

## INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.
2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.
3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.
4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.
5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

**University  
Microfilms  
International**

300 N. Zeeb Road  
Ann Arbor, MI 48106



8315637

Foster, Jimmy Wheless

A CONCEPTUAL FRAMEWORK FOR TEACHING COLLEGE CREDIT  
COURSES VIA PUBLIC RADIO

*The University of North Carolina at Greensboro*

ED.D. 1983

University  
Microfilms  
International 300 N. Zeeb Road, Ann Arbor, MI 48106

Copyright 1983

by

Foster, Jimmy Wheless

All Rights Reserved



A CONCEPTUAL FRAMEWORK FOR TEACHING  
COLLEGE CREDIT COURSES VIA PUBLIC RADIO

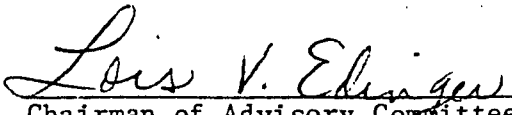
By

Jimmy Wheless Foster

A Dissertation Submitted to  
the Faculty of the Graduate School at  
The University of North Carolina at Greensboro  
in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education

Greensboro  
1983

Approved by

  
Chairman of Advisory Committee

APPROVAL PAGE

This dissertation has been approved by the following committee of the Graduate School at the University of North Carolina at Greensboro.

Dissertation  
Adviser

Lois V. Eninger

Committee Members

David F. Cook  
James W. Mull  
Frank [unclear]

March 31 1983  
Date of Acceptance by Committee

FOSTER, JIMMY WHELESS. A Conceptual Framework for Teaching College Credit Courses Via Public Radio. (1983)  
Directed by: Dr. Lois Edinger, pp. 80

The purpose of this study was to develop a conceptual framework for teaching credit courses to adults through radio and to assess the interest of public radio stations in North Carolina in utilizing radio for instruction. The three objectives of the study were (1) to review the literature on the development and the effectiveness of radio courses for adults; (2) to develop a conceptual framework for teaching courses for credit to adults via public radio; and (3) to survey all public radio stations in North Carolina to determine their past, present, and future interest in broadcasting courses for college credit.

The review of the literature indicated that even though radio is an accessible medium with the number of public radio stations and their audience size increasing, the medium has not been widely utilized for broadcasting credit courses. The limited research available indicated that radio lessons integrated with appropriately designed print and visual material were an effective instructional medium.

The study produced a conceptual framework for designing and implementing radio courses. The framework was based on learning principles, instructional design principles, curriculum development theory, communications theory, and the experience of many institutions and educators in using telecommunications for instruction. The conceptual framework consisted of eight procedures to follow in designing and implementing radio courses.

The public radio stations in North Carolina were surveyed with an 80% response rate. The survey revealed that no postsecondary course for credit had been broadcast over public radio in North Carolina in the last five years. The survey also indicated that a majority of the public radio stations were interested in broadcasting well designed courses and were interested in working with a team of educators in the next few years to produce high quality radio courses.

One of the assumptions made at the beginning of this study was that if educators were more aware of the findings from research on educational radio, and if they had a conceptual framework for evaluating and designing and offering radio courses, they would use educational radio more frequently. The conceptual framework described in this study, the supporting research that found radio to be an effective instructional instrument, and the interest of public radio stations in North Carolina in broadcasting radio courses should stimulate educators and broadcasters to use radio for courses directed to adults.



## ACKNOWLEDGMENTS

Sincere appreciation is extended to all who have assisted the writer and through their support and encouragement made it possible for him to pursue a doctoral program and this study as part of that program.

Special thanks are extended to the members of the doctoral committee: to Dr. Lois Edinger, chairman, for her continued guidance and patience; to Dr. Hugh Hagaman for his constant support and encouragement; to Dr. Dwight Clark for his invaluable suggestions; and to Dr. Terry Mullins for his interest and understanding. Special thanks are also extended to Miss Cora Paul Bomar and Dr. Hugh Hagaman who believed in me and through many years of support and encouragement made this entire program of study possible.

Appreciation and gratitude are expressed to the administration of Central Carolina Technical College and to the staff of the Learning Resource Center for their understanding, support, and patience.

My gratitude also goes to Mary Jane Yarborough and Phyllis Huff for their editorial assistance and to Judy Douglas and Martha Barrington for their secretarial assistance.

Finally, a special expression of thanks goes to my family for their sacrifices during several years of study: to my wife, Mary, for her support and encouragement and to my sons, Mickey and David, for their understanding and patience.

## TABLE OF CONTENTS

	Page
APPROVAL PAGE . . . . .	ii
ACKNOWLEDGMENTS . . . . .	iii
CHAPTER	
I. INTRODUCTION . . . . .	1
Background . . . . .	1
Statement of the Problem . . . . .	4
Objectives of the Study . . . . .	4
Justification for the Study . . . . .	5
Limitations of the Study . . . . .	9
Definition of Terms . . . . .	9
Design of the Study . . . . .	11
II. REVIEW OF LITERATURE . . . . .	13
Growth of Educational Radio . . . . .	13
Significant Laws Governing Noncommercial Radio . . . . .	15
Uses of Noncommercial Radio in Instruction . . . . .	17
Effectiveness of Radio Courses . . . . .	21
Instructional Design Principles That are Important in Developing Radio Courses . . . . .	22
Curriculum Development Principles That are Important in Designing Instruction . . . . .	27
Communications Theory . . . . .	30
III. METHODOLOGY . . . . .	33
North Carolina Public Radio Stations and Contact Persons . . . . .	37
Collection of Data . . . . .	41
IV. A CONCEPTUAL FRAMEWORK FOR DEVELOPING AND TEACHING CREDIT COURSES TO ADULTS VIA PUBLIC RADIO . . . . .	44
V. DISCUSSION, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . . .	62
Discussion . . . . .	62
Summary . . . . .	65

CHAPTER	Page
Conclusions . . . . .	68
Recommendations . . . . .	71
BIBLIOGRAPHY . . . . .	74
APPENDIX - Survey Instrument . . . . .	78

## CHAPTER I INTRODUCTION

### Background

Radio has been a medium for delivering instruction for over sixty years. The first educational radio station in the United States began operating in 1919 at the University of Wisconsin (Sandler, 1967, p. i). By 1924 the University of Nebraska was charging fees for courses taught by radio (Fornatale & Mills, 1980, p. 169). Even though educational radio has a history that extends over six decades, there is a considerable gap between the role that radio can play in education and the role that it does play. The majority of colleges and universities in this country do not use radio extensively for instruction (Forsythe, 1979, p. 2).

Since 1971 two national surveys have been conducted whose findings indicate that radio is not being used extensively in this country to teach courses for credit to adults. Richard R. Spingola (1972) surveyed 413 educational radio stations in the United States and its territories. The stations were assigned to one of three categories. Category I consisted of 328 stations licensed to institutions of higher education. Category II consisted of 66 stations licensed to school systems and libraries. Category III consisted of 19 stations licensed to nonprofit organizations, religious institutions, and foundations. Of the 413 stations, only 40 stations or 9.68 percent (Spingola, 1971, p. 23) reported instructional programming having top priority during a typical

broadcast week. This instructional programming did not emphasize courses for credit. Even though the majority of stations surveyed were licensed to academic institutions and school boards, only a small percentage devoted the largest part of their programming time to instruction.

Seven years after Spingola's survey, the Corporation for Public Broadcasting (CPB) conducted a national survey of public radio stations (Lee, 1981, p. 26). The survey indicated that only 2.1% of all the air time was used for instruction. This very limited use of radio for instruction occurred during a time when the total number of broadcast hours per station was increasing each year. Public radio stations used 68.6% of their air time to broadcast music (Lee, 1981, p. 26).

Another national study on Nontraditional Educational Delivery Systems was conducted in 1982 by the North Carolina Department of Community Colleges. The State President of the North Carolina Department of Community Colleges sent a letter to each state's chief administrator of public two-year colleges requesting information regarding each state's experiences with nontraditional delivery systems. Thirty-nine of the 50 states surveyed responded for a response rate of 78%. Only five states reported having a specific state board policy regarding nontraditional delivery of educational programs.

An examination of educational radio in North Carolina reveals statistics similar to those found at the national level. In 1982 North Carolina had 30 public radio stations scattered from the coast to the mountains, 25 of which were licensed to public schools or institutions of higher education. Mrs. Ivy Hoffman, a staff member of the North

Carolina Agency for Public Telecommunications, indicated that no courses were being offered for credit via public radio in North Carolina (Personal Communication, Fall, 1981).

It appears that institutions which have radio stations have not recognized radio as a viable means of providing instruction. Public radio has been overlooked throughout its history as a possible medium for teaching students. The situation is likely to continue until officials of higher education are made aware of the potential of radio as an effective instructional medium for adult education.

Radio is not being used extensively for instruction even though most adults have and use radios. The Carnegie Commission Report on the Future of Public Broadcasting found that the average American home had six radios (Forsythe, 1979, p. 1). Americans have radios in almost every room of their homes and in more than 95 percent of their automobiles. The Director of the North Carolina Agency for Public Telecommunications said, "It is the policy of the State of North Carolina that at least one public radio signal shall be made available to every resident of North Carolina." Thus, the variety of radio types, their ubiquitousness, and their portability make it possible for Americans to receive programs at home, at work, in their cars, and during leisure time. Also programs may come to groups or individuals. Forsythe (1979, p. 1) found that the average American uses radio for some three hours per day. Radio is certainly an accessible medium.

### Statement of the Problem

The problem under consideration for this study has two facets: first, to determine the most effective conceptual framework for teaching adults through the technology of radio; and second, to assess the interest of public radio stations in North Carolina in implementing a conceptual framework for teaching adults. Since radio is such an accessible medium and is cheaper to program than television, it would appear that radio would be used widely by institutions of higher education for teaching courses for credit to adults.

Two assumptions are made at the outset: one, that radio is an effective instructional medium for teaching courses for credit to adults; and two, if educators were more aware of the findings from research on educational radio and had a conceptual framework for evaluating and/or designing and offering radio courses, they would be encouraged to use educational radio more frequently.

### Objectives of the Study

The study has the following objectives:

1. To review the literature on the development of radio courses offered for adults and to examine what the research says about the effectiveness of radio courses. The review of the literature will also include principles of learning conditions, curriculum development, instructional design and communication that will form the basis for developing a conceptual framework for teaching credit radio courses to adults.

2. To develop a conceptual framework for teaching courses for credit to adults via public radio.

3. To identify all public radio stations in North Carolina by location, call letters, and contact person and to survey each public radio station in North Carolina to determine whether they have ever broadcast courses for college credit, and to determine whether these public radio stations have an interest in broadcasting college courses in the future.

#### Justification for the Study

If the objectives of this study are achieved, educators can produce their own radio course or more skillfully select appropriate radio courses developed elsewhere. If a conceptual framework for teaching courses to adults by radio is identified or developed, it should facilitate the development of radio courses. If the review of literature indicates that radio instruction is effective in helping students to accomplish course objectives, then it should encourage educators to become more involved with using that medium.

By way of encouragement, educators might take note of studies showing the growth of public radio. The Corporation for Public Broadcasting (CPB) recognized that radio was a powerful medium when it established National Public Radio (NPR) in 1971 (Lee, 1981, p. 9). There has been a steady growth in the number of public radio stations and in the number of radio listeners since then. In 1971 the nation had 495 noncommercial FM radio stations, and by 1980 the number had increased to 1,076 stations (Lee, 1981, p. 11). Of these 1,076 noncommercial FM



stations, over 700 were licensed to colleges and universities (Fornatale & Mills, 1980, p. 167). The Corporation for Public Broadcasting estimated that in 1979 68% of the American population was reached by public radio (Lee, 1981, p. 35). Approximately five million people listen to public radio each week according to the April/May 1979 Arbitron Radio Survey (Lee, 1981, p. 35).

With almost 1,100 public radio stations in existence in this country and an increasing listening audience, it seems to be an appropriate time for educators to place more emphasis on using radio to teach adults. "The belief that education is a process confined to the classroom is a foolish luxury that the nation can ill afford" (Public Broadcasting Report to the People, 1970, p. 10). David P. Stone (1981, p. 2) of Coastline Community College stated in that college's magazine that developing courses for future technology is important, but one must also look at the technology people have in their possession right now. One type of technology possessed by many adults is radio.

Instruction via public radio can allow institutions of higher education to reach students who are not currently enrolled. If these students are successful with a radio course, it could be the catalyst to encourage them to enroll in on-campus courses. Radio instruction offers the following advantages:

1. Education can be received at times and places most convenient to adult learners.
2. The implementation of instruction by radio will conserve natural resources since a significant portion of the instruction can be received at home.

