applying all of the special abilities of these many professions to the problems of education will we eventually arrive at solutions. While audio has its special, even unique characteristics to offer, still it must be employed with due regard for all aspects of any given instructional circumstance. In fact, it is only by so doing that audio can indeed make its finest contribution to all kinds and all levels of American education. And this, in the view of the Task Force, is the consummation devoutly to be pursued.

SUPPLEMENTARY PAPERS

(1) A Summary of Instructional Radio Research.......... (**)
    Excerpt from "Instructional Radio: A
    Position Paper", by Richard O. Forsythe, 1970

(2) A Survey of Instructional Radio In The
    United States: summary of questionnaire
    study for the Task Force, 1972................... (i)

(3) A Short Bibliography on Instructional Design,
    prepared by William Dale, Director of
    Instructional Services, NAEB, 1972.............. (**)

(4) "Audio Telecommunications Systems: Some Recent
    Developments", a review of the newer narrow-
    band technologies by George O. Hall, NAEB....... (**)

(5) A Report on Purdue University's college courses
    by radio, by Richard O. Forsythe, 1972.......... (vi)

(6) "Instructional Radio in Britain's Open University"
    by Charles A. Wedemeyer, Distinguished
    Professor of Education, University of Wisconsin. (ix)

(7) "An SCA Primer", the basics of FM subcarrier
    use, by Albert Fredette, Albany Medical
    College, 1972................................... (**)

(8) "Combining Radio and Television in Drug Abuse
    Education", by Irwin Gonshak, WNYE, Brooklyn.... (**)

(9) An Approach to Using Radio Nationally to Stress
    A National Value, by Claire Kentzler, WHA,
    Wisconsin School of the Air..................... (**)

**Not included in this special pre-publication copy of the
  Task Force report. Will be published in subsequent com-
  plete edition. For further information, contact National
  Educational Radio (NAEB) office in Washington, D.C.

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A SURVEY OF INSTRUCTIONAL
RADIO IN THE UNITED STATES

BY

RICHARD O. FORSYTHE

Early in its study , the NER Instructional Radio Task Force became aware of the lack of available information concerning the extent and nature of instructional radio broadcasting in the United States. Previous efforts to examine the field[1] had cited various instructional applications of the medium but made no attempt to describe the scope of activity. Since such information was deemed necessary to the work of the Task Force, a survey was undertaken utilizing the facilities of the Measurement and Research Center of Purdue University.

Description of Study

A questionnaire was cooperatively developed by Task Force members and Measurement and Research Center staff.[2] The instrument itself was divided into "objective" and "subjective" parts to facilitate interpretation. Generally, items attempted to elicit information about (1) the size and type of radio station, and (2) the amount and kind of instructional programming. Items were also included to ascertain the existence of evidence of instructional effectiveness and to provide the respondent opportunities to explain local conditions.

Questionnaires were mailed to all 187 NER member stations and to all 27 CPB qualified stations that are not members of NER. A cover letter from James Robertson, Director of NER, was attached to each questionnaire requesting station cooperation. Of the 214 questionnaires mailed, 140 (65%) were returned in time for tabulation.[3]

Responses to the structured-response portion of the questionnaire were keypunched for computer processing. Stations were divided into categories according to budget size and means and standard deviations were computed for appropriate items. In addition, Chi-Square analysis was done across all variables using "1971-72 budget change" and "current involvement in in-

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1. The Hidden Medium: Educational Radio and various other surveys by NAEB, NER, NPR, and CPB

2. See appendix for sample questionnaire

3. See appendix for list of respondents

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structional production" as the two bases for comparison. Re-
sponses to the free-response portion of the questionnaire were
subjected to content-analysis by members of the Task Force and
tallied by categories.

Results

It was found that 59 per cent of the radio stations who re-
sponded had, at one time or another, broadcast instrauctional
programs, and that 40 per cent are currently producing such
materials.[1] As Table I indicates, 11 per cent of the respondents
can be viewed as primarily instructional stations, while the
majority see their primary purpose as providing information and
culture to a general audience.

For reporting purposes, instructional programs were categor-
ized according to intended level and reception situation. It is
apparent in Table II that there has been a strong tendency over
the years for programs in the formal group listening category to
be concentrated at kindergarten through high school levels.
Conversely, there has also been a tendency to design college-
level and adult programming for informal reception. Current
instructional broadcasts generally follow the same patterns, as
can be seen in Table III.

