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INSTRUCTIONAL MEDIA USE IN FORMAL AND
NONFORMAL AGRICULTURAL TRAINING
PROGRAMS IN BENDEL STATE
OF NIGERIA

By

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A DISSERTATION

Submitted to
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DEDICATION

to Almighty God
For His Inestimable Love and Guidance

to Humphrey Iyahen Ohenhen
Omorowa Ohenhen

My Beloved Father and Mother

to My Sisters

Oghonwenyenwen, Osayawenwen
Ufunwen and Omorisiuwa

to My Brothers

Aghamioghogho, Ikponmwosa, Osarobo
Amenaghawom and Osazee

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CHAPTER I

THE PROBLEM

Introduction

In this age of high technological advancement in human communication, the provision of education and training in a most efficient and effective way is recognized as an urgent necessity. The potential of instructional media for facilitating communication in education has been widely discussed as they pertain to a wide range of aspects of teaching/learning and development. The ensuing research and experiential results have shown that effective media applicability in education is hinged on the composite knowledge of 'when', 'for what', and 'how to' properly use media technology and materials to promote understanding.

Although much of the impetus for change in educational organization arises from external sources, it is generally recognized that the teachers' readiness for change is crucial to the successful implementation of instructional innovations. Teachers' readiness for change translates to individual teacher's belief in the utility of the innovation; willingness to adopt it and possession of the needed skills to effectively implement the change.

According to Armsey (1971),

The condition of success in the use of the things of learning are many. A recognized and generally agreed upon need must exist. A desire to meet the need and to do it through the use of instructional technology must prevade. The people who must use instructional technology should want to use it and believe in its efficiency. (p. 101)

Among newer media, which studies have shown to be effective for improving and enriching teaching-learning are: television, radio, still projected pictures, motion picture films, computer-assisted instructional medium, audio-tape recordings, etc. These media can be used singly or in combination with one another and other media such as graphics, realia, flat pictures, print media, and lectures.

Agriculture in its complex interaction of people, food production, financing and technology, presents an enormous task of educating and training people in a wide range learning aspects. In this context, formal educational institutions should be viewed as just one among many settings for education. As instruction moves more and more outside of the school classroom setting, more reliance is usually placed on instructional media to meet diverse learning objectives. Formal educational institutions comprise the one setting in which the classroom teacher is still the dominant delivery system. Other settings--business, aviation, hospitals, labor organizations, the automobile industry and many others rely heavily on instructional media which are designed for specific learning objectives.

The fact remains, however, that the effectiveness of instructional media and media technology depends ultimately on the instructor. This study is primarily centered on the specifics of media use for technical agricultural education by agriculture teachers in nondegree institutions, and by agricultural extension agents in nonformal education projects. More learning can be realized in providing quality education effectively and efficiently, if the professional training

institutions provide prospective teachers and extension agents with adequate competency in the use of various instructional media materials.

Problem Statement

Agricultural nondegree training schools in Nigeria have grown both in absolute numbers, and in student population since the first one was established in 1921 at Moor Plantation Ibadan. But, increase in adequately trained technical agricultural educators has not caught up with the tremendous growth in student population. This has led to a shortage in the availability of the technical manpower needed to implement agricultural development projects.

Agriculture still occupies a dominant place in the Nigerian larger economy in spite of the increased importance of the mineral oil economy, and in trying to keep pace with modern agricultural technology, the work of agriculture educators has become more complex. Thus, the use of adequate instructional technologies and resources has become increasingly important.

In the formal training system, problems such as high student enrollments coupled with a shortage of trained technical agriculture teachers have continued to have adverse affects on the production of technical agricultural manpower, both in quantity and in quality. The traditional teaching methods of using printed text, lectures and words written on the chalkboard that once worked with low student-teacher ratios are no longer efficient for teaching present large student classes.

The nonformal agricultural education system is also plagued with a short supply of skilled agricultural extension educators. In

evaluating "Communication needs for self-sufficiency in Nigerian food production", the Federal Department of Agricultural Planning (FDAP) stressed the need for modern communication technology using all forms of media to bring vital information to the remote rural population and to educate them. The FDAP indicated that the present farmer education programs on radio and television in particular, are incoherent and not properly tailored for the farmers. Such remarks clearly indicate a lack of skills on the part of the agriculture programmers for designing and producing radio and TV programs for instructional purposes. Nigeria's present circumstances demand well-trained nonformal agricultural trainers that would effectively and efficiently educate the farming communities.

As long ago as 1911, a colonial British resident in Kano province remarked, "In my experience, the farmers of this province are keen businessmen. They grow what it pays them to grow." (Kano Province Report, 1911, p. 93). A majority of the Nigerian farmers are peasants who practice subsistence farming. Most of them may be illiterates, but they are shrewd, realistic, and very much 'economic-minded'.

Nonformal agricultural education also referred to as "extension education" (Leegans, 1971) is clearly more than an advisory service to the farmers. Farming is an economic activity that involves knowledge on the part of the farmer, skill in applying that knowledge, ability to execute that knowledge and the will to apply the knowledge to carry on the activity. In his role as a teacher, the extension agent should be able to educate his client in the four areas of Knowledge, Skills, Ability, and Will. Expressed in its simplest form, the agricultural

extension agent in Nigeria and in most developing countries is both an agent of change, and a teacher.

The need to equip technical agriculture educators with adequate instructional media resources and media training, (to either educate students in formal school settings or to educate framers in nonformal out-of-school settings) cannot be overemphasized. A recommendation by Kincaid (1968) based on a study of agricultural extension programs in Nigeria clearly indicates a problem of inadequate preparations of extension agents for their educational roles.

We recommend encouragement of the extension staff to adopt an attitude of persuasion through demonstration and teaching of farmers rather than through an approach which directs farmers and is typified by such comments as 'we told farmers to' and 'we supervised farmers, directing them in what was to be done'. (p. 120)

The similarity between the problems confronting Nigeria's technical agriculture education and those which are confronted in other developing countries is portrayed in Block's handbook (1972) Educational Technology and the Developing Countries. On the issue of curricular and teaching methods, Block remarked that "instructional methods that may have worked in elitist systems for the relatively few are no longer efficient or effective for mass education". (p. 3)

The increasing demands on the educational system to keep pace with technological advancements, have made educational leaders and planners go in search of educational innovations. Schramm (1977) succinctly stated the benefits of the use of communications media in instruction as viewed in the developing countries.

The developing countries in particular, have seen communications media as a way to raise the quality of instruction . . to supplement even good teaching with learning

experiences impossible to create locally, and to extend the reach of education to areas where schools and teachers are otherwise not available. If new technology could raise the educational output without greatly increasing the budget of teaching and without requiring too many more schools to be built, equipped, and staffed, then it would indeed offer great dividends in productivity. (pp. 17-18)

However, in order to successfully implement an innovation, and before large funds and resources are committed to the process, the opinions and attitudes of the target users regarding it, and their possession of required skills needed to put the innovation to use, should be studied.

To summarize, a major aspect of the educational problems facing technical agricultural training and development in Nigeria stems from the following factors: (a) high student enrollments, (b) shortages of adequately trained agricultural educators, and (c) reliance on traditional face-to-face instruction and print media only, which are no longer efficient for mass education.

Purpose of the Study

This study is exploratory in nature and it is designed to:

1. Determine the extent to which instructional media materials are utilized by nondegree agriculture teachers and extension agents for formal and nonformal agricultural training programs in Bendel State of Nigeria.
2. Identify areas of instructional media skills in which the school teachers and extensions agents need training.
3. Identify the media equipment and materials available to the school teachers and extension agents for use in their respective training programs.
4. Determine the relationships between trainers' use of instructional media and (a) previous media training; (b) type of training program; (c) professional qualification grade; (d) perceptions about instructional media; and (e) perceived constraints.

Background of the Study

Formal technical agricultural training, below the university level, evolved in Nigeria largely in response to two types of needs. First, the need for intermediate level manpower that goes to staff the public sector agricultural development programs. Second, the need to provide people with training for the pursuit of farming as a part-time or full-time occupation.

This formal agricultural training system constitutes a rather complex and multifarious set of institutions and programs. The growth and location of these institutions has followed the political development of the country. Some of the institutions are administered and funded by the Federal Ministries, and some are affiliated with the universities. Besides these, each state government has one or two schools of agriculture administered and funded by the state to train intermediate level manpower for the state ministry of agriculture. Some 'junior' colleges of education also offer teacher-training programs in agriculture.

There are currently over fifty institutions in the country for technical nondegree training in agriculture including forestry, fisheries, livestock and home-economics. In Bendel state, there are seven such institutions—three schools of agriculture and four junior colleges of education which offer agriculture programs.

Methods of certification among all schools of agriculture in the country are equivalent. All junior colleges of education also maintain equivalent certification. Schools of agriculture award two levels of

diplomas, which correspond with two categories of intermediate staff of the state ministry of agriculture.

Ordinary National Diploma (OND) is awarded for two-year training after secondary school education. Employees holding the OND qualification are categorized as Junior intermediate staff at the ministry of agriculture.

Higher National Diploma (HND) is awarded for another two-year, post-OND training, and employees holding this qualification are categorized as Senior Intermediate staff (See Appendix A).

The junior-colleges of education award a diploma known as Nigerian Certificate of Education (NCE) for three-years of teacher training beyond the secondary school level. NCE teachers that major in agriculture science are often employed in either of the following positions: a) teaching assistants for beginning classes in schools of agriculture; b) advanced class teachers in post-primary teacher training schools, and secondary schools; and c) extension agents in the ministry of agriculture. Findings of a country profile study on agricultural manpower planning, training, and utilization showed that the overwhelming majority of trained agricultural personnel in Nigeria are employed in the public sector (F.A.O., 1978).

Nonformal agricultural education and training programs are implemented by extension agents employed by the ministry of agriculture in each state. Generally, the divisional extension service of this ministry combines regulatory, educational and input-supply functions. The educational function is largely a voluntary out-of-school program. It is mostly action-oriented and generally nonacademic.