3. Radio does not require expensive hardware; it is portable and already in the possession of most Americans.

4. Radio is especially suited to serve the homebound and visually handicapped.

5. Radio can meet the needs of adult students in remote locations.

6. Radio programs are less expensive to produce than television programs.

Brian Brightly, Director of Educational Services at National Public Radio, stated at the 1982 National Conference on Adult Learning that he believes many parallels exist between educational radio and educational television; for example, educational radio suffers from some of the same barriers as educational television. Peter J. Dirr in 1979 surveyed all two-year colleges in the United States concerning the institution's use of television for instruction. The survey sponsored by the American Association of Community and Junior Colleges revealed an interesting and useful point. In his study, Dirr found that the availability of courses which meet academic needs and institutional standards promote the use of educational television for adults. Dirr found at the same time that the two factors which seem to impede the use of educational television for adults are the unsympathetic attitudes of the faculty and the inability of the institution to provide the necessary support services.

In 1979 the Corporation for Public Broadcasting and the National Center for Educational Statistics conducted the first nationwide study of the use of television by higher education institutions. The study surveyed 2,993 colleges (two- and four-year institutions, public and private) and had a response rate of 94%. The study, called the Higher

Education Utilization Study, found that the most important conditions causing institutions of higher education not to use television for instruction were (a) inadequate institutional support, (b) lack of available courses which meet institutional requirements, and (c) lack of faculty commitment (Dirr & Katz, 1981, p. 4). The most important reasons given for using television for instruction were (a) strong institutional support, (b) faculty commitment, and (c) available courses (Dirr & Katz, 1981, p. 42).

If Brian Brightly was correct in stating that educational radio suffers from some of the same problems as educational television, then this study should help educators and broadcasters overcome some of the problems found by the two previous studies. The major problems identified in the previous studies were a lack of available courses and inadequate institutional and faculty commitment.

Meeting the needs of adult learners is both a challenge and an opportunity for educational radio. Educational radio has the potential to provide lifelong learning experiences. Surely an education terminated during early adult life is no longer adequate; people need opportunities to learn throughout life. The learning needs of the unemployed, the underemployed, the unhappily employed, the handicapped or isolated as well as persons interested in enrichment offer great opportunities for higher education. Carefully designed radio courses would provide lifelong learning experiences.

B. H. Parrow predicted in 1940 that radio had great potential for the education of adults. Unfortunately in 1982 radio continues to

suffer from the burden of a great unrealized potential. This study is designed to increase the probability that educational radio will achieve its potential.

#### Limitations of the Study

This study of educational radio was conducted with certain limitations.

1. Only public radio stations in North Carolina were surveyeded.
2. The review of literature was limited to an examination of public radio in the United States and its effectiveness in teaching courses to adults.

#### Definition of Terms

For both the convenience of the reader and the sake of clarity, the following glossary of terms used throughout this study is presented.

Communications Act of 1934 - The law passed by the United States

Congress which proclaimed that the airwaves belong to the people of the United States and are to be used by individuals only with the authority of short-term licenses granted by the government. The Federal Communications Commission (FCC) administers the law and was created by this act.

Corporation of Public Broadcasting (CPB) - The Corporation was

established by the Public Broadcasting Act of 1967 to encourage the growth and the development of public educational radio and television. It serves to insulate broadcasting from external control. The CPB serves as the principal mechanism for providing federal support to educational broadcasting.

Federal Communications Commission (FCC) - The FCC was created by the Communications Act of 1934 and has certain regulatory powers such as the authority to assign power, frequency, or grant and renew licenses.

Licensees - The individual group or organization that legally holds the station's broadcast license.

National Association of Educational Broadcasters (NAEB) - The NAEB is the national professional organization devoted to serving individuals and institutions involved in non-commercial broadcasting. The NAEB provides consultation, conducts research, and publishes material related to educational telecommunications. Established in 1925, it is the oldest national organization in educational broadcasting.

National Public Radio (NPR) - The NPR was established and is funded by the Corporation for Public Broadcasting. The NPR provides services for program production and interconnection and represents its members before CPB, federal agencies, and the public. To be a member of NPR requires that a station meet certain standards in staffing, power, and operating hours.

Noncommercial Radio Station - Stations that provide a nonprofit and noncommercial broadcast service.

Public Broadcasting Act of 1967 - The federal law creating the Corporation for Public Broadcasting, for the purpose of promoting the growth and development of the nation's noncommercial broadcasting systems.

Radio Transmitter - Equipment capable of generating radio-frequency wave.

Subsidiary Communications Authorization (SCA) - SCA is an electronic technique that places two or more separate signals onto the frequency assigned to an FM station. FM frequencies are wider than the path needed by the FM signal and prevent overlapping of signals. The room left over is used for the SCA signal and is often called multiplexing. A special receiver is needed to "pick up" the SCA signal.

#### Design of the Study

The study was designed to accomplish the objectives of the study stated earlier in the chapter. Chapter II contains a review of the literature which includes library research, attendance at a workshop conducted by National Public Radio, interviews with and written material from people involved in offering adult courses over educational radio (as identified by NPR or research), and an interview with a staff member of the North Carolina Agency for Public Telecommunications. In addition, the review of the literature includes the historical development of educational radio and also the research findings about the effectiveness of radio courses for adults. Also included are relevant principles of curriculum theory, instructional design (with emphasis on the systems approach to instruction), and an examination of communications theory as it relates to educational radio.

Chapter III, Methodology, describes how information gathered from a review of the literature was used to develop a conceptual framework for

designing radio courses for adults. Chapter III also describes the findings of the survey of all noncommercial radio stations in North Carolina. The survey instrument was field tested by four noncommercial radio stations, then revised and mailed to each noncommercial radio station in North Carolina.

Chapter IV, Implementation, describes a conceptual framework to use in designing radio courses as required by principles set forth in Chapters II and III. Attention also is directed to existing conceptual frameworks that are appropriate for educational radio.

Chapter V, Conclusions and Recommendations, addresses other topics that should be researched and makes suggestions about how to increase the use of radio in instruction. The survey results are used in this chapter.

## CHAPTER II

## REVIEW OF LITERATURE

Growth of Educational Radio

Radio has been used for educational purposes in the United States since the beginning of educational radio in 1919 at the University of Wisconsin. Following this station's establishment, the number of educational radio stations increased rapidly to 171 stations within six years (Foster, 1982, p. 390). However, this number then dwindled to only 38 educational radio stations operating in the United States in 1937 (Lee & Winston, 1977, p. 3). The decline from 171 educational radio stations in 1925 to 38 in 1937 was caused primarily by two factors. The first was the tremendous growth during the 1920's and 1930's in commercial radio stations which provided some of the same services offered by educational radio stations. The second factor was a lack of money; educational radio needed funds to develop educational radio programs that could compete with commercial radio programming. The economic depression in the 1930's forestalled many educational radio stations' obtaining sufficient funds to operate. Thus, the number of stations declined significantly by the late 1930's.

All of the educational radio stations between 1919 and the late 1930's were AM stations. As the 1940's began, the number of educational radio stations again increased, primarily because of the development of FM broadcasting and the Federal Communications Commission (FCC) decision



to reserve certain FM frequencies for noncommercial broadcasting. In 1940 the FCC reserved five of the 40 FM radio channels for educational institutions (Foster, 1982, p. 391).

By 1945 the number of FM channels designated by the FCC for non-commercial educational stations totaled 40. In an effort to encourage educational institutions to use the reserved FM frequencies, the FCC in 1948 had authorized low-power, 10-watt radio FM broadcasting for public radio stations. The previous minimum had been 250 watts. The FCC decision to license 10-watt stations resulted in a proliferation of small stations that often served only college campuses and for only a short broadcast day. These low power stations gave students and faculty members the opportunity to use the equipment and to reach a potential audience within three to four miles of the station. The FCC had hoped that these 10-watt stations would, on their own initiative, increase their power and serve a larger public audience, but most remained at 10 watts.

During the 1950's and early 1960's, educational radio experienced a slow but steady growth. In 1969, the number of educational radio stations totaled 438 (Lee & Winston, 1977, p. 2), although only 20 of these were AM stations according to the Federal Communication Commission.

Further growth of noncommercial radio stations came from the 1967 Public Broadcasting Act, which authorized the Corporation for Public Broadcasting (CPB) to use CPB funds to assist educational radio stations. By 1977 the number of educational radio stations had increased to over 800 and nearly 64% of those were licensed to colleges and universities. By September, 1980, 1,076 noncommercial radio stations were operating in

the United States; of these stations, 217 met the criteria established by the Corporation for Public Broadcasting to receive CPB financial assistance (Lee, 1981, p. 11). Thus, the impetus for growth was realized because of increased financial resources. Today we can say that non-commercial radio has grown significantly since the passage of the 1967 Public Broadcasting Act.

The number of noncommercial stations nearly tripled between 1967 and 1980; at the same time the number of stations qualifying as members of National Public Radio (NPR) also nearly tripled. Public radio stations reached 65% of the American public in 1980 (Lee, 1980, p. iv). A study conducted by the Corporation for Public Broadcasting revealed that over 4.9 million people 12 years of age or over listened to a public radio station during an average week in April or May 1979 (Lee, 1980, p. iv). This was an increase of 108% over April-May of 1973.

#### Significant Laws Governing Noncommercial Radio

Although radio (commercial and noncommercial) was initially regulated by the Radio Act of 1912, which required stations to obtain licenses issued by the Secretary of Commerce (Foster, 1982, p. 193), in 1926 a court decision ruled against the power of the Secretary of Commerce and in effect did away with the 1912 law. The result was chaos in the radio business. In reaction to the chaos, Congress passed the Radio Act of 1927, which provided for a Federal Radio Commission to bring order to the industry. While the 1927 Act did bring order to the industry, it left control of some operations of radio scattered among several federal agencies. By 1934 a need to centralize the regulation of radio in one

agency was obvious. Congress, reacting to this need, passed the Communications Act of 1934, which created the Federal Communications Commission (FCC). Even though the Communications Act of 1934 has since been amended many times, the FCC continues to regulate the radio industry.

After the 1934 Communications Act, the next significant act affecting noncommercial radio came in 1967 when Congress passed the Public Broadcasting Act of 1967 establishing the Corporation of Public Broadcasting (CPB). This organization established a policy-making, funding, and management system for both public television and public radio. As a result, the number of noncommercial radio stations increased after 1967 because public radio stations (meeting the criteria established by CPB) were eligible for grant funds.

The establishment of public radio stations was further encouraged when the Corporation for Public Broadcasting created National Public Radio (NPR) in 1971. National Public Radio provides a national network of public radio stations that meet the minimum criteria defined by CPB (3,000 watts of FM power, at least one production studio with a separate control room, five full-time employees, an operational schedule of eighteen hours per day and an annual budget of \$80,000 or more) (Head & Sterling, 1982, p. 269). National Public Radio has its organizational headquarters and production center (with studios) in Washington, D. C. NPR acts as the liaison between the stations and Congress, federal agencies, and other broadcast organizations. Daily informational and cultural programming is made available to member stations by NPR. In addition, member stations are also eligible for cash grants provided by CPB.

When National Public Radio was formed in 1971, only eighty stations throughout the United States qualified for membership in NPR (Foster, 1982, p. 418). By 1980, 217 of the 1,076 noncommercial FM radio stations licensed by the FCC had the needed qualifications for being NPR stations (Lee, 1980, p. 11).

#### Uses of Noncommercial Radio in Instruction

Noncommercial radio throughout its history has been a medium for teaching a variety of subjects to adults. While some of the subjects have been offered for college credit, most have been very informal courses with no credit involved. However, as far back as 1924, the University of Nebraska charged fees for courses taught by radio. Though noncommercial radio has been used sparingly for adult instruction, it has been used for over a half a century. This study concentrates on the last twenty years' use of noncommercial radio for offering courses for credit to adults because the growth and documentation of adult radio instruction accelerated during that time.

Some of the colleges and universities offering courses over the radio are using a technique known in the radio industry as Subsidiary Communications Authorization (SCA) which is a type of multiplexing. As mentioned earlier, the FM radio channels are wider than the actual FM frequency. This extra band width can allow additional transmissions on the side bands of a main channel by the FM stations. Multiplexing thus permits an FM station to send out several signals simultaneously. An example of this practice is the piped-in background music often heard in office buildings.

In 1961 the FCC authorized the use of SCA by educational FM stations (Parker & Monson, 1980, p. 15). To receive the SCA signal, the listener must have a special inexpensive receiver. Several colleges and universities in the United States have offered educational courses, credit and noncredit, over the radio using the SCA signal rather than the open broadcast signal.

Beginning in 1965, the University of Wisconsin used the state-wide network of FM stations to broadcast an SCA signal that carried educational programs. Special SCA receivers were placed in strategic locations throughout the state. By calling in questions over the telephone, listeners made the system interactive. Thus, the University of Wisconsin began using SCA to offer credit and noncredit courses to teachers, medical doctors, nurses, and various other groups throughout the state.