Respondents were asked to indicate the number of years their
station had been involved with each type of instructional pro-
gramming. Returns suggest a strong tendency for stations broad-
casting at primary through high school levels to have done so for
either a very long time (15 to 20 years), or a very short time
(1 to 2 years). The majority of stations broadcasting college
credit courses have done so for only one or two years, while the
majority of stations broadcasting non-credit college courses have
done so for a considerably longer period of time.

Approximately three-fourths of the respondents included current
budget information which is presented in Table IV. Generally,
it would seem that stations in the $50,000 to $100,000 budget
classifications were least affected by recent economic cutbacks
while those in the highest categories were most affected.

Chi-Square analysis indicates that changes in 1971-72 station
budgets appear to be related to a station's potential audience
(.96). The exact nature of this relationship is not clear. There
would appear to be a tendency for stations with the largest and
smallest potential audiences to either have their budgets decreased

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1. Seven stations are producing instructional materials but
   are not broadcasting them.

TABLE I

PRIMARY STATION PURPOSE AND CURRENT INSTRUCTIONAL PRODUCTION
(Number of Stations Responding)

	Student Training	Programming for Campus Audience	Instruc-tional Services	Public Relations	General Informa-tion and Culture	Totals
Currently Pro-ducing Instruc-tional Materials	10	3	11	1	27	52
Not currently Producing In-structional Materials	7	4	3	1	58	73
Totals	17	7	14	2	85	125

*Chi-Square analysis reveals a .99 probability that primary station purpose and current instructional production are related.

TABLE II

PREVIOUS TYPES OF INSTRUCTIONAL PROGRAMMING
(Number of Stations Responding)

	Designed for Reception in Formal (classroom or structured-group) Situation	Designed for Indi-vidual Listening in Informal Situation	Totals
Primary	30	23	53
Upper Elementary	29	17	46
Junior High	20	12	32
Senior High	19	12	31
College (credit courses)	12	14	26
College (non-credit courses)	6	16	22
Continuing Adult Education	6	18	24
Continuing Pro-fessional Educa-tion	3	9	12
Other	2	7	9

TABLE III

CURRENT TYPES OF INSTRUCTIONAL PROGRAMMING
(Number of Stations Responding)

	Designed for Reception in Formal (classroom or structured-group) Situation	Designed for Individual Listening in Informal Situation	Totals
Primary	19	4	23
Upper Elementary	20	2	22
Junior High	14	1	15
Senior High	7	3	10
College (credit courses)	3	6	9
College (non-credit courses)	0	5	5
Continuing Adult Education	0	1	1
Continuing Professional Education	2	1	3
Other	0	0	0
Totals	57	22	79

TABLE IV

1971-72 BUDGET CHANGES
(Number of Stations Responding)

1971 Budget	Budget Increased in 1972	Budget Stayed the same in 1972	Budget Decreased in 1972	Totals
$10,000-$19,000	11	8	3	21
$20,000-$29,999	9	2	4	15
$30,000-$39,999	7	3	1	11
$40,000-$49,999	9	3	0	12
$50,000-$59,999	1	5	2	8
$60,000-$69,999	5	0	0	5
$70,000-$79,999	4	4	0	8
$80,000-$89,999	4	0	0	4
$90,000-$99,999	2	1	1	4
$100,000-$149,999	3	2	2	7
$150,000-$199,999	2	1	1	4
$200,000-$500,000	2	1	5	8
Totals	59	30	18	107

*Chi-Square analysis reveals a .97 probability that budget change and budget size are related.

or to stay the same. However, there is no apparent statistical relationship between budget change and a station's reported audience or its share of the potential audience.

Interestingly enough, there would appear to be no relationship between budget change and primary station purpose, amount of time on the air, number of professional staff, physical facilities, or reported audience.

Whether or not a station is currently engaged in producing instructional materials would seem to be related (.95) to budget size. As can be seen in Table V, 53 per cent of the stations with budgets in excess of $80,000 are currently producing instructional programs, while only 35 per cent of the stations with budgets of less than $80,000 are so involved.

As might be expected, there was a strong possibility (.99) of a relationship between a station's primary purpose and its current involvement in instructional production. Table VI reveals that instructional production logged most noticeably among stations in the "general information and culture" category. Among the other types of stations, approximately half were producing instructional materials with the obvious exception of those who viewed instruction as their primary function.

A number of questions were asked about station broadcast schedules, staff, facilities, and audiences. These data are presented in Table VII as averages within specified budget categories. The results should be interpreted cautiously because of small samples and wide ranges of response within categories. The data relating to the actual size of a station's audience is particularly suspect since a number of respondents indicated that they were only guessing. Generally, it would seem that staff, facilities, and time on the air increased with budget size.