The extension agents perform their educational functions in various learning environments which include farmers' fields, homes, community halls and extension offices.

A variety of methods are used by extension agents to educate and train their clients. A study by Williams (May 1969) in former Western State of Nigeria, identified six types of extension education activities: 1) visits to farmers, 2) addressing farmers' organizations, 3) method- and-result demonstrations, 4) advisory services, 5) agricultural shows, and 6) field trips, tours and excursions (p. 18).

Leagans (1964) remarked that the training of farmers in developing countries is becoming more and more a limiting factor in improving agriculture. The educational function of extension agents in Nigeria is limited, resulting in heavy noneducational distributive duties. Inadequate staffing of the extension service results in a very high ratio of the number of farm families to the number of extension agents (See Appendix B).

Formal agricultural training offered at the nondegree level is intricately related to nonformal agricultural training of farmers in each state. The formal training system provides preservice and inservice professional training for intermediate level agricultural agents, and they in turn implement the nonformal education program for farmers. The school teachers and the extension agents work toward a common goal to provide technical education and training in agriculture. Furthermore, there are strong financial and administrative network ties between the organizational systems that manage the two types of training.

Budgetary constraints are the most cited limiting factor in many studies that have examined the impact of formal and nonformal education on agricultural development in Nigeria. With the current economic depression in the country, the demands on agricultural development programs have taken an upward surge.

To be able to provide required manpower under the present stringent economic conditions, agricultural training systems need to be more efficient. School teachers are expected to handle larger student enrollments and the extension agents should be able to reach and educate more agriculture practitioners on how to improve their occupation.

Significance of the Study

The purpose of needs identification should be "to provide an organization or system with clearly defined end product as the objective of developing action for behavior change" (Warren 1969, p. 49). Instructional media are not an end unto themselves, and they have never been intended to replace the role of teachers in educational instruction. But, they can be integrated into the total instructional process to improve teaching and learning. To accept this premise, is to recognize that the way media are used in instruction is crucial to their facilitating learning.

To a large extent, the success of agricultural education programs depends on the provision of adequately trained instructors to implement the programs. In order for them to employ technology to instruct and train other persons, they need to learn and perform the skills of educational technology. It is also important for the educators to

develop a realistic attitude and commitment if technologies are to be adopted successfully.

Research demonstrates that preservice instructional media education instills in teachers a favorable attitude toward instructional media and also leads to their greater utilization in the classroom (Branscombe, 1969; Streeter, 1967; Oliver, 1962).

According to Planty, et. al. (1960), "A good training program should be composed of three elements: 1) improving each individual's skills, knowledge and attitude; 2) contributing to efficiency on the job; and 3) meeting the demands of organization (p. 25). The need to give teachers a new kind of training that equips them for a new communications technology era was succinctly stated by Heath (1973).

The new teacher must use the same media that the learner encounters regularly . . . television, radio, and motion pictures. He must also expose the learner to new media to expand his cognitive and affective capacities . . . The media have enveloped our society, and the school and the teachers now must employ the most up-to-date, efficient means of communicating and teaching, using all media (p. 166).

Witt (1964) also expressed that there is no doubt about the key role teachers play in determining the nature and quality of the teaching and learning process. He added that they must be taught how to evaluate, select and use all types of materials.

The following are more specific statements about the value of this study:

First, the study determines if the agricultural trainers who are to use instructional media believe in their efficiency and effectiveness.

Second, lack of adequate competency in media use is a potential source of individual user-resistance to instructional media innovation.

This study is relevant because its finding will help show which areas, in preservice and inservice media training of instructors, are being emphasized more than others. It also identifies skills and techniques in which the present instructors need to obtain more training.

Third, according to Hoban (1964), research is necessary to provide guidelines for good decisions. Findings of this research will be useful in planning guidelines for upgrading preservice media training to better prepare instructor candidates to utilize various instructional media materials.

Fourth, agricultural school teachers and extension agents are counterparts in the defined target systems for media innovation. The research findings will be useful in planning and developing guidelines for the development of media support services that can serve both the formal and nonformal training program systems. Knowledge of the current availability of media materials provides a useful baseline from which improvement decisions can be made.

Fifth, from a comparative viewpoint, this study is important in identifying instructional media use patterns of school teachers and extension agents. Findings on similarities and differences in use patterns will be useful in planning media training, with practical relevance to the two types of agricultural training.

On a more general note, the study will contribute to knowledge of antecedents to adoption of educational media innovations in the field of technical agricultural training in a developing country.

There are a number of studies that have examined audiovisual training needs of agriculture teachers in the United States. Some of

these studies include those conducted by Algee (1963), Norford (1950), and Tillman (1976) to mention a few. There are also a number of studies that have examined media use in extension training in some developing countries (Mtika 1979, Welton 1980, Sudad 1979, Stockley and McDonald 1979, etc.).

In contrast, there has been only a few informal papers written on media use for agriculture in Nigeria. No formal study has systematically examined the pattern of instructional media use for technical agricultural training in Nigeria.

This study will contribute toward filling the gap created by the absence of such formal studies. It is the first study that examines in depth media use in formal and nonformal technical agricultural training in Bendel state of Nigeria.

The impetus too for this study was, in part, derived from the rationale for empirical research which is well expressed by the International Institute for Educational Planning (ITEP), 1965:

. . . often the best way to tackle fundamental problems is by attacking specific practical problems and studying them in their real context. In the field of educational planning, this is the only way to generate the materials from which a sound and usable body of theory can be evolved (pp. 12-13).

Furthermore, this study is valuable because it examines a practical problem of immediate operational relevance. The research findings contribute to the understanding of some theoretical and practical implications for instructional media utilization in agricultural training in a developing country.

Research Questions

Data gathered in Bendel State for this study was used to answer the following research questions. The questions were derived from literature on instructional media use in education:

1. (a) What instructional media equipment and materials are available to the teachers of technical agriculture in nondegree institutions for agricultural training in Bendel State of Nigeria?
(b) What instructional media equipment and materials are available to extension agents of Bendel State Ministry of Agriculture and Natural Resources?
2. (a) What instructional media techniques and materials do the school teachers make the most use of in formal agricultural training?
(b) What instructional media techniques and materials do the extension agents make the most use of in nonformal agricultural training?
3. What grade level school teachers and extension agents make the most use of instructional media?
4. At what levels did the school teachers and extension agents have previous training in instructional media skills?
5. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in educational programs?

6. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in agricultural training.
7. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in formal agricultural training in comparison with use in nonformal training?
8. What are the perceptions of the school teachers and extension agents about their organizational support for instructional media use in agricultural training?
9. What are the self-perceived media proficiencies acquired by the school teachers and extension agents?
10. In what media skill areas do the teachers and extension agents need more training?
11. In what areas of agricultural training do the school teachers and extension agents interact and consult with one another the most?
12. What are the sources from which the school teachers and extension agents obtain information about instructional media?
13. What are the chief constraints on the use of instructional media as perceived by the school teachers and extension agents?

Research Hypotheses

The following research hypotheses were tested at .05 level of significance:

- H₁. School teachers and extension agents with previous media training will have higher frequency of instructional media use than their counterparts without previous media training.
- H₂. The frequency of instructional media use will be high when teachers and extension agents have more positive perceptions about instructional media.
- H₃. School teachers and extension agents with previous training in instructional media will have more positive perceptions about instructional media than their counterparts without previous media training.
- H₄. School teachers and extension agents will perceive the need to use broadcast instructional media more in nonformal agricultural training than in formal agricultural training.
- H₅. The frequency of instructional media use will be high when agriculture school teachers and extension agents perceive less constraints on media use.

(Each hypothesis was tested separately for the school teachers population and the extension agents population.)

Generalizability and Adaptability of the Study

The findings from this study can be generalized to the defined population in Bendel State of Nigeria. However, the recommendations derived from the study can be adapted for similar programs in other states for the following reasons:

With regard to the formal training program, all state funded and accredited nondegree institutions for agricultural training have basically similar curricula and equivalent certification. Key aspects

of their management such as staffing, job status, administrative and educational policies are also equivalent.

The state ministry of agriculture in each of the nineteen states has an agricultural extension service which executes nonformal agricultural education programs. Extension services in all of the states have uniform staffing procedures, administration, job status, preservice and inservice training policies, and equivalent farmer education policies.

Given this similarity between the study population and those in other states of the country, the adaptation of the study recommendations is expected to be a reasonable task.

Theoretical Framework

This study is based on theories of change, diffusion of innovation. The following sources provide a useful conceptual framework.

Davies, 1977; Havelock, 1973; Rogers and Agarnala-Rogers, 1976; and Rogers and Shoemaker, 1971; are some writers, among many, who have proposed numerous models of the process involved in adopting innovations. There are some differences among these models with regard to the exact nature and progression of the steps involved in an individual's deciding to either adopt or reject an innovation. However, all of the models imply that there are two broad stages in the process. The first stage centers on readiness or preparation for innovation, and the second stage centers on involvement with a particular innovation.

Readiness for instructional innovation is defined by Abedor and Sachs (1978) as "that critical combination of characteristics prerequisite to the adoption of an innovation which changes

instructional content or process" (p. 5). The literature on the innovation process indicates that there are two broad classes of characteristics which create this critical combination of prerequisites: individual characteristics which influence individual faculty readiness for instructional innovation and organizational characteristics which influence the readiness of the organization.

Individual faculty readiness to innovate is affected by characteristics such as attitudes, values, beliefs, skills, and knowledge of the individual. Organizational readiness is affected by characteristics such as structure, reward system, norms, resources, and policies of the organization (Abedor and Sachs, 1978). The writers indicate that it is the sum of individual faculty readiness and organizational readiness which provides the critical combination of characteristics prerequisite to the adoption of a particular innovation.