West Virginia Wesleyan College, a private institution, received a Title III grant in 1975 to develop a broadcast system using SCA signals to reach people with credit radio courses throughout that state. In its fourth year of operation (1979), the state-wide radio courses had an enrollment of over 900 students (Forsythe, 1979, p. 3). These adult students included four basic groups: first, housebound wives and mothers; second, people with previous college experience who had dropped out for financial reasons; third, blind and visually handicapped; and fourth, penal inmates (Forsythe, 1979, p. 3).

By 1979 three semesters of credit courses were broadcast each year. The West Virginia students rented either the special SCA receivers or the cassette recordings from the institution. This allowed the students to listen to the lessons in their homes rather than in small group

listening centers. Forsythe (1979) indicates that West Virginia Wesleyan College had the largest number of college credit radio courses of any school in the country.

Nancy Corder, outreach coordinator for West Virginia Wesleyan College, reported in a letter dated September 30, 1981, that the college had ten audio courses available for college credit. One of these courses was available for lease. In a second letter dated October 20, 1981, Ms. Corder indicated that the college had stopped broadcasting the courses and was offering them on cassette tape only. The reason for using cassette tapes only was that the West Virginia terrain did not allow for good broadcast signals and the cassettes allowed the students to control the pacing of the lessons.

In the late 1970's, Purdue University offered six courses per semester over radio. These courses included core courses and also courses such as art appreciation and biomedical engineering (Forsythe, 1979, p. 5). Approximately 75% of the students enrolled in the radio courses at Purdue were full-time, on-campus students. Taking a radio course allowed the students an opportunity to earn additional credit by listening to the lessons, reading a textbook, and passing a final examination. Forsythe reported in 1979 that Purdue had an average of 25 students per course successfully completing the course requirements.

Another college, Rio Salado Community College, in Phoenix, Arizona, had three formal radio courses under development in 1980 (Baltzer, 1980, p. 10). The developed courses were to be offered for credit and were to be transmitted over the 100,000-watt FM college station.

Coastline Community College of Fountain Valley, California, reported in a March, 1982 letter that the college had extensive experience with instructional television but was fairly new in the field of instructional radio. The college's limited use of offering courses via radio had been encouraging enough to prompt the college to become actively involved in developing new courses for radio. Radio courses under development or already completed included the following titles "Energy and the Way We Live," "You and the Law," "History of Broadcasting," "Science Fiction," "Theatre," and "Theatrical Dialects."

The University of Mid-America reported in the spring of 1982 that it had developed and was offering a radio course for college credit titled "Foundations of American Nationalism."

George Lopos (1982, p. 2) reported that the University of Iowa had offered eleven different radio courses for credit over the last nine years. The radio courses were in the fields of education, religion, political science, literature, and history. Another midwestern university, the University of Minnesota, with ten years of experience in designing and broadcasting radio courses for credit offers two courses per quarter (six courses a year) with an average course enrollment of approximately 15. This information was provided by Dr. Sheldon Goldstein.

An evaluation of the programming of these educational services came in 1978-79 when the Corporation for Public Broadcasting surveyed the 202 CPB qualified radio stations. The survey revealed that fifty-two stations were offering postsecondary educational services in 1978-79 ("A Study of Public Radio," 1980, p. 4). However, only 28 of these 52 stations were broadcasting formal courses for credit. These 28 stations broadcast 57

formal courses for 54 colleges with a total enrollment of 8,762 students ("A Study of Public Radio," 1980, p. 5). Of the 52 stations offering postsecondary educational services, only two of the stations had a full-time employee assigned to postsecondary educational services.

#### Effectiveness of Radio Courses

Throughout its history, radio has not been used extensively for instruction by colleges and universities. Because of this limited use of radio, the research on its effectiveness in providing instruction is limited. The research that is available, however, does suggest that radio is an effective instructional instrument. Chu and Schramm (1967) did extensive research and found that radio, supplemented with visual materials, can teach as effectively as any other medium. The available evidence from empirical research and evaluations of radio usage indicate that radio is as effective in producing learning as other types of media, including traditional instruction (Hannum & Morgan, 1974, p. 11).

Professor Richard Forsythe (1979) indicated that there is no significant difference in student learning when taught by radio, films, audio cassettes, television, computers, or print. Forsythe concluded:

Even though radio has been criticized for being only an audio medium, studies have shown that visual elements in learning are not uniformly important. In many educational situations visuals may be more harmful than helpful. Also, the efficiency of combined audio and visual media has been challenged by studies which show that multi-channel communications may not be inherently more effective than single-channel presentations. (Parker & Monson, 1980, p. 6).

Karen Kearns, assistant director of education services at NPR, described Lorne Parker at the University of Wisconsin as the most knowledgeable person in the country on educational radio. In More Than



Meets the Eye (1980), Parker stated that research covering a period of over 35 years indicates that instruction over radio is as effective as traditional classroom instruction or other media such as instructional television (Parker & Monson, 1980, p. 1).

Even though the research on instructional radio is limited, it is clear that providing instruction over radio is effective, especially when supplemented by supporting visuals (Parker & Monson, 1980, p. 22). Research conducted in the United States and in different countries of the world found instruction via radio to be effective in the communication of information, ideas, or in affecting attitudes (Waniewicz, 1972, p. 94).

#### Instructional Design Principles That Are Important in Developing Radio Courses

The literature concerning instructional design principles that are important in developing radio courses is reviewed below. The instructional design principles that are described in this chapter are incorporated into a conceptual framework for designing and implementing radio courses in Chapter IV.

The purpose of instruction is to bring about a change in the behavior of a learner. In fact, this change in behavior is called learning. For instruction to be successful, some general principles of instructional design should be followed which have been derived from learning theory. Robert M. Gagne (1971, p. 64) expressed the opinion that the ideas of four people have contributed most significantly to the field of instructional design. The ideas of these four learning theorists--Neal Miller, B. F. Skinner, David Ausubel, and Robert Gagne--are described below.

Neal Miller believes that four general principles should be adhered to in designing instruction (Gagne, 1971, p. 64). The first involves motivation in that the learning materials should take advantage of a student's background in order to create a feeling of desire in the student. Miller's second principle involves providing cues for students about which instructional activities are the most important for the student. The third Miller principle states that learning is an active process; therefore, instruction must cause the student to do something. Miller's final principle is that students who demonstrate the desired behavior should be rewarded. These four general principles of motivation, cueing, involvement, and rewards should be incorporated into the design of any successful course.

Gagne described B. F. Skinner's ideas of instruction as very similar to Neal Miller's with increased emphasis on reinforcement (Gagne, 1971, p. 65). Skinner's ideas of instruction include that learning can be achieved by rewarding correct student responses.

Ausubel believes that in designing instruction teachers should consider providing hints or cues in the instruction that new ideas or concepts are going to be examined. Ausubel also believes that instruction should present general ideas and concepts first and then move to the content specifics. The third principle advocated by Ausubel is that content should be mastered at one level before a student goes on to a higher level. Ausubel's final principle for instructional design specifies that new content which is to be learned should be integrated into content already learned (Gagne, 1971, p. 67).

Gagne himself set forth a number of learning principles that are related to designing instruction. He reiterated that the principles of contiguity, repetition, and reinforcement nearly always enhance student learning. In addition to these external principles, Gagne reminds planners of internal principles that a designer must consider. Gagne's list of internal principles includes attention, expectancy, recall of relevant prerequisites, inclusion of cues for encoding, retention, transfer of learning, assessment of performance, and provision for feedback, and reinforcement (Gagne, 1965, 1977).

Gagne defined attention as the process of alerting students to what is about to be learned. Thus, the presentation of the material needs to be designed to capture the student's attention.

Expectancy is explained as the process of informing the student about his expected performance after instruction. That process often includes providing the learner with instructional objectives.

In learning new information, learners must recall old information that is related to the new skill to be learned. Gagne (1965, p. 309) believes that there is a substantial delay in learning new material if the related prerequisite skills are not recalled.

The process of storing new information in a learner's long-term memory is called "encoding" by Gagne. Visual as well as verbal directions can provide the prompts and cues needed in the encoding process and also in the stage known as retention.

Gagne contended also that instruction should provide opportunities for learners to apply newly learned material in different situations.

This concept of transfer of learning is enhanced if learners have thoroughly mastered the new content.

Instruction includes providing opportunities for students to demonstrate whether they have achieved the instructional objective. This process of assessment gives the student and the instructor an opportunity to determine at what level the objective has been achieved.

Once students have had an opportunity to demonstrate their performance on a given objective, they need to be provided with information about the degree of accuracy of that performance. Gagne said that feedback can correct faulty responses and reinforce correct responses.

In addition to the above-mentioned learning theories, educators Richard O. Forsythe, Tamar Levin, Sheldon Goldstein, and Ignacy Waniewicz have also suggested effective instructional design techniques. Dr. Tamar Levin reported that international research findings suggest that the three design techniques of active learner involvement, feedback and corrective procedures, and provision of instructional cues result in improved student learning (Levin & Long, 1981, p. viii).

Numerous studies have shown that students in the same class vary greatly in their involvement in the instructional activities (Levin & Long, 1981, p. 1). Many other studies found that students who were actively involved in their learning had higher achievement than students who were not as involved in the instructional activities (Levin & Long, 1981, pp. 3-4). Students tend to become more involved in the teaching activities if they have the necessary prerequisite skills, if they are motivated, and if the activities are related to what is being learned.

According to Dr. Levin, feedback involves setting a performance standard for students and providing the students with information concerning the accuracy of their performance. Corrective procedures include providing additional learning activities to help the students reach the defined performance standard.

Levin and Long (1981, p. 26) also found that instructional cues could enhance student learning if the student clearly understood the cues. Educational objectives that describe the desired learner behavior, questions that are related to the objectives, appropriate visual aids, and practice exercises are all instructional cues that are effective in improving student learning (Levin & Long, 1981, pp. 26-34). Effective instruction involves providing a variety of cues in order to meet the needs of all the students.

Professor Richard Forsythe (1970) at Purdue University reported that many instructional design techniques used in audio-tutorial programs, language laboratories, and programmed learning materials are appropriate in designing broadcast courses. Another professor, Dr. Sheldon Goldstein, Director of University Media Resources at the University of Minnesota, expressed in a January, 1983, phone conversation that the design of radio courses should integrate the radio lesson with all the print and visual material supplied to the radio students. Dr. Goldstein reported that radio courses produced at the University of Minnesota involved the department of media resources and the department of independent study. The recommendation of Dr. Goldstein was that all radio courses be designed as a joint effort.

Ignacy Waniewicz (1972), in providing practical advice to educators on the use of radio broadcasting in adult education, emphasized that radio lessons should be scripted in a conversational tone. He also suggested that ideas need to be clearly presented in a vocabulary suitable to the audience.

Effective instructional design takes into account all of the aforementioned conditions for learning expressed by Gagne and the other three theorists as well as the instructional design principles expressed by Drs. Levin, Forsythe, Goldstein, and Waniewicz.

#### Curriculum Development Principles That Are Important in Designing Instruction

After examining the previously described instructional design principles of theorists and practitioners, a deliberate choice of a curriculum rationale for designing a radio course was made. The curriculum rationale selected not only supports the instructional design principles important in radio courses but also the unique characteristics involved in distance learning. The selected curriculum rationale is based on a systems approach to curriculum development. The curriculum development principles that are important in designing a radio course are described below.

Ralph Tyler in his book, Basic Principles of Curriculum and Instruction (1949), described three major principles that educators should consider in designing a course. The first principle is that any educational program or course should begin by stating the objectives. The objectives should describe the student behavior that is expected

after the instruction is completed and should outline the content area in which the student will be working (Tyler, 1949, p. 46).

Also, Tyler believes that to enable students to accomplish given educational objectives, they must become involved in learning activities that allow students an opportunity to practice the behavior indicated in the objectives. Designing learning activities that will give students the desired experience is Tyler's second principle. Usually, many different activities are possible through which a learner could achieve the objective; therefore, activities should be selected and designed so that they are interesting and attainable for the learner.

Curriculum development, according to Tyler, involves not only developing educational objectives and designing learning activities, but also determining whether the educational objectives have been achieved by the learner (Tyler, 1949, p. 104-105). This evaluation process allows educators to gauge the effectiveness of the instructional program in achieving the stated intent.

James Popham, like Ralph Tyler, emphasizes the need to develop specific instructional objectives when designing a course of instruction. Popham cited three major advantages of developing specific instructional objectives: (1) instructors can make better decisions about designing or selecting learning activities, (2) objectives help the students to clearly understand what they are to learn, and (3) instruction can be evaluated to determine whether students have accomplished the objectives (Popham & Baker, 1970, pp. 37-38).