The availability of cassette recorders is a matter of general interest since the cassette is representative of recent technological advances in the radio industry. It should, therefore, be noted that approximately one-third of the respondents did not indicate ownership of a cassette record/playback unit.

When asked to describe available evidence relating to the effectiveness of their instructional materials, 34 respondents reported they had evidence, 9 indicated they had none, and the rest did not answer. The evidence itself generally fell into the category of informal feedback from users or requests for materials. Only 3 respondents reported the existence of experimental studies, although eight had undertaken surveys of radio students.*

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* A more complete report including comments of respondents will be included in a subsequent complete publication of this Task Force Report.

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TABLE V

1972 BUDGET AND INSTRUCTIONAL PRODUCTION
(Number of Stations Responding)

	Currently Producing Instructional Materials	Not Currently Producing Instructional Materials	Total
$10-$20,000	6	10	16
20- 30,000	6	3	9
30- 40,000	2	7	9
40- 50,000	4	6	10
50- 60,000	2	10	12
60- 70,000	2	1	3
70- 80,000	1	6	7
80- 90,000	4	0	4
90- 100,000	4	3	7
100- 150,000	1	6	7
150- 200,000	2	2	4
200- 500,000	5	3	8
Totals	39	57	96

*Chi-Square analysis reveals an .95 probability that 1972 budget is related to the current production of instructional materials.

TABLE VI

PRIMARY STATION PURPOSE AND CURRENT INSTRUCTIONAL PRODUCTION.
(Number of Stations Responding)

	Currently Producing Instructional Programs	Not Currently Producing Instructional Programs	Totals
Student Training	10	7	17
Program Service to Campus	3	4	7
Instructional Service	11	3	14
Public Relations	1	1	2
General Information and Culture	27	58	85
Totals	52	73	125

*Chi-Square analysis reveals a .99 probability that 1971-72 budget change is related to primary station purpose.

Approximately two-thirds of the respondents felt that educators in their locale were not aware of the instructional possibilities of radio. The reasons given for this unfamiliarity are generally clustered in categories of which can best be described as (1) lack of knowledge about the instructional potention of the medium, (2) lack of interest in radio, probably due to television and (3) lack of promotion.*

The final item in the questionnaire provided educational stations an opportunity to react to the formation of an Instructional Radio Task Force by the NER Board of Directors and to comment on the "new" direction taken by their professional organization. Fifty-eight stations, approximately two-thirds of those responding, endorsed NER's concern for instruction while 26 stations expressed disapproval.*

Discussion

Several things are apparent as a result of this survey. First, and most surprising, is the amount of interest in instructional within the educational radio industry. A relatively large number (40 per cent) of the stations responding are presently involved in the production of instructional materials and a number of others are on the verge of entering the area. Until this study was undertaken, most informed estivates were that only ten to fifteen per cent of the population engaged in instructional production and that this number was decreasing because of the recent emphasis on "public" broadcasting by the CPB.

The renewed interest in instructional radio programming has undoubtedly been prompted by recent economic upheavals in education which have forced schools to cut non-instructional expenditures and by the new posture of NAEB toward instruction. It would, of course, be erroneous to think that a major philosophical shift has occurred within the educational broadcasting profession. However, in view of the evidence, it is clear that major philosophical questions are being discussed and that programming changes are taking place.

Second, and somewhat related to the first point, is the fact that stations currently producing instructional materials seem to be doing it in spite of the educational establishment. With some notable exceptions, the majority of stations have no major commitment to instruction and are, at best, only peripherally related to the instructional role of their parent institutions. This same problem exists for stations whose major function is instruction, since most of them would also seem to be divorced from the educational decision-making process. Only eight stations reported the involvement of administrators at the "superintendent" or "dean" level in instructional decisions.

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*A more complete report including comments of respondents will be included in a subsequent complete publication of this Task Force Report.