There is no precise formula for assessing the combined influence of individual characteristics on an individual's decision to innovate. However, unless some minimal value of each of the above characteristics exists, it is unlikely that the individual will attempt to innovate. (See Appendix C for an illustration of the relationship between faculty readiness and organizational readiness levels necessary for different degrees of change.)

The above concepts of readiness and prerequisite characteristics are pertinent to this study. The attitudes, values, beliefs, skills, and knowledge of the individual agricultural trainer would collectively affect the trainer's readiness for instructional media innovation. Similarly, the structure, reward system, norms, resources and policies

of the agricultural education organizations would affect their readiness level.

This study, however, is limited to examining those characteristics that affect individual trainer readiness, and how training can help maximize favorable effects of the characteristics. Zaltman and Pinson (1974) indicated that reeducational strategies are necessary when effective use of advocated change requires skills and knowledge the client system does not possess. In this regard, training needs assessment becomes a prerequisite function.

Other sources which provide useful conceptual framework include: Zaltman and Duncan's Strategies for Planned Change (1977), Diamond's Instructional Development for Individualized Learning in Higher Education (1975), Richard Evans' Resistance to Innovation in Higher Education (1970), Graff (1975), Havelock (1973), and Bergquist and Phillips (1977). Although most of the writers discussed change, innovation diffusion, innovation readiness, resistance, faculty development and organizational development concepts from the viewpoint of higher education, however, the underlying theoretical framework is applicable to lower educational strata.

Definition of Terms

To establish some degree of commonality of meaning, definitions of the following specific terms are provided.

Change: the relearning on the part of the individual or group (1) in response to newly perceived requirements of a given situation requiring action and (2) which results in an alteration in the structure and/or functioning of social systems (Zaltman and Duncan, 1977, p. 10).

Individual innovation readiness: a combination of characteristics which influence an individual's decision to innovate (Bass, et. al., 1978, p. 7).

Innovation: an idea practice, or object perceived as new by an individual (Rogers and Shoemaker, 1971, p. 19). Havelock (1973) defines innovation as any change which represents something new to the people being changed (p. 4).

Instructional Media: self-supporting devices which can be used by instructors to present a complete body of information in the teaching-learning process. (AECT, Audiovisual Process in Education, 1971, p. 86).

(Gerlach and Ely, 1971, p. 282) define the term as the graphic, photographic, electronic, or mechanical means for arresting, processing, and reconstituting visual or verbal information. For the purposes of this study, the above definitions exclude written words on chalkboards, printed texts and other "print only" materials.

The term is interchangeably used with audiovisual media, media, audiovisual aids, instructional materials, educational media, and communications media.

Instructional technology: beyond any particular medium or device, instructional technology is more than the sum of its parts. It is a systematic way of designing, carrying out, and evaluating a total teaching and learning process in terms of specific objectives based upon research in human learning, communication and nonhuman resources, to bring about more effective instruction (Brown, Lewis and Harclerod, 1977, p. 2-3).

Organizational innovation readiness: a combination of characteristics which influence the acceptance or tolerance of an innovation in the organization (Bass, et. al., 1978, p. 8).

Planned change: a deliberate effort with a stated goal on the part of a change agent to create a modification in the structure and process of a social system such that it requires members of that system to relearn how they perform their roles. Members of a system who are the targets of the change are referred to as the target system (Zaltman and Duncan, 1977, p. 10).

Definitions for the following are provided by the researcher specifically for the purposes of this study:

Agricultural extension: a division of the ministry of agriculture and natural resources which performs the functions of regulating, educating and supplying agricultural inputs to farmers within the state of jurisdiction. Extension as an organization and program is financed and supported through public funds.

Agricultural extension agent: an employee of the Nigerian ministry of agriculture—extension division. He is deployed to state districts and zones to work with farmers at the village level and help them improve their agricultural output by providing them with necessary training/education and input supply services.

Formal agricultural education and training: teaching and learning activities organized in a highly structured classroom environment for agriculture students.

Graduate agriculture teacher: an instructor who obtained preservice training in agriculture and/or related subjects and obtained a university degree (Bachelors, Masters, Ph.D.) qualification.

Intermediate agricultural manpower: senior and junior technical agricultural personnel trained at nondegree institutions of agriculture.

Ministry of Agriculture and Natural Resources (MANR): the official arm of the government that is responsible for all aspects of agricultural development. Each of the nineteen political states in Nigeria has a state MANR.

Nondegree agricultural education and training: refers to formal training programs in agriculture below the university degree level. They are offered in post-secondary institutions largely sponsored and operated by the government and are charged with providing technical level intermediate manpower required for advisory, training, input distribution and regulatory aspects of agricultural development.

Nonformal agricultural education and training: teaching and learning activities organized in unstructured instructional environments. In relation to program goals and approaches, the content of these training programs may vary considerably. Often, the content of farmer education is geared toward a particular aspect of agricultural production.

Traditional instructional methods: face-to-face lecturing or tutoring by an instructor mainly making use of print materials and a chalkboard.

Training: a planned and systematic sequence of instruction under competent supervision designed to impart predetermined skills, knowledge or abilities with respect to designated occupational objectives.

Limitations

Data collection for the study was limited to (a) nondegree institutions of agriculture, and (b) the extension division of MANR in Bendel State of Nigeria. Questionnaire respondents were limited to school teachers and extension agents that are directly involved in teaching. The study did not examine patterns of media use by students.

The study did not attempt to evaluate the agricultural training programs and media training programs offered in the different institutions where the respondents obtained preservice professional training.

A study of individual trainer readiness and the readiness of their respective organizations for instructional media innovation would provide a more complete picture of factors that could interact to facilitate or impede adoption of the innovation. The focus of this study is limited to factors that affect individual trainer readiness (for reasons of manageability within limited financial resources available to the researcher).

Assumption

Appropriate and judicious use of instructional media can promote good communication between teacher and learner and also between learners. Agriculture teachers and extension agents can improve the

effectiveness and efficiency of their training programs through such judicious use of instructional media.

A questionnaire as a measuring instrument of perceptions and behavior patterns can yield reliable data when properly designed, applied and analyzed. It is also assumed that the respondents will respond to questionnaire items to the best of their knowledge.

The authorities of formal and nonformal agricultural training will favorably consider recommendations for providing adequate media training and support services for agricultural trainers in the system.

Summary

In Chapter I, the rationale, need and purpose for the study were stated. It was contended that agricultural educators, if they are to use instructional media appropriately, need to acquire the knowledge and skills of the technology.

Also stated in the chapter are research questions to be answered and hypotheses to be tested. This is followed by the theoretical framework on which the study is based, definition of terms, limitations, and the assumptions of the study.

In Chapter II, the literature pertinent to the study is reviewed.

In Chapter III, the methodology and procedures used are presented. These include description of the population, subgrouping of respondents, design variables and data collection instrument.

In Chapter IV, analysis of the data and findings based on the study population is presented.

Chapter V embodies the summary, conclusions, recommendations and suggested areas for further research.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In this chapter the review of present literature is presented in four sections:

1. Prescriptions and projections regarding instructional technology.
2. Resistance to instructional media innovation in education.
3. Instructional media training and teacher education.
4. Utilization of instructional media in agricultural education and development projects in some developing countries.

Prescriptions and Projections Regarding Educational Technology

It is recognized that educational technology is much more than just men and machines. The task force on definition and terminology of the Association for Educational Communication and Technology, defines Educational Technology as:

A complex integrated process involving people, procedures, ideas, devices and organization, for analyzing problems, and devising, implementing, evaluating and managing solutions to those problems, involved in all aspects of human learning.

In Educational Technology, the solutions to problems take the form of all the Learning Resources that are designed and/or selected and/or utilized to bring about learning; they are identified as messages, people, materials, devices, techniques and settings (A.E.C.T., 1977, pp. 164-165).

In order to solve existing educational problems and keep pace with rapidly changing times, educational technology evolved and developed. Brown, Norberg and Srygley (1972) advanced the opinion that technology

can make education more productive and individual; instruction more scientific and powerful; learning more immediate; and access to education more equal.

The utilization of technology, whatever its form, makes demands upon a teacher. Teachers need to be better prepared for the classroom as well as be sensitive to the wide variety of teaching options. According to Davies and Kroll (1977), "His increased demand for better preparation and training may, in fact, be one of the most important implications of the new technologies" (5:13).

Smith and Nagel (1972) formulated five guiding principles to place in perspective how the role of instructional technology should be viewed. The principles indicate that the intent of instructional media utilization should not be to replace the teacher, but to serve as a tool for making the instructional process more effective and efficient. The writers pointed out that, when media and materials do take over the complete job of instruction, the question arises as to whether or not they are being used properly.

Brown and Thornton (1965) stated that the use of instructional media is of great advantage in situations of explosive increases in student enrollments. It was argued that the true meaning of added powers of instruction available through the use of modern technology, lies in the "greater degree of control, or freedom to vary the size of group and format instruction to achieve various educational goals" (p. 17).

Media use in education has been a heavily researched area in modern education. There are several studies now that have shown that effective

learning can take place through the judicious use of various media forms--motion pictures, television, radios, simulations and games, slides, filmstrips and others.

In an extensive review of research on the value of audiovisual instructional materials, Molstad (1974) summarized the research claims as follows:

1. significantly greater learning often results when media are integrated into the traditional program;
2. equal amounts of learning are often accomplished in significantly less time using instructional technology;
3. multimedia instructional programs based upon a "systems approach" frequently facilitate student learning more effectively than traditional instruction; and
4. multimedia and/or audiovisual instructional programs are usually preferred by students when compared with traditional instruction.

More recently, Peterman (1982) reviewed selected research on the application of educational media in primary and secondary schools. The review covered six media formats namely, television, motion picture, computer assisted instruction (CAI), audio format, multimedia and still projected format. He arrived at the following conclusions:

1. the use of classroom media (in each of the six media format reviews) can assist students to attain cognitive, affective, and psychomotor learning objectives;
2. classroom media can be as effective as (and in many cases more effective than) traditional, non-mediated instructional methods; and
3. in most cases the use of classroom media can help bring about as much or more learning in less time with less cost than is required by traditional instructional methods.