Popham agreed with Ralph Tyler also that in developing a course learning activities should be designed to allow the students to practice

the behavior identified in the instructional objectives. Appropriate student practice combined with knowledge of results leads to higher student achievement (Popham & Baker, 1970, p. 42).

Once the objectives of a course have been developed, Popham believes that the students need to understand the reason the instruction is important to them. He calls this the principle of perceived purpose. The principle is based on Popham's empirical studies that show that students learn better when they understand the reason for studying the subject matter (Popham & Baker, 1970, p. 83).

Franklin Bobbitt writing as early as 1924 emphasized that the first step in curriculum development was identifying the objective of the course (Bobbitt, 1924, p. 32). Bobbitt advocated that the purpose of education was to prepare people for future adult life; therefore, he thought the objectives should be derived from an analysis of the abilities and personal qualities necessary in adult life.

The identified objectives of a curriculum should be expressed to students in definite terms and in a language easily understood by the students according to Bobbitt (1924, p. 32). The specifically stated educational objectives become the basis for designing learning experiences that will allow learners to achieve the objectives. Bobbitt also advocated that students learn by doing; therefore, the curriculum should allow students an opportunity to practice the behavior indicated in the objective.

Bobbitt (1924, p. 284) also argued that curriculum development should involve people at the local level who have experience and expertise



in the subject under development. For example, if a course in nursing is to be developed, then local nurses should be involved in the curriculum development process.

### Communications Theory

Communication is the way people obtain and share information. An understanding of communication is especially important to designers of radio courses because the receiver of the message is not always able to question the sender of the message. A knowledge of communications theory is important in the design of instructional programs because the teaching-learning process is essentially a communications process.

Numerous writers have described the communication process and illustrated the theory of communication with models. The model below (Glueck, 1979, p. 123) was selected to illustrate communication theory because of its detailed steps.

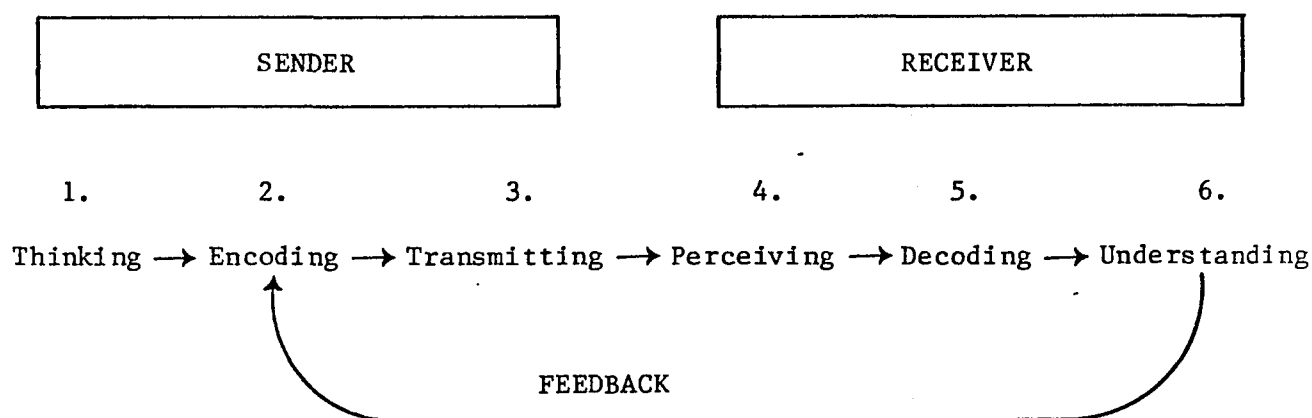


Figure 1. Communications model

For effective communication the sender must begin by thinking of the message and its purpose. The message might be an idea, facts, concepts, etc. Once the sender has thought of the purpose of the message, it must be encoded in a form which can be understood by the receiver. Encoding involves putting the message into words and/or visuals. Senders should encode messages using a vocabulary that will be understood by the receiver. Difficult concepts can be encoded with words and visuals. Messages should be carefully encoded before they are transmitted to avoid rambling (Glueck, 1979, p. 129).

Once the message has been encoded, it is then transmitted to the receiver through some medium like radio. After the message has been transmitted, the receiver has to perceive the message (see it or hear it using his senses). The message needs to have personal meaning for the receiver so that the message will not be filtered out of the receiver's field of perception. Next, the receiver must decode the message. Decoding involves translating the message into terms that the receiver can understand.

Sometimes what is encoded and transmitted by the sender is different from what is understood by the receiver. The sender is obligated to get frequent feedback to determine whether the message was understood as transmitted. Educators need to get frequent feedback to ascertain whether or not they have communicated accurately with students.

Another difficulty in communicating clearly arises from distortions that occur in the communication process. Senders must try to foresee and eliminate distortion. One type of distortion occurs when the sender

is not trusted by the receiver. Senders need to develop trust and rapport with receivers to prevent this kind of distortion.

When communicating through a sound medium like radio, senders must obtain and maintain the interest of the listener. To help ensure listener interest senders must discuss topics in terms of a listener's previous background and knowledge (Nisbett, 1982, p. 76). Nisbett indicates that programs containing many facts and figures are not a problem because the data tend to hold the listener's interest in between the presentation of the main teaching points.

When communicating ideas over the radio, the sender is advised to allow at least three or four minutes for each major point in the program (Nisbett, 1982, p. 84). In explaining major ideas over the radio, the sender must realize that listeners prefer concrete examples which are presented and explained in a clear, logical sequence (Nisbett, 1982, p. 77).

The major principles of instructional design, curriculum development, and communications theory covered in this chapter were used in the development of a conceptual framework for designing and offering for credit a radio course described in Chapter IV.

### CHAPTER III

#### METHODOLOGY

A conceptual framework for teaching credit courses to adults via public radio (based on the review of literature in Chapter II) has been developed in Chapter IV. The literature review examined specific principles of learning, curriculum development, and communication theory; these factors were considered important in designing radio courses that would result in student learning. The reviewed principles were especially important in designing radio courses because of the unique condition that the learners were separated from the instructor by distance which would not allow for daily face-to-face contact. By means of the conceptual framework, the distance that separates the students from the radio teacher is bridged. The details are presented in Chapter IV.

The instructional design of radio courses is important because the greatest advantage of a sound medium like radio lies in its direct appeal to the imagination (Nisbett, 1974, p. 75). For example, in teaching an art course via radio, the instructor can profit from the creative visual images the students have. However, teaching a subject like accounting via radio where each student needs to have the same visual image of what the radio teacher is describing takes careful planning and well designed and integrated radio lessons with student material provided for home use.

The conceptual framework suggests a team of educators and broadcasters who use a systematic approach to designing the radio courses.

The systems approach takes advantage of the learning principles described by the learning theorists in Chapter II. The systems approach also incorporates Tyler's ideas of developing course objectives, designing learning activities to accomplish those objectives, and determining whether those objectives have been accomplished. Additionally, the systems approach to designing radio courses allows the teacher and radio students to communicate effectively.

Offering college courses for credit to students over the radio involves more than simply designing a radio course for learners who will listen to the radio lessons at home. Consideration must also be given to the implementation phase of radio courses. The implementation aspect of the framework involves a group of educators and broadcasters working as a team to conduct certain activities before, during, and after the radio course is broadcast.

The conceptual framework advocated in Chapter IV is also based on these sources: Mavis Monson's Bridging the Distance: An Instructional Guide to Teleconferences, Rio Salado Community College's Operation Manual for Alternative Delivery Courses, Dallas County Community College District's Telecourse Procedures Manual, Hewitt's Administrators Guide to Telecourses, Munshi's Telecourses: Reflections' 80, and experience with offering nontraditional delivery courses at Central Carolina Technical College through the North Carolina Consortium for Instructional Telecommunication. A brief description of these sources follows.

Lorne Parker, Director of Instructional Communications Systems at the University of Wisconsin, recommended Mavis Monson's book, Bridging the Distance: An Instructional Guide to Teleconferencing, as an excellent

source for the instructional design aspects for courses transmitted at a distance. Monson emphasized that her research (conducted over 12 years at the University of Wisconsin) indicated that successful courses transmitted at a distance included four basic design components: (1) humanizing, (2) participation, (3) message style, and (4) feedback.

Another reference consulted was An Administrator's Guide to Telecourses written by Louise M. Hewitt of Coastline Community College, one of three colleges in the Coast Community College District of California. Hewitt's book describes the experiences of the colleges in the Coast Community College District plus the experiences of other prominent institutions in offering telecourses for credit to adults. The book gives practical suggestions on how to design and implement a college course for credit through nontraditional delivery systems, and emphasizes techniques and procedures to use before a course is offered, while a course is being offered, and after a broadcast course is over.

Telecourses: Reflections '80 was a study written by Munshi and funded by the Corporation of Public Broadcasting to examine the state of the art in college telecourses. The content was a review of telecourse literature and contained interviews with fifty educators, broadcasters, and publishers involved in offering telecourses.

The Telecourse Procedures Manual, developed by the Dallas County Community College District, has three primary sections that were appropriate to this study. One section discussed the methods used to acquire or develop broadcast courses plus the techniques used to evaluate and revise the courses, the second section discussed the implementation of

the course, and the third section examined the evaluation of course materials, procedures, and personnel.

The North Carolina Consortium for Instructional Telecommunications (NCCIT) was organized in 1979 and is composed of community and technical colleges and technical institutes that work cooperatively in using technology to provide distance learning to adult students. Between 1980 and 1982 the consortium made available 68 separate course offerings utilizing eight different telecourses and enrolling 3400 students (Julian, 1982, p. 1).

The major principles selected from the aforementioned sources and used in the development of the conceptual framework in Chapter IV include the following:

1. Develop a team concept of educators and broadcasters working together in instructional development.
2. Obtain community and local college faculty input and support.
3. Develop course objectives.
4. Provide students with a perceived purpose.
5. Design learning activities that allow active student involvement.
6. Provide students with knowledge of how they performed on learning activities.
7. Provide instructional cues.
8. Evaluate the course based on student performance and reaction.
9. Provide for interaction.
10. Humanize the instruction.
11. Script all radio lessons using an appropriate vocabulary.

12. Provide flexibility.
13. Advertise any radio course heavily.

The second part of this chapter concerns the interest of North Carolina public radio stations in offering college courses for credit. To ascertain the probable market in North Carolina for radio courses a survey instrument was developed to determine whether the stations had offered college courses for credit in the past and what their interest might be in the future. The survey instrument was field tested using four public radio station managers. The survey instrument was then revised and distributed to each of the thirty public radio stations in North Carolina. The following list of public radio stations in North Carolina was furnished by the North Carolina Agency for Public Telecommunications and was dated August 16, 1982.

NORTH CAROLINA PUBLIC RADIO STATIONS AND CONTACT PERSONS\*

<u>City and Call Letters</u>	<u>Contact and Address</u>	<u>Comments</u>
Asheville WUNF	Rachel Jeffries, Station Manager, UNC-Asheville, NC 28804 (704) 253-6874	Expanding to 110 watts. Recipient of \$25,000 1982 General Assembly Grant.
Asheville WBMU	James Robinson, President- General Manager, 15 Walnut Street, Suite 300, Lexington Park, Asheville, NC 28802 (704) 253-7818	440 watts. Minority- oriented.
Boiling Springs WGWG	Allen Setzer, General Manager, Gardner-Webb College, P. O. Box 876, Boiling Springs, NC (704) 433-2349	4,700 Watts. Community- oriented station. Mixed programming.



Boone WASU	Dr. Patton Reighard, Broadcasting Director, Crutchfield Radio & TV Center, Appalachian State University, Boone, NC 28608 (704) 262-3157	340 watts. Currently student-oriented station. Dr. Reighard sits on APT Public Radio Advisory Committee. Mixed programming.
Buies Creek WCCE	Daniel Ensley, General Manager, Campbell University, Buies Creek, NC 27506 (919) 893-5561	3000 watts. Community- oriented station. Mr. Ensley sits on the APT Public Radio Advisory Committee. Mixed programming.
Chapel Hill WUNC-FM	Gary Shivers, Director of Radio, Swain Hall 044A, University of North Carolina, Chapel Hill, NC 27514 (919) 966-5454	100,000 watts. National Public Radio affiliate; Corporation for Public Broadcasting-qualified. Mr. Shivers sits on the APT Public Radio Advisory Committee. Classical music, jazz, and public affairs.
Chapel Hill WXYC	Bill Burton, Station Manager, Student Educational Broadcasting, P. O. Box 51, Carolina Union, Chapel Hill, NC 27514 (919) 933-7768	400 watts. Student- oriented station. Mostly rock.
Charlotte WFAE	Jennifer Roth, General Manager, University of North Carolina-Charlotte, UNCC Station, Charlotte, NC 28223 (704) 597-2555	100,000 watts. National Public Radio affiliate, Corporation for Public Broadcasting-qualified.
Cullowhee WVCU	John Davlin, Advisor, Western Carolina University, P. O. Box P, Cullowhee, NC 28723 (704) 227-7173	327 watts. Student- oriented. 80% rock, 20% public service and other.
Dallas WSGE	Tom Black, WSGE, Gaston College, Dallas, NC 28034 (704) 922-3136	3000 watts.
Davidson WDAV	John Clark, Director, Davidson College, Davidson, NC 28036 (704) 892-2000, ext. 131	18,500 watts. Classical format. Covers Charlotte and areas north.