TABLE VII

MEANS OF SELECTED RESPONSES BY BUDGET CATEGORIES

	$10,000 $19,999	20,000 29,999	30,000 39,999	40,000 49,999	50,000 59,999
Number of stations	19	9	10	10	13
Average 1972 budget	13,542	23,861	33,560	42,500	52,707
Hours on the air per day	9.84	12.78	15.10	13.80	15.0
Days on the air per week	6.11	6.44	6.60	6.60	7.0
Weeks on air per year	42.68	43.70	45.80	50.0	51.14
No. of professional full-time staff	1.45	2.60	2.40	3.40	4.0
No. of professional divided time staff	2.14	2.60	2.14	3.22	3.60
No. part-time employees	9.08	9.50	12.90	10.0	11.36
No. volunteer workers	31.58	21.67	27.67	16.89	22.10
No. of studios	2.11	1.89	2.50	2.44	2.0
No. of control rooms	1.79	1.67	2.10	2.70	2.14
No. stationary tape recorders	4.32	6.33	4.80	9.30	5.64
No. portable tape recorders	2.88	2.44	5.60	2.78	3.85
No. cassette record/ playback units	2.21	1.83	3.63	2.78	3.30
No. of turntables	4.63	3.67	5.20	4.60	4.64
Potential Audience	297,647	398,666	746,000	581,222	464,307
Actual Audience	27,208	21,600	17,142	15,000	28,071

60,000 69,999	70,000 79,999	80,000 89,999	90,000 99,999	100,000 149,999	150,000 199,999	200,000 500,000
3	8	4	10	7	4	8
61,745	75,284	82,600	95,025	115,818	186,480	301,545
11.67	12.78	13.60	16.10	15.00	13.26	16.50
6.33	6.44	6.40	6.90	6.75	6.75	6.88
44.67	51.56	48.0	52.0	50.50	52.0	52.0
3.0	4.78	4.80	6.40	6.29	7.75	20.25
3.33	2.33	4.0	3.43	2.20	5.33	7.0
1.50	6.75	9.67	1.70	14.33	7.75	18.62
0	33.0	12.75	22.0	7.33	34.00	15.33
2.0	2.44	2.60	2.40	2.38	3.0	3.63
1.50	1.78	1.40	2.20	2.50	2.50	2.63
6.0	6.89	5.60	8.20	7.88	8.25	12.75
3.75	3.78	3.25	5.20	6.00	6.50	8.25
3.0	3.25	3.33	2.86	3.67	2.0	5.63
3.0	5.22	5.60	5.80	5.88	4.75	7.0
1,687,500	1,151,846	1,156,000	1,409,273	1,254,231	2,916,666	4,149,634
260,000	26,054	66,066	185,305	43,000	167,500	311,166

Third, and very obvious, is the almost total lack of objective evidence concerning the effectiveness of the instructional radio effort. For the most part, proof of accomplishment is limited either to counting requests for materials or to reporting fan mail. While it is true that radio is no different than many other areas of education in its demonstrated concern for evidence, it is also true that the entire educational system will be held increasingly accountable in coming years.

In conclusion, this survey has contributed new information of interest to some educational broadcasters. It has also contributed to the function of the Instructional Radio Task Force and has greatly reinforced its findings and recommendations.

PURDUE: AN OPEN UNIVERSITY VIA RADIO

By

RICHARD O. FORSYTHE
Director, WBAA Instructional
Division

Purdue University began broadcasting credit courses on Radio
Station WBAA in the fall semester of 1969. By August, 1972, seven-
teen different courses had been offered to 6,131 students who in-
formally registered to monitor the broadcasts. Of these known
listeners, 1,261 established university credit by examination.
The variety of subject-matter presented in this manner is illus-
trated in the appended list of broadcast courses, many of which
are available for sale to other educational institutions.

For the most part, courses are recorded as they are taught in
regular, on-going class sections. Presentations are, of course,
modified to accommodate the medium, and a radio producer is assigned
to each course to handle those aspects of production. Classes
which utilize discussion formats are kept small and are recorded
in broadcast studios because of the technical problems involved
in multi-microphone recording. In some instances, courses have
been totally restructured to capitalize upon the advantages of
radio presentation. Traditional lectures to large groups have
been replaced by small seminars featuring discussion between pro-
gessors and selected students, or among several professors. Out-
side authorities and guest lecturers are more frequently employed
in broadcast courses than in regular classes and some courses u-
tilize field recordings, music, and other production techniques.

Recordings of each broadcast lesson are filed with the
Audio-Visual Department to provide students additional listening
opportunities. These tapes are used by some professors in regular
classes as a substitute for their lectures thereby enabling them
to spend more time with individual students. Plans are also
underway to further utilize these recordings by establishing
"learning Centers" for individual study on both the main and
regional campuses.

Listeners who wish to monitor courses on WBAA may obtain a
course manual containing reading lists, sample examinations, and
other related print materials upon payment of a nominal service
charge. The listener who desires to establish credit must also
complete a formal registration application. Textbooks for
broadcast courses may be ordered by mail from any local book store.