In regard to media utilization in higher education, Twyford (1969) summarized the findings of several studies dealing with media

effectiveness. The effectiveness of instructional media in teaching/learning has been supported by the results of most of these studies.

According to Schramm (1977), "we have thousands of years of educational history to tell us that teachers themselves believe multimedia instruction is more effective than a single medium . . . " (p. 34).

It is noteworthy, however, that types and levels of learning experience are of prime importance when using an instructional media combination. Dale's Cone of Experience (1969) pictorially depicts a continuum of learning experience that ranges from direct purposeful experiences at the bottom to progressively more abstract experience toward the top. Adaptations of this cone of experience have been used by a number of writers to categorize instructional media based on degree of learning abstractness (See Appendix D).

In summary, the various prescriptions and projections regarding educational technology indicate that whatever medium is selected as an instructional tool, a careful integration of the medium/material within the total instructional process is of utmost importance to achieve effectiveness. Moreover, the ideal medium or media combinations are the ones which the teacher would be able to manipulate to suit the particular situation involved.

Resistance to Instructional Media Innovation in Education

Educational technology literature reveals that it is not always easy to induce educators to adopt new tools or techniques for instruction. This problem of innovation resistance has been largely

researched and findings of the studies indicate various factors that could induce resistance.

Initial resistance to instructional media use by faculty members could occur due to:

- a) Lack of agreement between planners/administrators and faculty members about the need for media in instruction.

According to Brown and Thornton (1965), the degree of acceptance or non-acceptance of instructional media has been highly influenced by the level of liberalism or conservatism about fundamental questions such as:

What are the purposes of college instruction?

How can new media contribute to the achievement of these purposes?

Are the new media more effective in reaching some aims and relatively useless for attaining others? (p. 8)

- b) Fear of technology.

The fear that technology would replace the teacher was one of the reasons for faculty resistance to instructional media use discussed in a 1971 Ford Foundation study. Armsey and Dahl (1973) concluded:

It is a concept that arouses emotions among both its advocates and its adversaries. Some theoreticians conceive of instructional technology as supplementary to the teacher; others, anticipating a more active role, see it as a replacement for the traditional teacher (p. ix).

When instructional media is integrated into the total instructional process (right from the planning stage through presentation and

follow-up concept practice) there would be quite a lot to keep a teacher in an active role—much more so than would have been the case if he used traditional methods.

- c) Non-involvement of faculty members in planning of educational programs.

Studies conducted by Anderson (1971), Berkman (1971) and DuMolin (1971) supported the findings of the Ford Foundation study on instructional television. These studies show that faculty members were ignored in the planning, curriculum designing, and decision-making process in higher education. They were also neglected in the training necessary for instructional media use.

Lack of internal motivation on the part of faculty members and administration was found to be chiefly responsible for failure to utilize new media in higher education (Committee on Utilization of College Training Resources for Fund for the Advancement of Education, 1959).

- d) Lack of media training.

The failure to provide the training necessary for instructional media use is also a major factor in teacher resistance. In discussing the problems and prospects of instructional television (ITV) in Nigeria, Imogie (1979) indicated that efforts being made to convince teachers about the instructional potentials of the TV medium have failed easily. This failure occurs because teachers who are to be

involved in the process at the classroom level do not receive some basic training in the use of IIV.

e) Resource Constraints.

Faculty members could make inadequate use of instructional media mainly because the media are not easily available. McIntyre (1963) identified seven constraints on instructional media use by faculty members at the University of Carolina. The faculty lacked: a) adequate financial support for purchase or rental of materials, b) suitable materials for college use, c) information on instructional materials, d) technical assistance for preparing materials, e) time to locate and preview good materials, and g) films, equipment and operators when needed.

Each of the above constraints is a legitimate source from which teacher resistance to media use could develop. Many writers have published works on change barriers and strategies for initiating and stabilizing planned change.

Havelock (1973) presented an elaborate guide for gaining acceptance, stabilizing an innovation and generating self-renewal in the adopting system. Carpenter and Greenhill (1965) formulated a broad guideline for minimizing faculty resistance to instructional media in higher education. This includes, source credibility, proper timing, clear relations of media innovation to needs as perceived by faculty members, competent specialists, budget considerations and service operations.

Other noteworthy techniques include Roger's Diffusion of Innovations (1983), Zaltman and Duncan's Strategies for Planned Change (1976), Abedor and Sach's Readiness for Instructional Innovation in Higher Education (1978).

To summarize, among the various factors which studies have shown to be possible sources of teacher resistance to instructional media innovations are: lack of media skills and training, resource constraints, fear of technology, non-involvement of teachers in planning of educational programs, and lack of internal motivation on the part of both teachers and their administration.

Many studies have examined the need to incorporate instructional media training in teacher preparatory programs.

Instructional Media Training and Teacher Education

Today's teachers need to know how to use the tools of their profession. Many are competent to do so when they begin to teach, but many are still poorly prepared or not prepared at all. In earlier years, a surprisingly large number of classroom teachers felt they had received too little preparation for using instructional materials and equipment. This finding was revealed in a national survey conducted by the National Education Association and reported in the NEA journal in 1963.

Educational technology literature shows that more teacher training institutions today prepare their teachers to utilize media during preservice and inservice training. The one time academic folklore which held that 'a teacher is born, not made' or that 'teaching is an art, not

a science' has gradually given way to a commonly heard adage that 'teachers teach not as they are taught to teach, but as they are taught'. Such a statement has important implications for preservice teacher training. Making use of modern communication devices in order to teach others to use them is a logical idea.

A professional educator requires much more than the acquisition of subject matter competence. In the Journal of Teacher Education, Fulton pointed out that the preparation of more and better qualified teachers includes:

Preparing teachers not only to teach concepts, but to teach them more effectively. Teachers must be prepared to manage classroom instruction in an environment that is beset with many external influences, some of which might be made useful to education. One of the most important of these influences is the wide use of communication media by most educational agencies. The effectiveness of such media in communicating ideas is indicated by their continued and expanded use by industry and agencies outside of education. The preparation of teachers to teach more concepts effectively within a complex culture includes those concepts relating to communicative media, more commonly called audio-visual materials (1960, p. 492).

Instructional Media Competencies

After World War II, there was a substantial increase in the use of audiovisual materials and an increased attention to teachers' needs to acquire media competency. A number of surveys were conducted to ascertain what general and specific competencies teachers as well as media specialists should develop.

Fulton and White reported a general collective opinion on Media selection and utilization in an article "What Constitutes Teacher Competence in Audio-visual Communication?" published in Phi Delta Kappan (1959). The article proposed that media competencies could be divided

under four headings: a) selection-evaluation of materials; b) utilization of appropriate instructional materials; c) production of simple instructional materials; and d) preparation and use of physical facilities.

In deriving media competency lists, many studies emphasized the relationship of media to the total instructional process. The participants of the Lake Okoboji Audiovisual Leadership Conference recommended that teachers should have a working knowledge based on certain "philosophical and psychological factors underlying use of audiovisual materials in the teaching/learning process" (Allen, 1958, p. 29). Those emphasized are:

1. Knowledge and understanding that the accepted principles of audio-visual materials are based on sound research.
2. Communication theory and learning theory underlying the use of audio-visual materials and equipment in the classroom.
3. Understanding the relationship of audio-visual materials to the curriculum (p. 29).

An emphasis on theory and research was advanced by Norberg (1966). Although teachers need not be capable of carrying on independent experimental research, Norberg emphasized that they must be able to interpret and apply the findings of educational experimentation. This should be from a background in a discipline that contributes to a liberal professional type of teacher education program. According to Norberg:

The audiovisual process is a problem in presentation of instructional materials; thus, the theoretical background should be drawn from communication theory and perception theory, at least; and media dialogue probably ought to be philosophical rather than oriented to any specific discipline (1966, p. 59).

A more practical approach was presented by Gerlach (1966). His emphasis was on stimulus response approach and he advocates a teacher's ability to define the stimuli that follow emission of the derived response. Then, to select the appropriate medium, the teacher must also be familiar with the various stimulus characteristics of various media (pp. 7-15).

Meierhenry identified some manipulative skills which he acknowledged to be neither final nor static: a) Using chalkboard, b) Cartooning and simple sketching, c) Mounting pictorial materials, d) Lettering, e) Making displays, f) Duplicating printed materials, g) Recording on tape, and h) Making transparencies (1966, p. 229). The writer also noted that the rapidity with which competencies become out-dated and obsolescent is one of the difficulties with developing specific competencies.

Teacher Competence and Actual Use of Media

There are a number of studies that have examined the question of whether or not media training that teachers receive actually produces changes in classroom behavior.

In a survey questionnaire study, Edward Streeter (1968) was concerned with establishing whether specific media competencies (and which ones) can be demonstrated to have a significant positive correlation to actual use of media in the classroom.

The study sample consisted of 436 teachers working in two schools in which equipment, material, and supporting personnel were available to facilitate the teachers' use of a variety of instructional media.

Forty-seven specific media competencies used in the study were selected from the report by Meierhenry on Media Competencies for Teachers (1966).

Research Outcomes:

1. There was a positive correlation (.41) between teachers' total media competency scores and total media frequency-of-use scores, and
2. teachers with media training in college had significantly higher media competency scores than teachers who did not have such training.

Comments on this study by Brown, et. al. (1972) cautioned that it should not be assumed that mere quantitative use of media is an exclusive or ultimate criterion of good utilization. Rather, quantitative use of media merely happens to be an objective and accessible index of teachers' awareness of, and inclination to use at least a quantitative variety of media. They added that quantitative variation of media and techniques, at least, suggests versatility. It also shows a good possibility that the teacher who is using a variety of materials and media is actively and imaginatively trying to improve his instructional practices.

Branscombe (1969) also arrived at findings similar to that of Streeter. He surveyed the preservice professional training of teachers in the selection, production, and utilization of audiovisual instructional materials.