Elon College WSOE	Gerald Gibson, Advisor, P. O. Box 2243, Elon College, NC 27244 (919) 584-9711	Plan for increase to 500 watts. Student-oriented. Rock, pop, MOR, jazz, news.
Fayetteville WFSS	Joseph Ross, Director, Fayetteville State University, 1200 Murchison Rd., Fayetteville, NC 28302 (919) 486-1381	Expanding from 10 watts (currently) to 100,000. Will be National Public Radio affiliate and Corporation for Public Broadcasting-funded. Minority-oriented programming.
Greensboro WNAA	Gary Flanagan, General Manager, Dept. of Speech Communications/Theater Arts, A & T University, Greensboro, NC 27411 (919) 379-7934	10,000 watts. Minority- oriented programming.
Greensboro WQFS	Charles White, Advisor, Guilford College, Greensboro, NC 27410 (919) 292-5511	19,000 watts. Student- oriented station. Mostly rock.
Greensboro WUAG	Dean James Allen, David Israel, Manager, University of North Carolina at Greensboro, 1000 Spring Garden St., Greensboro, NC 27412 (919) 379-5405	10 watts (campus coverage). Student-oriented station.
Greenville WZMB	Dr. Gerry Haskins, Advisor, Second Floor, Joyner Library, East Carolina University, Greenville, NC 27834 (919) 757-6629	280 watts. Student- oriented. Album rock.
High Point WWIH	Everard H. Smith, Advisor, P. O. Box 3431, High Point College, High Point, NC 27262 (919) 885-5101	10 watts (campus coverage). Student-oriented station.
Kinston WKNS	Alonzo Carruth, Broadcasting Department Chairman, Lenoir Community College, P. O. Box 188, Kinston, NC 28501 (919) 527-6223	3000 watts. Mixed programming.

Mars Hill WVMH	Niles Hipps, Advisor, Mars Hill College, Box 1161-C, Mars Hill, NC 28754 (704) 689-1232	10 watts (campus coverage). Adult rock, mixed. Student- oriented.
Raleigh WCPE	Gregory Procopio, President, Educational Information Corp, 4044 Old Wake Forest Rd., Raleigh, NC 27609 (919) 872-7569	12,500 watts, increasing to 33,000. Classical.
Raleigh WKNC	Herb Council, P. O. Box 5072, Harris Hall, NCSU, Raleigh, NC 27607 (919) 737-2441	2,900 watts. Student- oriented; mostly rock.
Raleigh WSHA	David Linton, Manager, Shaw University, 118 East South St., Raleigh, NC 27602 (919) 755-4890	25,000 watts. Corporation for Public Broadcasting- qualified. Community- oriented with emphasis on minority service.
Rockingham WRSH	Ben Jones, Advisor, P. O. Box 1748, Rockingham, NC 28379 (919) 895-6371	Applied for 400 watts (from 10). Student- oriented. High school station.
Salisbury WNDN	Gerald Honaker, Advisor, Catawba College, Salisbury, NC 28144 (704) 637-4408	10 watts (campus coverage). Student-oriented.
Sanford WDCC	Jerry M. Farmer, Radio- Television Department, Central Carolina Technical College, 1105 Kelly Dr., Sanford, NC 27330 (919) 775-5401	3,000 watts. Mixed programming.
Swan Quarter WHYC	Gary Stroble, Manager, P. O. Box 217, Swan Quarter, NC	1000 watts. Mixed programming.
Warrenton WVSP	Valeria Lee, President, Sound & Print United, P. O. Box 365, Warrenton, NC 27589 (919) 257-1909	100,000 watts. Minority- oriented programming. Jazz, classical, public affairs. National Public Radio affiliate. Corporation for Public Broadcasting-funded.

Wilkesboro WSIF	Al G. Stanley, Advisor, Wilkes Community College, Drawer 120, Wilkesboro, NC 28697 (919) 667-7136	10 watts (campus coverage). Mixed programming.
Winston-Salem WFDD	J. Patrick Crawford, Manager, Wake Forest University, Winston- Salem, NC 27109 (919) 761-5257	36,000 watts. National Public Radio affiliate. Corporation for Public Broadcasting-qualified. Mostly classical music.

\*Does not include religious broadcasting.

A copy of the survey instrument mailed to each public radio station in North Carolina appears in Appendix A.

#### Collection of Data

As previously indicated, the survey instrument was mailed to each public radio station in North Carolina. An accompanying cover letter explained the purpose of the study and solicited participation by all recipients. Twenty-four of the 30 public radio stations in North Carolina returned the completed survey instrument giving a response rate of 80%.

The answers to each question beginning with "how many hours per day is the station on the air" were tabulated and appear below. Where the question asked for comments a summary of all the comments was included. A tabulation of the survey results indicated the following:

How many hours per day is the station on the air?

Minimum - 7 hours; Maximum - 24 hours; Average 17.2 hours

In the past five years, has your station offered any postsecondary courses for credit?    Yes   0          No   24

If well designed radio courses carrying college credit were available, would your station be interested in broadcasting such courses?

Yes 14      No 7      Maybe 3

If your answer is no, please explain why.

Eight public radio stations included comments with seven of the eight indicating that the format and purpose of their station was not formal education but to offer programs of general interest to the public, primarily music.

The other responding station thought it was more appropriate to offer the course by cassette tape than over public radio.

Would your station be more likely to broadcast educational radio courses over open broadcast or by SCA signal?

SCA signal - 11; Open broadcast - 11; Neither - 1; No Response - 1

Would you or a station representative be interested in working with a team of educators to develop and offer for credit a radio course for adults in your service area?

Yes 18      No 4      Maybe 1      No Response 1

If your answer is yes, please indicate when you would be interested in working on a radio course.

4 immediately  
10 within the next two years  
5 within the next five years

Have you had any discussion with the postsecondary institutions in your area concerning broadcasting radio courses for credit?

Yes 6 No 18

A more detailed summary and examination of the survey data is to be found in Chapter V.

## CHAPTER IV

A CONCEPTUAL FRAMEWORK FOR DEVELOPING  
AND TEACHING CREDIT COURSES TO ADULTS  
VIA PUBLIC RADIO

The history of educational radio clearly demonstrates that the medium of radio has been used since the early 1920's to teach a variety of courses for credit to adults. The history of radio also shows that the medium, though an effective instructional vehicle, has been greatly under-utilized. An assumption of this study was that if educators were aware that radio was an effective instructional medium and if they had a conceptual framework (based on curriculum theory, learning theory, and communications theory) for designing and evaluating radio courses, then radio would be used more often to teach credit courses to adults.

The conceptual framework for designing radio courses that is presented in this chapter utilized most of the principles described in Chapter II. In addition, the conceptual framework is based on the concepts in Mavis Monson's Bridging the Distance: An Instructional Guide to Teleconferences, Rio Salado Community College's Operation Manual for Alternative Delivery Courses, Dallas County Community College District's Telecourse Procedures Manual, Hewitt's Administrator's Guide to Telecourses, Munshi's Telecourses: Reflections '80 and from experience with offering nontraditional delivery courses at Central Carolina Technical College through the North Carolina Consortium for Instructional Telecommunications.

The initial step in developing a conceptual framework to use in designing radio courses is for the local postsecondary institution to

select a committee for radio course design and implementation. The committee will include at least one person from each of the following areas: broadcasting, instructional design, learning resource center, administration (preferably the chief academic officer), and faculty. Terrence Adams wrote that one of the key elements in the design and implementation of radio courses is the need for teamwork between broadcasters and educators. The development and implementation committee begins by surveying the community served by the local radio station. Patricia Cross emphasized that adult educators need to find out what courses consumers want and then offer those courses (Cross, 1981, p. 110). This community assessment will indicate needs or preferences for certain radio courses as well as preferred listening times. The committee then selects the radio course it wants to design and offer in accordance with the preferences expressed by the community. Along with the expressed course preferences, the committee considers the cost of production and the prospects for longevity of the course. The committee additionally works with the proper administrative officials of the college to select a teacher for the radio course. Obviously the teacher selected needs to be knowledgeable on the course content, but he or she must also be flexible, and have an understanding and appreciation of nontraditional methods of instruction and nontraditional learners. The teacher must also be able to work successfully with the committee in designing the radio course and must be comfortable working from a prepared script. The National Public Radio staff at the 1982 Conference on Adult Learning strongly recommended that each lesson in a radio course be written and



approved by the design team. The selected radio course teacher thus becomes a member of the design and implementation committee.

The fourth step in the conceptual framework is to have the design and implementation committee work with the college administration to appoint an advisory committee for the radio course. Advisory committee members will be local people and faculty members with knowledge of the course content. Advisory committee members will give advice about the course objectives, content, organization, and also give the course credibility and support in the broadcast coverage area. Advisory committee members that are actively involved are also good promoters of radio courses.

For best results in planning and executing a radio course, the design and implementation committee follows the recommendation of the National Association of Educational Broadcasters which is to use a systematic approach for designing courses to be delivered over the radio or other methods of mass communication (Covert, 1974, p. 2). The systematic approach used for developing the radio course is similar to the systems approach framework advocated by Stuart and Rita Johnson in their 1975 publication, Toward Individualized Learning. The systems approach used incorporates the major principles of curriculum theory, learning theory, and communication theory discussed in Chapter II. The systems approach applied to designing radio courses involves six steps: (1) getting to know the needs and background of the students, (2) defining the course objectives, (3) developing a rationale for each lesson, (4) designing learning activities, (5) assessing student performance, and (6) revising course materials.

The first step, getting to know the students, is extremely important since the instruction will not be face to face. Mavis Monson (1978, p. 2) calls this process "humanizing." Humanizing involves developing rapport between the radio teacher and the students who are separated by distance. A positive correlation exists between humanizing and learner participation and also between humanizing and student fondness for the course (Monson, 1978, pp. 10-11).

One humanizing technique consists of having all the students who are taking the radio course meet on campus or in some other designated location within the broadcast area for an orientation session. The students get to meet the teacher, to meet other radio students, and to receive a summary view of how the radio course is designed, what the goals of the radio course are, how the textbook or other printed or visual material will be used, how to communicate with the teacher during the course, and how the course grade will be determined. The orientation session also allows the teacher an opportunity to test the students to determine whether or not they all have the prerequisite skills for the course. The North Carolina Consortium for Instructional Television recommends that all courses taught by nontraditional means have an orientation session before the radio course begins. Coastline Community College found a positive correlation between student attendance at orientation sessions and success in the course (Hewitt, 1980, p. 21).

Other humanizing techniques include writing a welcome letter to each radio student, sending a biographical sketch and photograph of the radio teacher to each student, and developing a student profile for each radio student. The sources listed at the beginning of this chapter

describe in great detail a number of techniques that can be used to let the teacher and students get to know each other. The acquaintance process is extremely important for future communication.

After developing some techniques that will allow the radio teacher and students an opportunity to become acquainted, the design and implementation committee moves to the second step in the systems approach which is developing the objectives for the radio course. At this point the five considerations for selecting course objectives advocated by Ralph Tyler will have been examined. The community survey will have revealed information about the potential students. Advisory committee members provide the community life perspective and the radio teacher is the subject matter specialist. The use of a philosophy screen and a psychology of learning screen in selecting course objectives are part of the responsibility of the design and implementation committee, also.

After the objectives for the course have been selected and the course content has been divided into a series of radio lessons, the third step in the systems approach begins which is to develop a rationale for each lesson, which explains to students why the lesson content is important to them. A successful rationale will get the students' attention and get them interested in the given radio lesson. If students understand the objectives and rationale for the radio lesson, they are more likely to enter into the instructional activities.

The fourth step in the systems approach consists of developing the learning activities that will allow the students to master each objective. The learning activities will be a series of practice cycles. Each practice cycle has three components--input, practice, and feedback.

Input involves providing the students with the information necessary to allow them to perform the behavior indicated in the objective. The input information might be provided by the radio lesson or print or visual material designed for use with the radio course. Input also includes questions or directions intended to lead the learners to practice the desired behavior. A review of the literature on radio instruction revealed a recommendation that the audio be supplemented with a textbook and appropriately designed accompanying print and visual material. The radio teacher refers to the visual material by page number or diagram number.