Anyone who has not been dropped from Purdue may establish credit in a broadcast course by examination. These tests are free to students who are enrolled in the university and who have paid full fees for the semester in which the examinations are scheduled; all others are charged a $25.00 examination fee per course. Tests are administered and graded by the appropriate academic departments and students are required to earn at least a grade of "C" to get credit for the course. As with all credit-by-examination at Purdue, letter grades are not recorded and results are entered simply as hours of credit. There is no penalty for failure under this system; failing grades are not recorded and the student is free to either take the examination at a later date, or enroll in a regular section of the course.

At the present time, instructional radio at Purdue is a cooperative effort involving both Station WBAA and the Division of Continuing Education. Courses are selected and produced by WBAA's instructional staff who handle arrangements with academic departments and prepare or edit related print materials. The actual printing and mailing of materials and the processing of students is handled through the Division of Continuing Education which finances this aspect of the operation through a service charge for course manuals.

A preliminary analysis of broadcast expenses suggests that students were taught by radio for significantly less than normal university costs for a similar number of regular students. Evidence also exists to show that radio instruction was effective as well as economical. Successful radio students tended to score higher on the same examinations than successful students in regular sections of the courses. This is explained, in part, by studies of particular courses which show that radio students tend to have higher grade-point indexes than non-radio students.

While broadcast courses serve a variety of audiences, approximately three-fourths of those who attempted to establish credit were full-time Purdue students. The relatively small percentage of off-campus students is largely explained by the fact that courses are aired at night when WBAA reduces power and beams its signal into a less populated area in accordance with FCC regulations. In 1973, Station WBAA will devote a significant portion of daylight time to broadcast courses which will greatly increase the potential audience for this type of programming. At the present time, according to counsellors and department heads, broadcast courses have increased scheduling flexibility and have served to open courses that were closed because of over-enrollment. Listeners are generally pleased with the service and many part-time students report that radio provides the only means for them to continue their education.

There is, undoubtedly, a general satisfaction with broadcast instruction by radio at Purdue University, and the many inquiries received by WBAA would indicate a growing interest in this type of service in many areas of the country.

ENROLLMENT IN COURSES BROADCAST BY WBAA

	Number Ordering Manuals	Number Taking Test	Number Passing Test
Fall, 1969			
Psy 120 Elementary Psychology	132	26	20
Soc 100 Introductory Sociology	128	17	3
Spring, 1970			
Phil 110 Introduction to Philosophy	469	56	46
Psy 120 Elementary Psychology	463	151	56
Soc 100 Introductory Sociology	282	63	15
Soc 350 Marriage & Family Relationships	476	143	60
Com 230 Radio & Television Broadcasting	179	23	13
Summer, 1970			
Psy 120 Elementary Psychology	195	51	15
Soc 350 Marriage & Family Relationships	230	71	45
Fall, 1970			
SERVICE CHARGE FOR MANUALS INSTITUTED DURING THIS SEMESTER			
Soc 100 Introductory Sociology	138	59	26
Engl 230 Introduction to Literature	109	37	34
Econ 210 Principles of Economics	100	38	27
A&D 355 Art Appreciation	130	86	86
H&S 525 Sex Education in Schools	108	47	36
Spring, 1971			
CHE 597G Biomedical Engineering	115	44	42
Econ 210 Principles of Economics	171	61	25
H&S 530 Drugs Use and Abuse	284	149	67
Phil 100 Introduction to Philospohy	223	56	42
Soc 100 Introductory Sociology	190	95	33
Summer, 1971			
Phil 110 Introduction to Philosophy	98	18	13
A&D 355 Art Appreciation	90	28	28
Fall, 1971			
H&S 530 Drugs Use and Abuse	146	68	40
CDFL 350R Marriage & Family Relationships	166	126	109
Psy 120 Elementary Psychology	130	54	17
Geos 391G Frontiers in the Geosciences	71	52	46
Engl 238 Introduction to Fiction	105	31	19
Spring, 1972			
Soc 100 Introductory Sociology	175	72	15
Geos 104 Introduction to Oceanography	180	71	68
Psy 120 Elementary Psychology	157	56	12
CDFL 350R Marriage & Family Relationships	186	115	101
Agr 498 Ecological Systems	95	25	17
HPER 590 Drugs Use and Abuse	163	54	29
CHE 597A Environmental Engineering	93	20	15
Summer, 1972			
Soc 100 Introductory Sociology	64	28	15
Psy 120 Elementary Psychology	43	16	13
HPER 590 Drugs Use and Abuse	47	20	13

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WBAA

"The Voice of Purdue"

COURSE BROADCAST SCHEDULE FOR FALL, 1972

PHIL 110 INTRODUCTION TO PHILOSOPHY
(credit 3) The basic problems and types of philosophy with special emphasis upon the problems of knowledge and nature of reality. Professor Cotton (T—W—Th 8:40 p.m.)