Research Outcome:

There was a positive relationship between preservice professional training in audiovisual selection, production, utilization and subsequent professional use of these materials.

Preservice Educational Media Training in Nigeria

Before the 1960's, the use of instructional media, especially Educational Television and Educational Radio services, were limited to secondary schools and teacher training colleges. The Educational Broadcasting Units (EBU), of the ministries of education, developed the programs which were broadcast by commercial TV and radio stations during specified hours of the day. In those early years, instructional TV was used for enrichment purposes and teachers' guides were prepared to accompany each program broadcast.

The EBU maintained a team of field inspectors whose duties were to check and supervise the classroom teachers in their utilization of TV lessons in the various subjects. These TV programs depended heavily on foreign assistance such as staff, materials and funds from US-AID and United Kingdom Volunteer Services Overseas, UNESCO.

In recent years, the teacher training colleges began to offer audiovisual (AV) courses which are taught by educational media specialist-lecturers. Training films and filmstrips made especially for teacher training are used. Student teachers are encouraged to practice using AV materials. Examination in AV education constitutes part of the overall written and oral exams administered to the students (Johnbloed, 1973).

The evidences adduced from the foregoing research findings suggest that in order to ensure that teachers utilize media, they must be given sufficient exposure to instructional media methods during their preservice training. Teachers must be equipped with the skills to select, evaluate, produce and utilize various instructional media and materials.

Utilization of Instructional Media in Agricultural
Education and Development Projects in
Some Developing Countries

Radio and Radio Forum Projects

Some of the earliest attempts to localize the use of radio were through the use of listening groups, particularly those associated with agricultural and literacy programs. The idea of farm forum originated in Canada, but was swiftly adapted to the Indian Continent, beginning with a limited and carefully evaluated experiment in Poona, and subsequently applied (although with less overall success) throughout India.

The listening group model was applied to Tanzania and Ghana in the mid-1960s, and it was extended to cover television in Senegal in the late 1960s and early 1970s. In Jamaica, in the early 1970's, the JAMAL program for national literacy development was reorganized to make systematic use of radio, audio-cassettes, and other media.

The principle of community participation was first practiced in these experiments. The programs were, in many cases, recorded on location, and dialogue between producers and audiences, and between

different local audiences, was a linchpin of the experiment (Hancock, 1981).

MASAGANA 99 Rice Production Program—a food production campaign in the Phillipines, made use of the media, especially the radio, to provide farmers with agricultural information. The program covered such topics as fertilization, pest control, water management and land reform. Nonformal education programs like the school-on-the-air proved to be particularly effective in educating farmers about production methods promoted in MASAGANA 99 (Fernandez, 1980).

In Ecuador, the Tabacunda project used open broadcast radio channels to reach farmers, linking its programs with a tape-distribution system. In Mexico, in 1971, the Campo y Productividad project used both radio and television to illustrate farming techniques and to train farmers in the process of decision-making.

All these projects, first implicitly and later explicitly, served two objectives. The first was relatively traditional: to use the broadcasting media to reach rural audiences and to help equip them with basic educational and technical skills. A second, more oblique objective was to help these audiences undertake basic decision-making at the community level (Hancock).

The movement toward local and community forms of media has been a gradual and evolutionary process; no sharp line demarcates educational and outreach projects from communication programs that focus mainly on community involvement. Educators now see education less as a distinct sector than as a part of the overall social or individual development process.

Radio has been used in Nigeria for educational purposes, but there has been a limited amount of study of radio as a tool for systematic instruction of farmers. Before the creation of states in Nigeria (1967), Western and Eastern Regional Ministries of Agriculture broadcast regular agricultural radio programs from the radio stations in their respective regions. Williams (1968) found that in Western Nigeria, radio diffusion ranked second to the extension worker as a source of farm information. Their programs were broadcast in Vernacula.

In Northern Nigeria, a survey found that over half the farmers considered radio as their prime source of information on agricultural topics.

Portable Video Projects

A good example of the use of video media comes from Peru, where the Audiovisual Production Center for Training (CEPAC) is the communication arm of the national agricultural training and research center. Financed by the United Nations Development Program, and executed through the United Nations Food and Agricultural Organization, this project uses portable video to make training programs that are taken to the rural farmers. (Support comes from a team of thirty agricultural extension agents.) Because of the "snowball" methods of training and production, it has considerable outreach: some 40,000 campesinos in 1979. Not political in thrust, CEPAC emphasizes participative learning rather than social animation, and it employs a team of all-around media generalists who eschew notions of professionalism.

Other video projects that provided successful learning experiences include: Tanzanian Year 16 project carried out by a six member video

team in three villages in 1971-1972; and Guatemala Video Communication which was used to promote soya cultivation (Berrigan, 1979).

Television Projects

Another example of the use of media in development programs is the Satellite Instructional TV Experiment (SITE) which was carried out in India. Instructional programs were beamed to villages—2,400 in all—from the ATS-F Satellite positioned in a geo-stationary orbit over Lake Victoria in Africa (Karamchandani, 1976).

During four hours of programs each day, lessons for primary-school children were included along with training for extension workers, instruction for farmers, advice on family planning and nutrition, teaching of simple occupational skills and promotion of national integration. Numerous studies have shown that the most popular programs were those dealing with farming.

In addition to creating awareness on availability of various inputs and their costs, the farmers took part in post-program discussions and clarifications led by the extension workers.

Other Media Combination Projects

A combination of cassette recorders, radio programs and extension agents was used in an agriculture project and tested out in two Afghanistan provinces, Wardak and Logar (Stockley and McDonald, 1977).

On recognizing the successful utilization of instructional multimedia for the project, the national authorities asked that filmstrip production services be added. This plan includes training of the ministry staff in AV production techniques.

As the authorities and the researchers noted, "addition of this element (filmstrips) should make the combined approach techniques very powerful indeed, without departing from the original premises—simplicity, use of existing resources and maximum degree of involvement of the local farming population."

In a Guatemalan agricultural project between 1973-1978, media combinations test and results of the experiment led the researchers to conclude that no single media combination was effective for all situations. The effectiveness of different combinations varied with the level of development and cultural constraints. Consequently, good baseline data are necessary to ensure choosing the most appropriate media for a given target group (NFE Exchange, 1980).

Meza-Montalvo, Abedor and Wilkinson (1980) conducted a study which compared AV instruction with traditional instruction in agricultural engineering in a developing country (Brazil). The results of the study indicate that, if properly designed and adapted to the local culture, AV instruction can improve student learning and attitude, as well as be more cost effective than the traditional instruction method.

The foregoing shows that there is little or no doubt about the important role that AV media has performed (and the need to continue to do so) in education, and in agricultural training and development in particular. However, the process of media selection, production and utilization should be flexible and adjustable to local conditions facing the teacher and the learners. Consequently, practical application of instructional media would vary among educational settings, and contexts.

Summary

The literature pertinent to this study has been reviewed and has laid the foundation for the entire research.

The chapter covered some prescriptions and projections regarding instructional technology derived from experiential and research findings, which cut across various educational disciplines. Audiovisual media are seldom used to replace conventional teaching completely. Instead, they are generally used to complement or supplement face-to-face instruction.

Media have often been used in both formal and nonformal education to attack problems of quantity, quality and access. Their use can enable countries with shortages of teachers to extend schooling to greater numbers. To decide, if or when to use instructional media, it is necessary to examine the advantages, disadvantages, and overall suitability of each within a particular context and for a particular task. Differences in subject matter, and in audience, are more important than differences in media to the success of an educational program.

Strong arguments exist for using more than one medium in an educational effort. Learning theory supports the case for multi-media education. Having access to two or more media enables the teacher to present the same point in different ways with different emphases. Using more than one medium will generally satisfy both those with preferences for verbal instruction, and those who prefer visual instruction.

Communication theory also supports the case for multi-media education. Research shows that people readily note information from a

single source. But they are far more ready to act on that information if it comes from more than one source, particularly if they have the opportunity to discuss the information with other people.

The chapter also examined literature on resistance to media use in education. Among other factors, teacher and organizational resistance to adoption of media innovations could range from teacher role threat to failure to provide necessary training, and built in self-renewal in the adopting system. To ensure successful innovation installation in any educational system, teacher readiness as well as institutional readiness need to be nurtured.

Media competencies for teachers were identified from studies by Meierhenry, Fulton, Norberg and Gerlach. In the final section of the chapter, reports on agricultural education and development projects indicate that different media formats can be creatively used to teach school pupils and adult learners in various settings.

Communication and learning effectiveness is not necessarily limited to the use of sophisticated media formats and materials. Simple easy-to-use technology, when creatively utilized, can help stretch the impact of educators as they strive to induce learning both in the young and in the adult.

According to the Joint FAO/UNESCO/ILO Advisory Committee on Agricultural Education, Science and training, ". . . . coordinated action should be taken to link formal and nonformal systems of agricultural education and training. . . pre-service and in-service training programs need to be improved by reinforcing technical, practical, teaching skills of agriculture instructors, and by a rational use of educational technology" (1982, p. 114).

CHAPTER III

DESIGN AND METHODOLOGY

The purpose of this study is to determine the individual factors that influence the use of instructional media, by technical agriculture school teachers and agricultural extension agents, in Bendel State of Nigeria. Also, to thereafter identify deterrents to media use by them, relative to their skills and knowledge for producing, organizing, and utilizing media materials in formal and nonformal training programs.

The research task is an exploratory one designed to meet the following four basic objectives:

1. To determine the extent to which instructional media materials are utilized by nondegree agriculture teachers and extension agents for formal and nonformal training programs respectively.
2. To identify areas of instructional media skills in which the school teachers and extension agents need training.
3. To identify the media equipment and materials available to the school teachers and extension agents for use in their respective training programs.
4. To determine the relationships between trainer's use of instructional media and (a) amount of previous media training; (b) type of training program; (c) professional qualification grade; (d) perceptions about instructional media; and (e) perceived constraints.