The design and implementation committee designs the radio lesson in a style that will be understood by the students. This involves using a vocabulary understood by the students and explaining concepts and ideas within a frame of reference likely to have been experienced by most of the students. The radio teacher presents the "input" information by speaking directly to individuals rather than to a group. The lesson is designed to give the radio students a preview of the major concepts of the lesson to be covered. A rule of thumb is to cover no more than three major concepts in a 30-minute lesson (Monson, 1978, p. 29). Each major concept is presented several times to insure that the students hear and remember the important ideas. A short summary of the major concepts is repeated at the end of the radio lesson and mailed to the students.

To provide variety in the radio lesson, the teacher changes the rate of speech and volume and combines the audio-lecture with other techniques such as panel discussion, guest speakers, interviews, and

appropriate sound effects. Sound effects can be important in appealing to certain senses. For example, you cannot teach the sense of smell over the radio but you can create sounds that give the listening audience the impression they are in a particular environment that has a certain smell.

Following the input part of the practice cycle, each student should have the opportunity to practice the desired behavior. If the input was designed to teach students how to add fractions, they should now have some practice problems. The practice exercises are provided in the student's supplementary material.

Following the practice the students should receive feedback about the accuracy of their work. The correct answers to practice problems are provided in the supplementary material. When students get feedback on how and why they are right or wrong, they can take steps to improve and are more likely to do better the next time.

The learning activities are designed to involve the students in the learning process. The research on listening and learning clearly indicates the relationship between participation and learning (Monson, 1978, p. 17). Learning is an active process, and the practice cycles are designed to involve the students. The design and implementation committee plans radio lessons that also mentally involve students. The use of mental exercises along with written and oral questions can enhance the internal participation of the student. The research evidence confirms that providing practice cycles does enhance learning (Johnson & Johnson, 1971, p. 49).

The radio course can be designed to allow students to call in responses to questions or to ask questions. If two-way communication is not possible, then students can be given written questions and the answers can be mailed to the radio teacher who evaluates them and returns them to the students.

The radio course is designed to teach specified objectives to students. Periodic evaluations are made to determine whether the radio students have mastered the instructional objectives. This student assessment process is the fifth step in the systems approach. The process entails giving tests to determine whether or not the students have mastered the cognitive and psychomotor objectives of the course. Some of the tests are designed to be open book and are completed by the students at home and mailed to the radio teacher. Two of the tests are designed to be taken by students in a group situation on campus or in an appropriate community center. The North Carolina Consortium for Instructional Television recommends that students taking courses by nontraditional delivery systems meet as a group about the middle of the course and again at the end of the course. The mid-term group meeting with the radio teacher is used for review and for taking a mid-term exam. A final exam is administered at a group meeting at the end of the course. The combination of at-home and on-campus tests allows the design and implementation committee to determine how effective the radio lessons and supplementary material have been in accomplishing course objectives.

The final step in the systems approach is to revise the course based on student feedback. The student feedback consists of the individual learner's performance on the given tests plus any written or oral

comments they make about how to improve the radio course. The mid-term and final review sessions allow the radio teacher an opportunity to get feedback from the students on such topics as:

1. Were the radio lessons interesting?
2. Were the directions clear on how to use the supplementary print and visual material?
3. Were the objectives for each lesson clear?
4. Were the practice exercises sufficient?
5. Did the test questions relate to the instructional objectives?
6. Did students receive adequate feedback from the teacher on all mailed-in assignments and tests?
7. Did the teacher respond adequately to phoned in questions?
8. What recommendations do students have on how to improve the radio course?

As a part of the course procedure the radio teacher has communicated with the students throughout the course by phone and written correspondence thus providing additional insights. Besides the student's feelings about the radio course, the committee has the student's pre- and post-test scores, how the group and each individual performed on each test item, and on each instructional objective. By analyzing the students' comments and test scores, it is possible to pinpoint where there was a breakdown in the instruction and to revise the radio course accordingly.

Figure 2 shows the six major steps in the systems approach.

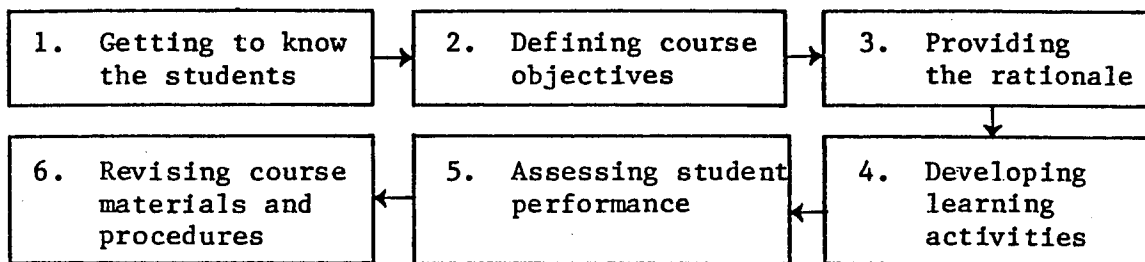


Figure 2. Systems approach

After the radio course has been developed but before it is offered, the design and implementation committee has the responsibility for planning and conducting a variety of pre-broadcast activities. During the time the radio course is being broadcast and following completion of the course, the committee is heavily involved in additional activities that help to make the radio course successful.

The careful planning of pre-broadcast activities helps to ensure that the course will be successful. The entire college should receive an orientation to the goals and objectives of the radio course, the design of the course, the purpose of the course, the course outline, the text being used, and the strategies being used to facilitate interaction between the teacher and the radio course students. Such an orientation for the faculty and staff of the entire institution helps to eliminate faculty animosity about nontraditional courses and to develop faculty interest in helping to promote the course.

The information that is used in the faculty-staff orientation is also used to obtain approval for offering the course for credit. Each institution has its own system for granting course approval, and the design and implementation committee secures approval through the



specified system. The committee, in obtaining approval for the course, also secures agreement on the amount of credit the course will receive.

Arrangements are made with the local radio station to broadcast the radio course at a time compatible with the preferred time expressed on the community survey. The broadcast times need to be consistent each week. If the radio lessons are going to be repeated, it should be at a different time and on a different day from the original broadcast (Hewitt, 1980, p. 11). Arrangements should also be made to have a cassette tape copy of the radio lesson available for checking out or for listening to in the institution's Learning Resource Center. In this way, students who may miss the original broadcast or just need to hear the lesson again have the opportunity to do so.

Radio courses require additional support services like printing, mailing, and extra telephone lines; these services must be planned for in advance. Each student will receive numerous mailings from the teacher. The mailed communications will include items such as a welcome letter, mail-in assignments, mail-in tests, letters of encouragement, and supplementary print and visual material developed for the course. Institutions offering radio courses need to arrange for additional telephone lines to facilitate the interaction between the radio teacher and the students. Initially the students are encouraged to call the institution about registering for the course and later to call the radio teacher with any questions concerning the course. The radio teacher is also expected to call each student during the course.

If the radio course is to attract large numbers of students, it needs an active and early promotional campaign (Hewitt, 1980, p. 15).

Good promotion of radio courses is more important in enrolling large numbers of radio students than it is in courses offered in traditional classrooms (Operation Manual, 1980, p. 27). Promotional techniques to be considered are press releases, campus bulletin boards, public service announcements on radio and television, newspaper advertisements, billboards, previews of certain lessons to the press and specialized audiences, and brochures. The promotional literature emphasizes the benefits of the radio course to prospective students. The major benefits are that through the medium of radio students can take a college credit course in the convenience of their home and save time, energy, and money.

Simple and easy registration procedures are another key to having a large enrollment in the radio course. Students can register for the radio course by telephone or mail in registration forms, or they may use the traditional on-campus registration location.

Students registered for the radio course are expected to come to campus or to designated community sites for at least three group meetings. Students will be attending an orientation session before the broadcast lessons begin; later for a mid-course review, discussion, and testing; and again at the end of the course for a final review and test. The design and implementation committee reserves the meeting room in advance for the three group meetings with students.

Students who miss the mid-course or final test have an opportunity to take the missed test in the Learning Resource Center. A staff member of the Learning Resource Center is assigned the responsibility of giving the makeup tests. The LRC is the logical location to make up missed

tests because of the hours the facility is open and the experience of the staff in administering tests.

The design and implementation committee works with the proper college officials to designate a specific counselor to work with the radio students. The designated counselor is introduced to the students at the orientation session.

During the weeks that the radio course is being broadcast, the design and implementation committee continues to have responsibilities for course operations that are vital to the success of the course. Chief among these responsibilities is the need to provide opportunities for interaction between the radio students and the faculty (Hewitt, 1980, p. 19). The radio students need to feel that the institution is as interested in them as it is in the traditional, on-campus students. The four primary methods of achieving this interaction are phone calls, letters and cards, newsletters, and review sessions.

The telephone calls may be initiated by the students or the radio course faculty member. The radio teacher has specific times that he or she can be reached by telephone each week to answer student questions. The institution provides an answering service or a designated person to record any questions about the radio course that are telephoned in when the radio teacher is not available. The radio teacher not only returns calls initiated by students but also calls students directly to encourage them, check on their progress, and get feedback about the design of the course. Miami-Dade Community College found that students taking telecourses who received regular phone calls from the instructor had a lower attrition rate (Hewitt, 1980, p. 20).

Frequent letters and cards to the radio students help achieve interaction between the teacher and students throughout the course. The correspondence ranges from welcome letters to notes reminding students of the dates and time for the group review sessions.

Many institutions offering nontraditional delivery courses develop a newsletter that is distributed periodically throughout the course. Newsletters for radio students contain information about the course content, new materials available in the Learning Resource Center that relate to the course, a feature article on one or more students taking the radio course, and a reminder to students of upcoming assignments and tests.

Radio students are encouraged to attend the two review sessions, one at mid-term and the other at the conclusion of the course. These group sessions allow radio students to meet and interact with each other. Also it is an additional opportunity for students to talk with the instructor. Students who get to know each other at these group sessions can then form their own study groups at home.

The promotion of the Learning Resource Center is another function that is carried on during the radio course. Learning Resource Centers will have print and nonprint materials available for students who would like to do additional work on content-related material. In addition, cassette copies of the radio lessons will be available in the LRC for students who would like to have the lesson repeated.

During the radio course the students complete mail-in assignments and tests. These student papers should be graded and returned promptly along with any appropriate teacher comments.

The radio course is designed to integrate the radio lesson, text, and supplementary print and visual material. Throughout the course, efforts are made to give clear directions to students about how to use the textbook and supplementary material with the audio-lesson. Coast Community College District found that when the supplementary material was not available at the beginning of the course, the dropout rate increased significantly (Hewitt, 1980, p. 22).

Once the radio course is over, all aspects of the conceptual framework are evaluated. The evaluation of student performance and attitudes about the radio course have been described earlier. Additional student research involves compiling the demographic data of the radio students and studying the dropout rate and the reasons students dropped out of the course.

Each member of the design and implementation committee has been actively involved in the radio course, and should evaluate his own experience individually and as a team. The design and implementation committee should also discuss when the radio course might be used again. The committee might find other uses for the radio course. Some of the lessons might be a good supplement to campus courses taught traditionally. The committee could also consider offering the course as a self-paced course available through the LRC with open entry and exit points. The evaluation of the entire experience of offering a credit course via radio is the last phase of the conceptual framework.

The conceptual framework for teaching credit courses via public radio described in this chapter involves a team approach. The design and implementation committee is the team composed of broadcasters,

subject matter specialist, instructional design specialist, learning resource center personnel, and college administrators. According to Terrence D. Adams in his article, "Working with Broadcasters," this team approach to developing and teaching credit radio courses has been needed for a long time.

The design of the radio course using the systems approach model incorporates the learning principles advocated by Gagne, Miller, Skinner, Ausubel, Rita Johnson, Stuart Johnson, and others. The design and implementation phase of the radio course involves the principles of communication theory and the curriculum development ideas of Tyler, Popham, and Bobbitt.

The planning and implementation phase of the framework is based on the ideas and experiences of numerous people and institutions in the United States that have experience with offering credit courses through nontraditional means. Peter Vander Haeghen, Associate Dean of College Development at Coastline Community College, in a letter to the author dated March 1982, stated that the textbook, supplementary print and visual material, and other support services are similar for radio and television courses.

Information available from individuals at the University of Wisconsin, National Public Radio, Rio Salado Community College, Dallas County Community College, Miami-Dade Community College, North Carolina Consortium for Instructional Television, and Central Carolina Technical College provided the basis for the planning and implementation part of the conceptual framework.