GEOS 191G INTRODUCTION TO GEOGRAPHY
(credit 3) This course will serve to introduce the student to the broad field of geography. Emphasis will focus on man's concept of place and how it influences or conditions his perception of various aspects of the environment. Basic objectives of the course will be to establish and develop a geographic perspective in terms of the concepts of time, place, distance, and area. Professor Frederking (T—W—Th 7:50 p.m.)

ECON 210 PRINCIPLES OF ECONOMICS
(credit 3) Economics 210 is designed to help you understand the economic system of which you are a part. The primary strategies used to achieve the objectives of the course are to familiarize you with our economic institutions which are constantly changing and to develop an economic model which will help you identify the nature of the interactions which occur among the various sectors of the economic system within this institutional framework. Professor Weidenaar (T—W—Th 7:00 p.m.)

CDFL 350R MARRIAGE AND FAMILY RELATIONSHIPS
(credit 3) A functional approach to the interpersonal relationships of courtship, marriage and family life. Professors Riker and Taylor (M—F 7:00 p.m.)

CE 350 ENVIRONMENTAL ENGINEERING
(credit 2) The scientific foundation of environmental engineering. Synopsis: An introduction to the broad field of environmental engineering, including noise pollution, occupational health and safety, air pollution, radiation, solid wastes, water supply and wastewater — sources, control and management. This is a required course in Civil Engineering at Purdue; thus a background equivalent to the freshman engineering program is desirable. Professor Steffen and associates (Monday 7:30 p.m.)

Radio Station WBAA (Purdue University) will broadcast the listed courses beginning August 28, 1972. Anyone may attempt to establish credit by examination except students who have been dropped from the University for any reason. Listen at home, take the required examinations, and that's about all there is to it. *There is no penalty for failure under this system.* Students who fail the tests may either try again at a later date or enroll and go through the course in the regular manner. Other than a nominal service charge, there is no extra cost to Purdue students who are already paying full fees. Temporary and part time students and those not otherwise enrolled in the University will be charged a $25 examination fee which must be paid to the Bursar in the Executive Building *before* the examinations are taken.

Those students desiring course syllabi, reading lists, and copies of material distributed in class will be required to pay a $2.00 service charge for *each course.* In the case of CE 350 and ECON 210 the charge includes a text for the course. Please mail check made payable to Purdue University with the form below properly completed.

Business Office — CE
110 Stewart Center
Purdue University
West Lafayette, Indiana 47907

1. I am enclosing the appropriate amount for each course checked below so that I may receive the printed material distributed in conjunction with the broadcast classes.

   ☐ PHIL 110   ☐ GEOS 191G   ☐ ECON 210 (includes text)   ☐ CDFL 350R   ☐ CE 350 (includes text)
   $2.00 $2.00 $8.00 $2.00 $6.00

2. Name _____   3. Date _____

4. Address _____ Zip _____

5. Now attending: Purdue _____ Other College _____ High School _____ No School _____

6. Working toward Degree? Yes ___ No ___   7. If yes, list major area _____

8. If college student: Graduate ___ Undergraduate ___ list number of hours you are taking this semester in addition to the radio courses _____

9. If not student, list your occupation _____

10. Married? Yes ___ No ___   11. Age _____   12. Telephone Number _____

13. Do you think you will attempt to establish credit by examination at the end of the semester? Yes ____ No _____

(Make checks payable to Purdue University)

INSTRUCTIONAL RADIO IN BRITAIN'S OPEN UNIVERSITY

by CHARLES A. WEDEMEYER
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The University of Wisconsin-Extension

While the origin of formal, systematic and mediated instruc-
tion of distant (external) learners goes back to the 1950's (1);
and the first university created to serve distant learners exclu-
sively through mediated instruction had its beginning in the 1890's
(becoming fully established in the 1940's) (2), it was not until
1969 that a university for distant learners appeared employing a
multi-media diffusion and communications system to accomplish its
instructional objectives. This 1969 creation was the British Open
University, located at Milton Keynes in England.