Answers to certain research questions were sought using survey research methodology and by testing five null hypotheses.

Hypotheses

- H₀₁: There will be no significant relationship between the amount of previous media training and the frequency of use of instructional media by the school teachers and extension agents.
- H₀₂: There will be no significant relationship between the perceptions about instructional media and the frequency of media use by the school teachers and extension agents.
- H₀₃: There will be no significant relationship between the amount of previous media and the perceptions of the school teachers and extension agents about instructional media.
- H₀₄: There will be no significant relationship between the trainers' perceptions about use of broadcast instructional media and type of agricultural training program.
- H₀₅: There will be no significant relationship between the perceived constraints on media use and the frequency of instructional media use by school teachers and extension agents.

Population of Study

Formal Agricultural Training System

This population was comprised of teachers who were actively engaged in teaching agriculture and related courses in the nondegree institutions established before 1981 in Bendel State of Nigeria. The institutions that qualified to be included in the study were:

1. College of Education, Benin City (Department of Agriculture).
2. College of Education, Agbor (Department of Agriculture).
3. College of Education, Abraka (Department of Agriculture).

4. College of Education, Warri (Department of Agriculture).
5. School of Agriculture, Asaba.

Nonformal Agricultural Training System

This population was comprised of agricultural extension agents of the Bendel State Ministry of Agriculture and Natural Resources (MANR), who were directly involved in teaching activities. The extension service of the MANR is made up of five administrative Divisional Circles. All extension agents eligible to be included in the study were obtained from the five circles as follows:

1. MANR, Bendel North Circle
2. MANR, Bendel South Circle
3. MANR, Bendel East Circle
4. MANR, Bendel Central Circle
5. MANR, Bendel Delta Circle

Frame for Selection

Formal training program population: the institutions' staff records were used to derive a list of all teachers that were actively engaged in teaching agriculture and related courses.

Nonformal training program population: the MANR extension staff records were used to derive a list of extension agents in the five divisional circles.

Designated Population Subjects

In the formal training population, there were a total of 58 teachers who were actively engaged in agricultural teaching. In the

nonformal training population, a total of 110 extension agents were directly involved in teaching activities.

Achieved Population Subjects

All 58 school teachers and all 110 extension agents participated in the study. Since only those who were actively engaged in teaching activities were designated to participate, and since they all did participate, the achieved response was 100 percent. (See Tables A and B for distribution of Subjects among institutions and extension circles.)

Table A: Distribution of Responses Among Institutions

<u>Institution</u>	<u>Designated</u>	<u>Achieved</u>
Agriculture Depts. in:		
College of Education, Benin City	6	6
College of Education, Agbor	10	10
College of Education, Abraka	11	11
College of Education, Warri	6	6
School of Agric., Asaba	25	25
Totals	58	58

Table B: Distribution of Responses Among Extension Circles

<u>Divisional Circle</u>	<u>Designated</u>	<u>Achieved</u>
North Circle	26	26
South Circle	19	19
East Circle	23	23
Central Circle	20	20
Delta Circle	22	22
Totals	110	110

Population Grouping

The total population (N=168) was divided into two groups using a categorical variable (Type of agricultural training program): a) Formal training programs conducted in schools, and b) Nonformal training programs conducted in out-of-school settings for farmers. Therefore, all agricultural school teachers were categorized under the Formal Group and all extension agents were categorized under the Nonformal Group.

Typically, each school teacher and extension agent obtained a most recent professional qualification either from a university (B.Sc., M.Sc., Ph.D. Degree) or from a nondegree institution (OND, HND, NCE diploma). All subjects with a university degree were categorized as "Graduates" and those with nondegree diplomas were categorized as "Nongraduates". (See Table C for population subgrouping).

Table C: Population Subgrouping

PROGRAM TYPE	PROFESSIONAL QUALIFICATION GRADE			Totals
		Graduate	Nongraduate	
	Formal	School Teachers	School Teachers	
		(n ₁) 46	(n ₂) 12	58
	Nonformal	Extension Agents	Extension Agents	
		(n ₃) 37	(n ₄) 73	110
Totals		83	85	N=168

Population sampling was not performed because the Formal (teachers) population group was rather small compared to the Nonformal (extension

agents) population group. If stratified sampling was done, it would have resulted in cell-sample numbers that would have been too small for analysis. In order to obtain large enough observations for comparative analysis, all designated population subjects were used.

Consequent to the exhaustive utilization of the total population list in the forming of groups and subgroups, the population was conceptually defined as follows:

The total study population will change in terms of individual teachers and extension agents who are employed to serve in the two systems. But, all future teachers and extension agents can always be subgrouped with the same categorical variables used in this study. From this conceptual viewpoint, the school teachers and extension agents used in the study, therefore, constitutes a sample of past and future populations of the defined agricultural training systems.

Rationale for Population Selection

The Formal program population was limited to the listed five institutions for the following reasons:

They were the only ones established in Bendel State before 1981. All other nondegree institutions of agriculture were not eligible because they are quite new, and are still in the process of developing their training programs to full capacity.

The limitation of the population subjects to those involved with teaching was necessary because some school staff and extension staff perform purely administrative, regulatory or distributive duties. This study primarily examines factors that influence the use of instructional media by individuals that teach, thereby eliminating other staff.

Although there are some other relevant populations in other states in Nigeria, data gathering was limited to the population in Bendel State for the following reasons:

First, due to limited resources available to the researcher, it was not considered feasible to include all other relevant populations.

Second, due to the generally poor communication infrastructure in Nigeria, huge transportation costs would have been incurred if data collection had spanned numerous states. Quick retrieval of missing data by telephone would have been near impossible because of accessibility problems. Moreover, mail services are quite slow and sometimes unreliable.

Third, in view of the above expected problems, effective data gathering required the physical presence of the researcher at the various locations in Bendel State. It was anticipated that transportation within the selected state would be facilitated with help from an agricultural research organization located in the same state. (The researcher professionally belongs to this organization.)

Finally, with the high similarity between the study populations in Bendel State and all other relevant populations in the other states, the researcher expected the following:

Any difference in their general characteristics will not be statistically significant. Hence, it will be possible to adapt the recommendations derived from the findings of the study to situations that exist in other similar populations (See Generalizability - Chapter I).

Instrumentation

Design and Development

This study is descriptive in nature and a questionnaire instrument was used. Precedent research sources that dealt with teacher preparation in media selection, production, and utilization were relied on in the design and development of the Questionnaire. Notable research reports that were consulted include those by the following investigators: Streeter (1967), Meierhenry (1966), Branscombe (1969), Fulton (1960), Fulton and White (1959), and Inbrock (1951).

Writings on the subject of educational innovations such as those written by Havelock (1973), Zalman and Duncan (1977), Gaff (1975), and Abedor and Sachs (1978) were consulted for their contribution to precedent theoretical framework for the research. Dale (1969), Kinder (1959), Wittich and Schuller (1973), and DeKieffer (1947) are other texts on audiovisual education that were consulted. Ideas and concepts put forth in these documents and materials constitute the framework from which the data collection instrument was developed.

Two forms of questionnaires containing the same question items were prepared. One set contained directions for the school teachers and the other set contained directions for the extension agents.

The original draft questionnaire was prepared in consultation with Professors and Research Consultants at Michigan State University knowledgeable in Audiovisual technology. Recommendations were made for rephrasing some of the items. The revised draft was later approved by the dissertation guidance committee for pilot testing.

The questionnaire contained twelve sections (A-K) with closed-ended questions, some of which required scaled responses.

Section A was designed to collect personal data from each respondent. Names of respondents were not required.

Section B was designed to determine the specific media skills acquired by each respondent. This included operation of media equipment as well as design and production of instructional media materials.

Section C required specification of the levels at which previous media training was obtained: 1) Informal or self-taught, 2) Training with credit which includes formal coursework, workshops, seminars, etc.

Section D dealt with the frequency of use of specific instructional media materials. The responses were scaled: Never used (zero), Low use (1-3 times), Moderate use (4-6), High use (7-9) and Very High use (above 10 times) per semester.

Section E determined areas of the formal and nonformal training programs in which the school teachers and extension agents consult and interact with one another. Responses were categorized: Never consulted; Seldom, Sometimes, Very Often. The purpose of this section was to identify areas in the training programs in which media materials could be collaboratively developed, and utilized for both formal and nonformal training.

Section F contained a list of eight support services. Respondents were asked to indicate on a four-point scale, the adequacy of each support service to encourage their use of instructional media.

Section G contained a list of nine constraints that often affect the use of instructional media. The respondents were asked to indicate

on a four-point scale, the degree to which they perceived the constraints.

Section H identified sources from which the teachers and extension agents obtain information about instructional media, and the frequency of such information.

Section I contained five positive and five negative perception statements which faculty members generally have about instructional media. The respondents were asked to indicate the degree to which they agreed or disagreed with each of the statements on a Likert scale.

Section J determined respondents' perceptions about the value of instructional media use for agricultural training.

Section K was designed to further inquire the respondents' perceptions about the value of media use for formal agricultural training in comparison to their use for nonformal training.

The researcher posited that the extent of use of instructional media materials would also depend on their availability. A media materials inventory was taken in each institution and so was the MANR.
(Appendix F - Checklist)

Design Over Variables

Dependent Variable

The frequency of instructional media use is the dependent variable. In Section D of the questionnaire, the subjects could respond with: "very high use" which is given a numerical value of 4, "high use" equals 3, "moderate use" equals 2, "low use" equal 1 or "no use" equals 0. This variable was assumed to be continuous in nature.

Independent Variables

The independent variables were: level of previous media training; type of agricultural training program (formal, nonformal); professional qualification grade (graduate, nongraduate); perceived constraints on instructional media use; perceptions about instructional media; and organizational support.