Louise Hewitt at Coastline Community College considers the following aspects to be essential in implementing a successful radio course (Hewitt, 1980, p. 26):

1. Total commitment of all institutional resources
2. Vigorous measures to enroll students and to keep students
3. Strong support for faculty involved
4. Steady communication with students
5. Close coordination of all of these services and supports

The design of the radio course, the selection of the radio instructor, institutional motivation, and institutional promotion of the radio course are the key elements that need to be blended together to attain a successful distant-learning course (Parker, 1981).

In this chapter the author has presented the conceptual framework for a public radio course which would extend the use of radio to many previously uninstructed persons. He has utilized the ideas of Hewitt and Parker along with information from several educational institutions.

Figure 3 illustrates the steps in the conceptual framework for teaching credit courses via public radio as described in this study.

## CONCEPTUAL FRAMEWORK FOR TEACHING CREDIT COURSES VIA PUBLIC RADIO

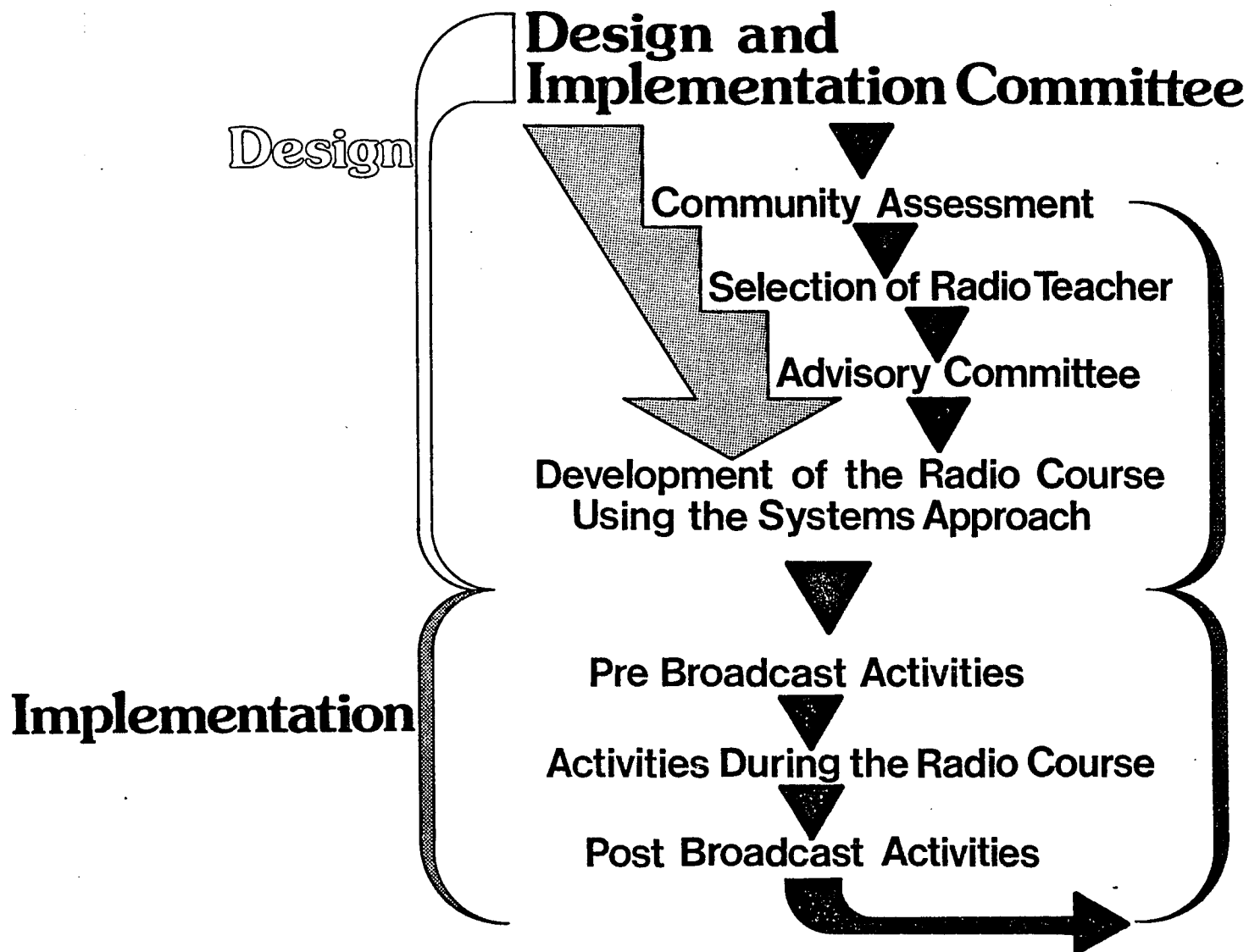


Figure 3. Conceptual framework for teaching credit courses via public radio.



## CHAPTER V

## DISCUSSION, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

In the United States there is a tremendous need for lifelong education and learning opportunities. In 1972 the Response Analysis Corporation, a commercial survey organization of Princeton, New Jersey, estimated the United States had 104 million people between the ages of 18 and 60 who were not full-time students and who live in private homes (Cross, Valley & Associates, 1974, p. 13). The Response Analysis Corporation randomly surveyed 2,004 of these adults in the summer of 1972. The survey instrument focused on people's learning interest, preferred learning location, reasons for learning, desire for credit courses, and perceived barriers to learning.

The results of the survey indicated that a majority of the respondents were interested in taking practical vocational courses (Cross et al., 1974, p. 2). The survey also revealed the interest of American adults in taking traditional academic courses. For example, 8% of the people sampled indicated an interest in the biological sciences (Cross et al., 1974, p. 3).

The national survey instrument directed the respondents to select their preferred learning location from among 17 choices. The second highest preferred location (10% of the sample) was the individual's home (Cross et al., 1974, p. 33). The major barriers to taking a course as indicated on the survey, were cost (53% of the potential students) and time (Cross et al., 1974, p. 50).

Adults completing the national survey indicated an overwhelming interest in taking courses for credit. Of those surveyed, 63% indicated a desire to receive some type of course credit (Cross et al., 1974, p. 36). This 63% translated into over 60 million adults in 1972 interested in taking a course for credit. Further evidence of the adult interest in education comes from a study conducted by Ron G. Springhorn of East Texas State University. The Springhorn study indicated that the 25 to 40 year-old student population is on the increase in institutions of higher education (Springhorn, 1983, p. 105).

There appear to be four major reasons for the interest of adults in lifelong learning opportunities. One of the reasons is the rapidly changing world of work. Modern technology is causing many workers' skills to become obsolete (Peterson et al., 1979, p. 425). Approximately one of three adult Americans is undergoing some type of job transition (Peterson et al., 1979, p. 424). People are depending on additional education to help make a satisfactory transition into new jobs. The need for training and re-training will likely intensify as prerequisites for employment and the requisites for continued employment reflect the rapidly changing demands of the world of work.

A second reason influencing the need for lifelong learning opportunities is the increasing demand in society for professional competency (Peterson et. al., 1979, p. 425). Many professions now require relicensing and recertification which indicate the need for continuing professional educational growth.

Educational opportunities to meet the needs of the increasing number of women who are joining the work force is the third major reason

for interest in lifelong learning. Women preparing for employment are enrolling in vocationally oriented programs in large numbers (Peterson et al., 1979, p. 424). A 1979 study of students in the North Carolina Community College system revealed an increase in the female student population from 32% percent in 1968 to 54% in 1979 (Shearon, Templin, Daniel, Hoffman & West, 1979, p. 6).

A fourth major reason for lifelong learning opportunities is the need for self-fulfillment (Peterson et al., 1979, p. 425). Increasing desires for constructive use of leisure time and for the development of cultural interest create the need for continuing education courses. In addition, as the population gets older, the special needs of senior citizens will have to be met.

The challenge of having more adults who want to take some type of course for credit presents an opportunity for institutions of higher education to meet a portion of adult education needs. By utilizing public radio stations, these institutions can offer more credit courses for adults. Colleges and universities hold the license to over 700 of the approximately 1,100 public radio stations in existence in the United States (Fornatale & Mills, 1980, p. 167). Public radio stations not only are increasing in number but also are increasing the size of their listening audience. Approximately five million people listen to public radio each week according to the April/May 1979 Arbitron Radio Survey (Lee, 1981, p. 35). This number of listeners represents an audience growth of 108% over April/May of 1973.

Educational radio has the potential to provide satisfactory lifelong learning experiences for adults. The varied learning needs of a

diverse adult population provide a challenge and opportunity to higher education and to public radio.

#### Summary

This study had three objectives. The first was to review the literature on the development of radio courses offered for adults and to examine what the research says about the effectiveness of radio courses. The literature review clearly indicated that radio has been used successfully as a medium for instruction throughout its history though at much less than full potential. The review of literature also supports an assumption made at the beginning of this study, namely, that radio is an effective instructional medium for teaching courses for credit to adults.

The second objective of this study was to develop a conceptual framework for teaching credit radio courses to adults. The conceptual framework developed was based on curriculum theory, learning principles, communications theory, and the experience of a number of institutions and educators in offering distance-learning courses. A second assumption made at the outset of this study was that if a conceptual framework for designing and implementing radio courses was developed, it would encourage educators to use educational radio more frequently. The future of educational radio looks promising. By creating and implementing the conceptual framework, a team of educators and broadcasters working together can encourage the use of radio broadcasts for providing a credit course for adults. The conceptual framework will help a design and implementation team to use the medium of radio to provide a college credit course for adults in the convenience of their homes and will save time, energy, and money.

The third objective of this study was to survey each public radio station in North Carolina to determine whether they have broadcast courses for college credit in the last five years (1977-1982) and to determine whether these public radio stations had an interest in broadcasting college courses in the future. Information provided by the Agency for Public Telecommunications listed 30 public radio stations in North Carolina in 1982. Twenty-four (80%) of the 30 public radio stations in North Carolina responded to the survey. The survey results indicated that no responding public radio station in North Carolina had broadcast a regular college course for credit in the last five years (1977-1982). Two stations did report limited instructional programming: WHYC in Swan Quarter had offered a number of secondary courses and WSGE at Gaston College reported offering continuing education courses only.

Fourteen (58% of the responding stations) public radio stations replied that they definitely would be interested in broadcasting well-designed radio courses carrying college credit. Another three stations (13%) indicated some interest in offering broadcast courses for credit. The seven stations (29%) that indicated no interest in broadcasting courses for credit gave as their reason their station's purpose, which did not include offering formal education.

The public radio stations were evenly divided in citing their preferred method of broadcasting educational courses. Of the responding stations, 46% indicated that they would likely broadcast educational radio courses over open broadcast and the same percentage preferred using the SCA signal. One station did not respond to the question, and one station answered that it would not use either method.

North Carolina Public Radio stations indicated an interest in working with a team of educators to develop and offer for credit a radio course for adults. Eighteen stations (75%) indicated an interest in jointly developing a radio course with a team of educators; furthermore, four (17%) stations replied that they were available to begin work immediately. Another ten stations (42%) indicated they would be available in the next two years, and five stations (21%) responded that they would be interested in working with educators to develop a radio course within the next five years.

Despite the strong interest registered by public radio stations in North Carolina for working with educators to develop radio courses, there has been limited dialogue between the broadcasters and post-secondary institutions concerning radio courses for credit. Moreover, 18 stations (75%) reported no discussion with postsecondary institutions about the possibility of meeting the educational needs of adults through radio courses.

While it was disappointing to learn from the survey that no public radio station in North Carolina had offered a college course for credit in the past five years, it was encouraging to learn of the interest of public radio station personnel concerning the possible use of radio as a medium for teaching credit courses to adults. There is a potential market for well designed radio courses in North Carolina. In fact, during the course of this study evidence was made available that people throughout the country are interested in or already at work on developing credit courses for radio.

In an October, 1982 news release, the Corporation for Public Broadcasting announced plans for the formation of a radio course titled "Global Understanding." This Project is being funded by a ten-million-dollar-a-year grant from the Annenberg School of Communications. The goals of the Project are to create innovative and high-quality college level materials and to demonstrate use of telecommunications systems for addressing unique higher education problems (Veraska, 1982). This course proposed by National Public Radio is being prepared in conjunction with faculty from the University of California at San Diego, University of California at Berkley, the Institute for Western Europe at Columbia University, John Hopkins University, Boston College, and the American Political Science Association. The project will produce two college-level courses, each consisting of fifteen half-hour radio programs and supporting text materials. The course will examine the ties between the United States, China, Japan, and Western Europe. This is one example of the interest and confidence individuals and groups are showing toward broadcast learning.

### Conclusions

The conclusions that evolved from the findings of this study are presented with a discussion of each.

Conclusion 1: Radio throughout its history has not been used extensively for instruction by colleges and universities.