Prior to the British Open University the experimental AIM (Artic-
ulated Instructional Media) Program at the University of Wisconsin
developed the concepts, theory and process systems for a fully artic-
ulated multi-media system of university instruction (3). This
four year experiment ended in 1968, in time for its yield to find
immediate application in the British Open University.

The Open University at Milton Keynes is a national university
whose mission is the provision of higher education and continuing
learning opportunities to persons 21 years of age or over in England,
Scotland, Wales and Northern Ireland. The learners are distant,
largely part-time, and adult. These parameters require a university
structure, admissions, curriculum, diffusion and communications
systems, and supporting services that are clearly different from
conventional universities which cater to learners who are full time,
residential youths. The Open University is a new creation (4).

The Open University has an instructional system composed of
five elements: mediated instruction by correspondence, television
and radio; and supplementary face to face instruction at local
study centers and summer schools. (5) The Open University evolved
from Prime Minister Wilson's proposal, in 1963, for a "University
of the Air". An Advisory Committee to the Department of Education
and Science was appointed in 1966, and in 1968 a Planning Committee
was established "to work out a comprehensive plan for an Open Uni-
versity". (6) The Royal Charter of the Open University was granted
in 1969. Thus between 1963 and 1969 the University of the Air pro-
posal was altered considerably, and the product of six years of

study, debate and planning was a new phenomenon among Universities, but no longer a university depending entirely or even primarily on broadcast media. (7)

The media plan that was eventually decided upon included three diffusion/communications systems: print/correspondence, television and radio. Instead of developing its own broadcast capability, the Open University early obtained agreement from the British Broadcasting Corporation for that body to provide (on a contract basis) the producing-directing-transmitting functions; to become, in actual fact, a part of the Open University faculty for the carrying out of the instructional broadcast activities.

The decision not to tie instruction wholly to broadcast media was more than a symbolic gesture to appease hostile or skeptical academics who had guffawed at the very idea of getting a degree by "watching the telly". It was a decision carefully arrived at involving a recognition that "with all their capacities, the broadcast media are the blindest of all teachers; and that, for the full exploitation of their potential, additional systems were required which provoked and required responses from viewers and listeners, and which provided feedback...Experiments followed, indicating that the integration of correspondence education practices and face-to-face learning situations with the broadcast media created effective learning situations." (8)

In 1969 when the Open University faculty was preparing its four Foundations Courses, the basic media plan was to provide one half-hour television and one half-hour radio program, per course, per week. The Open University courses last 36 weeks; hence there were 36 radio and 36 television programs planned and produced for the first year of operation beginning January, 1971. Each of these programs were repeated at least once during the week; so 144 half-hour broadcasts were scheduled through the 36 weeks.

Undoubtedly the TV/radio broadcasters were at first disappointed that the broadcast media did not become the primary instructional media. From the learner's point of view, the radio and television parts of their courses account for less than 10% of their total learning experiences. (9) Yet the importance of these mediated experiences is probably in excess of the time alotted to them. We note, for example, that the largest single fixed element in the Open University's re-current costs is the amount paid to the BBC for its collaboration in producing-directing-disseminating mediated instruction. (10)

The articulation or integration of the media results in the heightening or reinforcing of each medium. The primary medium (correspondence) was selected because it is flexible, combines well with other media, provides feedback to a live teacher as well as a computer for testing, and reaches all potential learners. (BBC coverage

in Britain is not complete; nearly 20% of the population lies outside the effective broadcast range; and not all citizens have receivers that can tune in the BBC television channel.)

But the wisdom of not tying the Open University entirely to broadcast instruction becomes evident in examining two developments subsequent to the 1969 charter. One of these was the "course team" concept accepted in 1969 for the development of Open University courses; and the other is the situation faced now in Open University planning for 1973 and beyond in which the time constraints on broadcast media are becoming painfully evident.

The course team concept was first formally applied to mediated instruction in 1960, in a television-correspondence course developed at the University of Wisconsin. (11) In the 1964-68 AIM project at Wisconsin, the Course team concept was refined to include a range of competencies beyond the subject matter itself: media, design specialists; learning theory specialists; testing, evaluation and counseling specialists. In the Open University course teams there are academics (subject matter specialists--the "teachers"), educational technologists, media producer-directors (radio and TV) and educationists, backed up by special services from testing, evaluation, research and design groups. What is significant in this concept is that all members of the team work as equals in the whole task of course development--in everything from objectives of the course, analysis of content, determination of need for and utilization of media; to testing, and evaluations. Thus the radio producer-director, for example, is not merely asked to produce something previously selected for broadcast instruction; he participates in the total design of the course itself, taking general responsibility for articulating/integrating all of the course elements, and specific responsibility for producing-directing that part of the course committed to radio. For such responsibility the radio specialist is a member of the Open University staff as well as the BBC. Radio (or any other medium) is thus made the direct servant of the instructional processes of the University; it is an insider, not an outsider, and the media specialist shares responsibilities with his teammates for the software as well as the hardware of instruction. Indeed, under this concept the radio producer-director is no longer the broadcaster; he is, with the others of the team, one of the teachers. Here, indeed, can the medium properly become the message.