Pilot Test

The questionnaire was tested in June, 1984, in Nigeria using 15 randomly selected agriculture school teachers and 15 randomly selected extension agents. To ascertain the clarity of each question item, the respondents were asked to rate each of the questions as "Very Clear" or "Not Clear". Only very few questions were rated as "Not Clear" and these were revised until they were accepted and rated as "Very Clear" by the respondents. The pilot test took an average of 45 minutes to complete. The revised questionnaire was used in the study (Appendix E).

Collection of Data

Prior to visiting Nigeria, two letters (Appendices G & H) were sent to: 1) Heads of Department/Principals of the nondegree institutions of agriculture, and 2) Permanent Secretary of the MANR to solicit their cooperation in conducting the study. Letters of endorsement (Appendices I-N) from them were copied and attached to each questionnaire, and they served to enlist the cooperation of the respondents.

Administration of Questionnaires

Each copy of the questionnaire was accompanied by two letters. The contents of the first letter (Appendix O) included statements of

objectives of the study, operational definition of instructional media use in the study, and an appeal for independent and objective completion of the questionnaire. The second letter was a copy of the endorsed research permit.

The questionnaires were administered in the months of July - September, 1984 with the researcher's physical presence at each location. The first day at each institution was spent meeting with the Head of Department/Principal. At these meetings, strategies were mapped out for completing the questionnaires.

To prevent subject contamination, those within the same school completed their questionnaires the same day, and within the same general time period. Arrangements were made to select the most convenient time for the respondents without disrupting class schedules.

The researcher was present at all times to provide necessary guidance and to ensure the independent completion of each questionnaire. In cases when designated subjects were unavoidably absent during scheduled times, the respective department heads willingly administered the questionnaires and ensured their independent completion. There were only a few such cases.

All completed questionnaires were collected the same day that they were administered. Quick scanning of each questionnaire was done to detect missing data and the data was retrieved immediately. This contributed to the achievement of the 100 percent response.

The second, identical, set of questionnaires were similarly administered to the extension agents. However, it was not practicable, most of the time, to assemble the subjects in the same location because

most of them were assigned to field duties. In such cases, each agricultural officer-in-charge of the extension zone was given a quick training on how to administer and scan for missing data sets.

The questionnaires were distributed to the far-located extension agents by their officers or superintendents-in-charge with whom the researcher met first at the zone office. The fact that most of the extension agents were located in different villages and districts was an added advantage for the prevention of subject contamination.

The data gathering tour covered a total of 10 cities/towns in Bendel State, all of which were accessed by automobile transportation. This took the researcher four weeks (compressed time) to complete.

Data Analysis

The data collected was hand coded, transferred to standard computer cards, and analyzed via the Statistical Package for the Social Sciences (SPSS) at the Michigan State University Computer Center.

Frequencies on all variables in the twelve sections of the questionnaire were obtained to determine the completeness of the data, and the distribution of respondents to each item. The responses to the items were compiled and the hypotheses were tested at the 0.05 level of significance. Since the study is descriptive and exploratory in nature, descriptive statistics were used, Pearson Correlation and chi square were used to determine the relationship between instructional media use and the other selected variables. Analysis of Variance was used to test for statistical differences between groups.

Summary

The procedures and methodology used in this study were developed to collect data from a defined total population of 58 agriculture school teachers and 110 agricultural extension agents in Bendel State of Nigeria. To this end, 13 research questions and 5 null hypotheses were generated. The hypotheses dealt with instructional media use as a function of previous media training, organization support, perceived constraints, perceptions about instructional media professional qualification grade, and structure of agricultural training program (nonformal, formal).

The data was collected by a questionnaire organized into twelve sections which contained closed-ended question items. A pilot test was conducted prior to data collection to validate the instrument. The data was collected during the summer months of 1984 in Nigeria, and with the researcher physically present at each location. 100 percent response was achieved.

The data was hand coded and analyzed via The Statistical Package for the Social Sciences (SPSS) at the Michigan State University Computer Center.

In Chapter IV, findings of the data analysis are presented. Chapter V will reflect on the findings, discuss the implications and make recommendations for further study.

CHAPTER IV
ANALYSIS AND RESULTS

Introduction

This chapter presents the findings of the data analysis. The primary purpose of the study was to examine patterns of use of instructional media for nonformal training of farmers, and for formal nondegree agricultural training. Also, to determine factors which could influence the individual readiness of the trainers for instructional media innovation. The objectives of the study were:

1. To determine the extent to which instructional media materials are utilized by nondegree agriculture teachers and extension agents for formal and nonformal agricultural training programs in Bendel State of Nigeria.
2. To identify areas of instructional media skills in which the school teachers and extension agents need training.
3. To identify the media equipment and materials available to the school teachers and extension agents for use in their respective training programs.
4. To determine the relationship between trainers' use of instructional media and (a) amount of previous media training; (b) type of training program, (c) professional qualification grade, (d) perceptions about instructional media, and (e) perceived constraints.

Thirteen research questions were answered (five hypotheses were tested). Results of data analysis were presented in the order of the research questions answered and the hypotheses tested statistically (one tailed tests) at the $\alpha=.05$ level. Descriptive statistics were used to analyze responses to the variables covered in the questionnaire.

Pearson's Correlation and chi square were used to determine associations between selected variables. One-way analysis of variance was used to test for significant differences between groups. A brief summary of findings concludes the chapter.

Research Question 1:

- (a) What instructional media equipment and materials are available to the teachers of technical agriculture in nondegree institutions for agricultural training in Bendel State of Nigeria?
- (b) What instructional media equipment and materials are available to extension agents of Bendel State Ministry of Agriculture and Natural Resources?

Findings:

A media equipment inventory taken in each nondegree college of agriculture in Bendel State revealed an extremely low level of equipment availability. Table 1 shows that four out of the thirteen equipment on the checklist were not available to agriculture teachers in the formal training system. Each college should possess at least one item of each kind of equipment listed, but this was far from the case. The numbers listed indicate the totals of the equipment available to all teachers in the five colleges included in the study.

Among the instructional materials available in the five colleges, graphic media types ranked the highest in quantity—posters (45), maps/charts (38). These were followed by 3-Dimensional media types—real objects (37), models (32); still picture media types—flat pictures (27), slides/filmstrips (20) and transparencies (16).

Table 2 displays the quantity of each medium in all five colleges, and the average number of media items per college.

Table 1

Quantities of Serviceable Media Equipment Available
in the Formal Training System (Nondegree Colleges
of Agriculture in Bendel State)

<u>Equipment</u>	<u>Total Quantity</u>	<u>Number per College</u>
16 mm Projector	2	.4
8 mm Projector	0	0
Slide Projector	8	1.6
Filmstrip Projector	3	.6
Overhead Projector	4	.8
Opaque Projector	0	0
Audio Cassette Recorder/Playback	2	.4
Audio—Reel to Reel	0	0
Video Tape Recorder	2	.4
Television Monitor	2	.4
Video Camera	1	.6
Movie Camera	0	.0
Still Camera	3	.6

Table 2

Instructional Materials Available in the Formal Training System

<u>Type</u>	<u>Medium</u>	<u>Quantity</u>	<u>*Number per College</u>
Graphic:	Posters	45	9.0
	Maps/Charts	38	7.6
Still Picture:	Flat Pictures	27	5.4
	Slides/Filmstrips	20	4.0
	Transparencies	16	3.2
	Opagues	0	-0-
Audio:	Tape Recordings	10	2.0
	Radio Programs	11	2.2
Motion Projection:	Films	13	2.6
	Television Programs	11	2.2
	Video Taped Programs	9	1.8
3-D:	Real Objects	37	7.4
	Models	32	6.4
Demonstration:	Field Sites	12	2.4

*7-9=High, 4-6=Moderate, 1-3=Low, 0=Not Available

For nonformal training, the extension agents had access to only two types of media equipment—the 16mm film projector and the audio cassette recorder/playback machine. [16mm, Quantity = 5; Audio recorder, Quantity = 4] All other equipment items on the checklist were unavailable.

The types and quantities of instructional materials that were available to the extension agents in the five Extension Divisional Circles are shown in Table 3. Real objects rank the highest in quantity (45), followed by posters (43), flat pictures (36), maps/charts (35), models (21), and demonstration field sites (20).

Table 3 displays the total quantity of each medium available in the extension service, and the average number of each item per extension divisional circle.

Heads of the Instructional Media Centers (IMC) gave the following reasons for non-availability, presented in descending order of seriousness as a problem: lack of funds and high cost of equipment, lack of spare-parts, foreign exchange constraints, lack of trained instructional media developers, and lack of trained audiovisual aides.

Research Question 2:

- (a) What instructional media techniques and materials do the school teachers make the most use of in agricultural training?
- (b) What instructional media techniques and materials do the extension agents make the most use of in nonformal training?

Findings:

School teachers' responses and extension agents' responses indicating frequency of use of fifteen different types of instructional

Table 3

**Instructional Materials Available in the Nonformal Training System
(Agricultural Extension of Bendel State Ministry of Education)**

<u>Type</u>	<u>Medium</u>	<u>Quantity</u>	<u>*Number per College</u>
Graphic:	Posters	43	8.6
	Maps/Charts	35	7.0
Still Picture:	Flat Pictures	36	7.2
	Slides/Filmstrips	1	0.2
	Transparencies	-0-	-0-
	Opaques	-0-	-0-
Audio:	Tape Recordings	4	0.8
	Radio Programs	13	2.6
Motion Projection:	Films	7	1.4
	Television Programs	10	2.0
	Video Taped Programs	-0-	-0-
3-D:	Real Objects	45	9.0
	Models	21	4.2
Demonstration:	Field Sites	20	4.0

*7-9=High, 4-6=Moderate, 1-3=Low, 0=Not Available

media are listed in Tables 4 and 5 respectively. Extent of usage of instructional media is defined as a combination of frequency of use, and the number of trainers using each media type in a 16-week academic semester; (Equivalent 4-month period for nonformal training).