National surveys cited in Chapter I and the survey of public radio stations in North Carolina support the conclusion that radio is not used extensively for instruction. One of the national surveys conducted by

the Corporation for Public Broadcasting indicated that only 2.1% of all the air time on public radio stations was used for instruction (Lee, 1980, p. 26). In 1978-79 the Corporation for Public Broadcasting surveyed the 202 CPB qualified radio stations and found that only 28 of them were broadcasting formal courses for credit ("A Study of Public Radio," 1980, p. 5). No public radio station in North Carolina has offered a course for credit in the last five years (1977-1982).

**Conclusion 2:** Radio is an accessible medium.

A study found that the average American home had six radios (Forsythe, 1979) and that Americans have radios in more than 95% of their cars. The average American also listens to a radio for some three hours a day (Forsythe, 1979, p. 1).

**Conclusion 3:** Radio is an effective medium for offering courses of instruction.

Because radio has not been used extensively for instruction, the research on its effectiveness in providing instruction is limited. Still, the research that is available indicates clearly that providing instruction over radio is effective, especially when supplemented by supporting visuals (Parker & Monson, 1980, p. 22).

**Conclusion 4:** In the United States, a strong interest in using radio to broadcast courses for credit is emerging.

The review of literature in Chapter II cited numerous institutions of higher education that have offered radio courses or are planning to offer radio courses for credit in the near future. In the fall of 1982, the Corporation for Public Broadcasting with The Annenberg School of Communications reported that one of the four projects being funded at



that time was a radio course for college credit (Veraska, 1982). The survey of public radio stations in North Carolina, conducted as a part of this study, revealed a definite interest in broadcasting high quality radio courses and high interest in working with educators to develop radio courses.

Conclusion 5: Though not used in the past five years (1977-1982) to broadcast a course for credit, the public radio stations in North Carolina registered considerable interest in using radio for instruction in the future.

Of the stations answering the survey, 58% indicated a definite interest in broadcasting well designed radio courses offering college credit; 13% of the stations indicated moderate interest. The survey revealed that 75% of the public radio stations in North Carolina were interested in working with a team of educators to design and broadcast a radio course for adults.

Conclusion 6: The discussion between public radio stations and postsecondary institutions concerning the broadcasting of radio courses for credit has been limited in North Carolina.

The survey of the 30 public radio stations in North Carolina had an 80% response rate. Of the stations responding, 75% indicated no discussion with institutions of higher education concerning the broadcasting of radio courses.

Conclusion 7: The conceptual framework described in this study could facilitate the development of successful radio courses.

The Director of Educational Services at National Public Radio, Brian Brightly, believes educational radio and educational television

suffer from many of the same problems. The 1979 national study of the use of television by higher education institutions found that the three most important conditions causing institutions not to use television were (1) inadequate institutional support, (2) lack of available high quality courses, and (3) lack of faculty commitment (Dirr & Katz, 1981, p. 4). The conceptual framework for designing and implementing radio courses described in this study will guide institutions toward the production of quality radio courses that have the support of the faculty and the institution.

#### Recommendations

Based on the findings and conclusions of this study the following recommendations are made:

1. A national clearinghouse to rate and evaluate all available radio courses (for lease or purchase) should be developed. The conceptual framework described in this study could be used for this rating and evaluation. The clearinghouse should also list any research conducted about the effectiveness of the course. One of the conclusions of this study was that educational radio suffers from a lack of high quality courses for which adults could receive college credit. The American Association for Higher Education through a grant from the Carnegie Corporation started a project in 1980 to identify and develop a directory of the most significant postsecondary educational applications of telecommunications (Lewis, 1983, pp. 1-6). The directory, published in 1983, lists only 70 courses throughout the country, and of these, only 17 were radio courses. If interest in radio courses increases as this

study indicates it might, then a clearinghouse of all radio courses would be a valuable tool to educators and broadcasters.

2. A nationwide study on the use and the effectiveness of radio by institutions of higher education should be conducted. The first nationwide study of the use of television by higher education was conducted in 1979, but there was no comparable study of educational radio in the literature.

3. The chief academic officers at all postsecondary institutions in North Carolina should be surveyed to ascertain their interest in using radio for instruction. The survey of the public radio stations indicated their interest in using radio for instruction. If the chief academic officers of the institutions are also interested, then the process of developing and implementing radio courses in North Carolina would be much easier.

4. A statewide radio advisory committee should be appointed to determine how public radio can be utilized for offering credit courses to adults in North Carolina. North Carolina has 30 public radio institutions scattered from the coast to the mountains, ranging in size from 10 watts to 100,000 watts. Twenty-five of the stations are licensed to post-secondary institutions. The stations are on the air from 7 to 24 hours per day with the average being 17.2 hours per day. North Carolina public radio has a definite potential for use in instruction.

BIBLIOGRAPHY

## BIBLIOGRAPHY

- Adams, T. D. Working with broadcasters. In R. Yearling (Ed.), Using mass media for learning. Washington, D.C.: American Association of Community and Junior College Press, 1979.
- Bobbitt, F. How to make a curriculum. Boston: Houghton-Mifflin Company, 1924.
- Corder, N. Personal communication, September 30, 1981.
- Corder, N. Personal communication, October 20, 1981.
- Corporation for Public Broadcasting. Expanding education beyond the classroom. Public broadcasting report to the people. Washington, D.C.: Corporation for Public Broadcasting, 1970.
- Covert, C. E. An approach to the design of mediated instruction. Washington, D.C.: The Association for Educational Communications and Technology, 1974.
- Cross, K. P. Adults as learners. San Francisco: Jossey-Bass, 1981.
- Cross, K. P., Valley, J. R. et al. Planning nontraditional programs. San Francisco: Jossey-Bass, 1974.
- Dallas County Community College. Telecourse procedures manual. Dallas County Community College District, 1979.
- Dirr, P. J. Television uses by two-year colleges, 1978-79. Washington, D.C.: American Association of Community and Junior Colleges, 1979.
- Dirr, P. J. & Katz, J. H. Higher education utilization study phase I: final report. Washington, D.C.: Corporation for Public Broadcasting, 1981.
- Fornatale, P. & Mills, J. E. Radio in the television age. New York: The Overlook Press, 1980.
- Forsythe, R. O. Instructional radio. In S. Tickton (Ed.), To improve learning an evaluation of instructional technology (Vol. 1). New York: R. R. Bowker, 1970.
- Forsythe, R. O. Instructional radio: So good but so neglected. Planning for higher education (Special Issue 8), 1979, 29, 1-10.

- Foster, E. Understanding broadcasting. (2nd ed.). Reading, Massachusetts: Addison-Wesley, 1982.
- Gagne, R. M. The conditions of learning. New York: Holt, Rinehart and Winston, Inc., 1965.
- Gagne, R. M. Learning theory, educational media and individualized instruction. In S. Tickton (Ed.), To improve learning an evaluation of instructional technology (Vol. 2). New York: R. R. Bowker, 1971.
- Gagne, R. M. The conditions of learning (2nd ed.). New York: Holt, Rinehart and Winston, Inc., 1977.
- Glueck, W. F. Management essentials. Hinsdale, Illinois: The Dryden Press, 1979.
- Goldstein, S. University of Minnesota. Telephone conversation, January, 1983.
- Hannum, W. H. & Morgan, R. M. The use of peer tutoring and programmed radio-instruction: viable alternatives in education. Tallahassee: Florida State University, 1974.
- Head, S. W. & Sterling, C. H. Broadcasting in America: A survey of television, radio, and new technologies (4th ed.). Boston: Houghton Mifflin Company, 1982.
- Hewitt, L. M. An administrator's guide to telecourses. Fountain Valley, California: Coastline Community College District, 1980.
- Hoffman, I. Personal communication, Fall, 1981.
- Johnson, R. B. & Johnson, S. R. Assuring learning with self instructional packages. Chapel Hill: Self Instructional Packages, Inc., 1971.
- Johnson, R. B. & Johnson, S. R. Toward individualized learning. Reading, Massachusetts: Addison-Wesley, 1975.
- Julian, A. A. Utilizing telecommunications for nontraditional instruction in the North Carolina Community College System. Raleigh: North Carolina Department of Community Colleges, 1982.
- Lee, S. Y. & Winston, S. Status report of public broadcasting, 1977. Washington, D.C.: Corporation for Public Broadcasting, 1977.
- Lee, S. Y. Status report of public broadcasting, 1980. Washington, D.C.: Corporation for Public Broadcasting, 1981.

- Levin, T. & Long, R. Effective instruction. Alexandria, Virginia: The Association for Supervision and Curriculum Development, 1981.
- Lewis, R. J. Meeting learners' needs through telecommunications: A directory and guide to programs. Washington, D.C.: American Association of Higher Education, 1983.
- Lopos, G. Radio at the University of Iowa. The coast communicator. Spring, 1982, p. 2.
- Monson, M. Bridging the distance. Madison: University of Wisconsin, 1978.
- Munshi, K. S. Telecourses: reflections '80. Washington, D.C.: The Corporation for Public Broadcasting, 1980.
- Nisbett, A. The technique of the sound studio. In Audio course acquisition and production. Washington, D.C.: National Public Radio, 1982.
- Parker, L. A. & Monson, M.K. More than meets the eye. Madison: University of Wisconsin, 1980.
- Parrow, B. H. Radio trailblazing: A brief history of the Ohio school of the air and its implication for educational broadcasting. Columbus, Ohio: College Book Company, 1940.
- Petersen, R. E. et al. Lifelong learning in America. San Francisco: Jossey-Bass, 1979.
- Policy for public radio assistance. Raleigh: North Carolina Agency for Public Telecommunications, 1981.
- Popham, J. W. & Baker, E. L. Establishing instructional goals. Englewood Cliffs: Prentice-Hall, Inc., 1970.
- Popham, J. W. & Baker, E. L. Planning an instructional sequence. Englewood Cliffs: Prentice-Hall, Inc., 1970.
- Rio Salado Community College. Operation manual for alternative delivery courses. Phoenix: Author, 1980.
- Sandler, J. The hidden medium: A status report on educational radio in the United States. New York: Herman W. Land Associates, 1967.
- Shearon, R. W., Templin, R. G., Daniel, D. E., Hoffman, L. M., & West, R. F. A profile of students in North Carolina community colleges, technical colleges, and technical institutes. Raleigh: North Carolina State University, 1979.

- Spingola, R. F. Noncommercial radio stations in the United States and territories: Programming and organization. Unpublished doctoral dissertation, Indiana University, 1972.
- Springhorn, R. G. The adult learner: An instructional methodology for the future. Technological horizons in education journal, 1983, 10, 105-108.
- Stone, D. P. You and the law now a coast radio course. The coast communicator, Fall, 1981, p. 2.
- A study of public radio stations' educational services, 1978-79. Washington, D.C.: Corporation for Public Broadcasting, 1980.
- Tyler, R. W. Basic principles of curriculum and instruction. Chicago: The University of Chicago Press, 1949.
- Veraska, D. Four C.P.B./Annenberg project proposals approved (News Release). Washington, D.C.: Corporation for Public Broadcasting, 1982.
- Waniewicz, I. Broadcasting for adult education: a guidebook to world-wide experience. Paris: United Nations Educational, Scientific and Cultural Organization, 1972.



APPENDIX A

SURVEY OF PUBLIC RADIO STATIONS IN NORTH CAROLINA

## SURVEY OF PUBLIC RADIO STATIONS IN NORTH CAROLINA

INSTRUCTIONS: Please provide information for each item.

Call letters of station \_\_\_\_\_

Station's address \_\_\_\_\_

Name of Station Manager \_\_\_\_\_

Is your station AM or FM? \_\_\_\_\_

What is the station's wattage? \_\_\_\_\_

How many hours per day is the station on the air? \_\_\_\_\_

In the past five years, has your station offered any post-secondary courses for credit? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, indicate the title of each course and the number of students enrolled in each course. (If more space is needed, use the back of the page.) (If possible, please attach a course description.)

COURSE \_\_\_\_\_

Number of students enrolled \_\_\_\_\_

COURSE \_\_\_\_\_

Number of students enrolled \_\_\_\_\_

COURSE \_\_\_\_\_

Number of students enrolled \_\_\_\_\_

If well designed radio courses carrying college credit were available, would your station be interested in broadcasting such courses?

Yes \_\_\_\_\_ No \_\_\_\_\_

If your answer is no, please explain why. \_\_\_\_\_

Would your station be more likely to broadcast educational radio courses over open broadcast or by SCA signal? \_\_\_\_\_

Would you or a station representative be interested in working with a team of educators to develop and offer for credit a radio course for adults in your service area? Yes \_\_\_\_\_ No \_\_\_\_\_

If your answer is yes, please indicate when you would be interested in working on a radio course.

\_\_\_\_\_ immediately  
 \_\_\_\_\_ within the next two years  
 \_\_\_\_\_ within the next five years

Have you had any discussion with the post-secondary institution(s)  
in your area concerning broadcasting radio courses for credit?

Yes \_\_\_\_\_ No \_\_\_\_\_