To set up course teams of this kind, the BBC advertised for academics (in the fields in which courses were being developed) who wanted to be trained as producer-directors in a collaborative role with BBC and the Open University. Since the emphasis was, first, on persons with acceptable credentials in subject matter fields, the advertisement brought in persons who were "almost as well qualified as the University academic staff." (12). The Open University and BBC then trained these persons for their special roles in the course teams.

The constraints upon broadcast media in the years ahead are becoming obvious. In 1971 with four Foundation Courses, 144 half-hour broadcasts were scheduled. By 1974 there will be 30 courses in being, and--even with the vast resources of the BBC--the Open University will run out of broadcast time, especially TV time. By 197. it will thus be impossible to broadcast all courses on open circuit every week. The time constraint will be so severe that some courses may have TV broadcast segments only every two or three years.

Presently, broadcasts are scheduled on Saturday evenings, 7:30-8:30 PM, and Saturday and Sunday mornings. Time pressures in 1974 (consider: if 30 courses had the same number of broadcast components as the foundation courses, there would have to be 4320 broadcasts in 36 weeks) require putting broadcasts into the weekday hours; but the only time available is the morning hours. Yet this time is useless with a student body that is largely employed. Cassettes (audio and video) are being considered, but presently open circuit broadcasting is cheaper than any other means. Advances in audio/video recording may help solve this problem; but the solution is not yet in sight.

The time-bind constraint summarized above is chiefly a problem for television broadcasting, less so for radio. In addition, audio recording as an alternative to open broadcasting is more viable than video recording for a widely dispersed student body that by 1974 will number about 55,000.

Thus radio as an instructional medium, and its corollary, recorded audio, face an interesting and vital period in the Open University. While the broadcast restraints are chiefly on TV, the effect of these constraints will alter the roles of both radio and TV. Obviously, in instructional situations where video is not a necessity, audio will tend to become the favored medium. The constraints are therefore sparking a new look at the role and potential of radio and audio recording in Open University instruction.

The theory implicit in the course team concept is that the medium selected for instruction at any point is determined by the learning objectives, the nature of the subject matter, and the needs and requirements of the learners. Thus an instructional medium is employed only when it best (of all possible media available) fits these criteria. In addition, the medium must be flexible, must meet satisfactory cost-benefit ratios, must be reinforcing with respect to the other media employed, and must be integrative in the total learning experience. Integrated radio (and audio recordings) for instruction in the Open University will, it is expected, meet these requirements satisfactorily for a larger proportion of instructional units in the future. The 50-50 broadcast division between radio and television at the opening of the Open University will probably evolve into a larger dependence upon radio and audio recordings in the years

ahead. The situation developing may bring about a rediscovery of radio's true potential, partly obscured since the advent of television. (13)

The Open University is not a static invention; rather, it does "see itself as a self-improving system". (14) In addition to the preparation of new courses each year as the total curriculum evolves, some of the radio and TV broadcasts of completed courses are remade each year, and about a third of the correspondence/print material is revised annually. The estimated like of a course is about four years, at the end of which it may be completely re-done.

Since, as we have seen, conditions respecting open broadcasting (as well as other elements in the institutional milieu) are not static either, the Open University can be expected to follow a developmental path in the years ahead. It will get much of its guidance in this respect from its Institute of Educational Technology, a unique academic/service agency within the University composed of psychologists, educationists, sociologists, statisticians and technologists following problem-solving systems approach using human and non-human management and control mechanisms. The Institute utilizes strong links with communications theory, control analysis, content analysis, audience analysis, media analysis, and effect analysis. (15) The Institute works in two main areas, course development and institutional research.

On the Institute of Educational Technology, therefore, a large part the task of developing the most effective instructional roles for radio and audio recording will fall. That such a situation prevails augurs well for instructional radio, for the Institute's concern for the learner following integrated experiences towards specific objectives is more likely to yield effective instructional utilizations of radio, than the special pleadings of broadcasters of the arrogant skepticisms of inexperienced academics.

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