In formal training the instructional media most frequently used by the teachers in a semester were real objects, followed by field demonstrations and wall maps/charts. Most frequent usage here is represented by a combined frequency of "above 10" and "7-9" times. However, some of the media formats such as exhibits/displays, models, posters, flat pictures and slides were used by more teachers, but at lower frequencies (1-3 times per semester). The data shows an extremely low usage of instructional television and radio, motion picture films, audio taped programs and transparencies (in terms of frequency of use and number of users).

More than half of the teachers' responses (63.5%) to the combined fifteen media types indicated no instructional media use in a 16-week semester. The percentages of teachers who reported "not used" for individual media types ranged from 22.4% (real objects) to 100% (opaque projections).

In nonformal training, the instructional media most frequently used by extension agents were field demonstrations, followed by real objects, exhibits/displays. Frequent usage here is represented by a combined frequency of "above 10" and "7-9" times. It was also found that a higher number of extension agents used instructional media at lower frequencies (1-3 times) as compared to those who used them at higher frequencies. From this viewpoint, posters rank first in terms of number

Table 4

Frequency of Use of Instructional Media
by Agriculture Teachers in Nondegree
Colleges of Agriculture

<u>Medium</u>	<u>*10 & Above</u> <u>N (%)</u>	<u>7-9</u> <u>N (%)</u>	<u>4-6</u> <u>N (%)</u>	<u>1-3</u> <u>N (%)</u>	<u>0</u> <u>N (%)</u>
Real Objects	17 (29.3)	16 (27.6)	6 (10.3)	6 (10.3)	13 (22.4)
Field Demonstrations	15 (25.9)	13 (22.4)	8 (13.8)	9 (15.5)	13 (22.4)
Wall Maps/ Charts/Graphs	10 (17.2)	11 (19.0)	10 (17.2)	8 (13.8)	19 (32.8)
Exhibits/Displays 15 (25.9)	5 (8.6)	7 (12.1)	11 (19.0)	20 (34.5)	
Models	1 (1.7)	7 (12.1)	12 (20.7)	14 (24.1)	22 (41.4)
Posters	3 (5.2)	4 (6.9)	15 (25.9)	16 (27.6)	20 (34.5)
Flat Pictures	3 (5.2)	1 (1.7)	6 (10.3)	12 (20.7)	36 (62.1)
Slides	2 (3.4)	2 (3.4)	2 (3.4)	11 (19.0)	41 (70.7)
Transparencies	2 (3.4)	—	2 (3.4)	2 (3.4)	52 (89.7)
Films	—	1 (1.7)	—	4 (6.9)	53 (91.4)
Filmstrips	—	—	2 (3.4)	7 (12.1)	49 (84.5)
Audio-tape Recordings	—	—	1 (1.7)	4 (6.9)	53 (91.4)
Instructional Radio	—	—	2 (3.4)	3 (5.2)	53 (91.4)
Instructional Television	—	—	1 (1.7)	2 (3.4)	55 (94.8)
Opaque Projections	—	—	—	—	58 (100)

*10 times and Above (in a 16-week semester)

7-9 times

4-6 times

1-3 times

0 (Not used)

(Numbers outside parentheses indicate number of teachers)

Table 5

Frequency of Use of Instructional Media
by Agricultural Extension Agents

<u>Medium</u>	<u>*10 & Above</u> <u>N (%)</u>	<u>7-9</u> <u>N (%)</u>	<u>4-6</u> <u>N (%)</u>	<u>1-3</u> <u>N (%)</u>	<u>0</u> <u>N (%)</u>
Field Demonstrations	23 (20.9)	6 (5.5)	20 (18.2)	35 (31.8)	26 (23.6)
Real Objects	10 (9.1)	6 (5.5)	23 (20.9)	27 (24.5)	44 (40.0)
Exhibits/Displays	11 (10.0)	4 (3.6)	15 (13.6)	39 (35.5)	41 (37.3)
Flat Pictures	4 (3.6)	5 (4.5)	8 (7.3)	26 (23.6)	64 (60.9)
Posters	4 (3.6)	3 (2.7)	13 (11.8)	51 (46.4)	39 (35.5)
Wall Maps/ Charts/Graphs	2 (1.8)	3 (2.7)	16 (14.5)	24 (21.8)	65 (59.1)
Instructional Radio	—	5 (4.5)	1 (0.9)	17 (15.5)	87 (79.1)
Models	—	4 (3.6)	7 (6.4)	16 (14.5)	83 (75.5)
Instructional Television	—	4 (3.6)	2 (1.8)	6 (5.5)	98 (89.1)
Audio-tape Recordings	2 (1.8)	—	1 (0.9)	9 (8.2)	98 (89.1)
Films	—	1 (0.9)	1 (0.9)	9 (8.2)	99 (90.0)
Slides	—	—	1 (0.9)	2 (1.8)	107 (97.3)
Filmstrips	—	—	—	—	110 (100)
Transparencies	—	—	—	—	110 (100)
Opaque Projections	—	—	—	—	110 (100)

*10 times and Above (in a 16-week semester)
 7-9 times
 4-6 times
 1-3 times
 0 (Not used)

(Numbers outside parentheses indicate number of extension agents)

of users. 71.6 percent of of all the responses to the combined fifteen media types indicated no media use in a 4-month training period (category chosen was "not used"). The percentages of extension agents who reported "not used" for individual media types ranged from 23.6% (field demonstrations) to 100% (filmstrips).

Each of the instructional media was scored on a 0-4 point use scale: 0 = Not used, 1 = Low use (1-3 times), 2 = Moderate use (4-6 times), 3 = High use (7 - 9 times), and 4 = Very high use (Above 10 times). The grand mean across media types was 0.8 (for school teachers) and 0.5 (for extension agents). The low means and the high percentage of responses indicating no media use show that the extent of reported media use in both formal and nonformal training programs were extremely low. (Tables 6 and 7 display the mean use of each instructional medium).

In general, the school teachers used more media (Mean = 12.0) than the extension agents (Mean = 7.5). One-way analysis of variance was used to determine if the observed difference in amount of media use was statistically significant. The result of the test was significant at the alpha = .05 level (Table 8).

Table 6

The Mean Use for Each Instructional Medium
(School Teachers in Formal Training)

<u>Instructional Medium</u>	<u>*Mean</u>	<u>SD</u>
Real Objects	2.31	1.547
Field Demonstrations	2.14	1.527
Wall maps, Charts, Graphs	1.74	1.517
Exhibits, Displays	1.43	1.244
Posters	1.27	1.151
Models	1.09	1.128
Flat Pictures	.67	1.082
Slides	.50	.978
Transparencies	.24	.823
Filmstrips	.19	.476
Instructional Radio	.12	.422
Motion Picture Films	.12	.462
Audio-taped Programs	.10	.360
Instructional Television	.07	.317
Opaque Projections	.03	.184

* Out of 4 Points

Table 7

The Mean Use for Each Instructional Medium
(Extension Agents in Nonformal Training)

<u>Instructional Medium</u>	<u>*Mean</u>	<u>SD</u>
Field Demonstrations	1.68	1.439
Real Objects	1.19	1.274
Exhibits, Displays	1.14	1.245
Posters	0.93	0.955
Flat Pictures	0.66	0.099
Wall maps, Charts, Graphs	0.66	0.951
Models	0.38	0.766
Instructional Radio	0.31	0.714
Instructional Television	0.20	0.647
Audio-taped Programs	0.17	0.619
Motion Picture Films	0.13	0.431
Slides	0.05	0.314
Filmstrips	-0-	-0-
Transparencies	-0-	-0-
Opaque Projectors	-0-	-0-

* Out of 4 Points

Table 8

Analysis of Variance Comparing Formal and
Non-Formal Trainers in Terms of Media Use

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	12.0	8.6	14.5	.0002*
Non-Formal (Extension Agents)	110	7.5	6.4		

*Significant at the alpha = .05 level

Research Question 3:

What grade level school teachers and extension agents make the most use of instructional media?

Findings:

Two grades of school teachers and extension agents were considered in the study: Graduate trainers (possess university degree qualification), and Nongraduate trainers (possess Nondegree diploma qualification). The graduate trainers used more media (Mean = 10.1) than did the nongraduate counterparts (Mean = 8.0). However, the observed difference in reported media use was not statistically significant at the alpha = .05 level (Table 9).

Table 9

Analysis of Variance Comparing Graduate and Non-Graduate
Grade Level of Trainers in Terms of Media Use

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Graduates	83	10.1	7.9	3.2	.08
Non-Graduates	85	8.0	6.9		

*Significant at the alpha = .05 level

Research Question 4:

At what levels did the school teachers and extension agents have previous training in instructional media?

Findings:

Three levels of media training were examined: (1) Formal courses/workshops, and (2) Informal or Self-taught, and (3) No training. The data show that 24 percent of the school teachers had media training at the formal level, 24 percent at the informal level, and 52 percent had no media training whatsoever (Table 10).

Among the extension agents, 17 percent had media training at the formal level, 15 percent at the informal level, and 68 percent had no media training. The distribution of respondents among training levels and for each of the twenty-two listed media skill is shown in Appendix P.

Composite scores were formed for each respondent by adding together the media training scores for the twenty-two media skills. Mean scores were then computed for the school teachers' group and for the extension agents' group. The results show that the school teachers had more media

training (Mean = 16.2) than the extension agents (Mean = 10.8). An analysis of variance test was done to determine if the observed difference was statistically significant. The result was found to be significant at the .05 level (Table 11). The data also indicates that the graduate grade level trainers had significantly more media training than their nongraduate counterparts (Table 12).

Table 10
Level of Previous Media Training

	<u>School Teachers</u>	<u>Extension Agents</u>
Formal courses/workshops	14(24%)	19(17%)
Informal or Self-taught	14(24%)	16(15%)
No training	30(52%)	75(68%)

Table 11
Analysis of Variance Comparing Formal and Non-Formal
Trainers in Terms of Previous Media Training

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	16.2	11.0	12.2	.0006*
Non-Formal (Extension Agents)	110	10.8	8.9		

*Significant at the alpha = .05 level

Research questions 3 and 4 which have addressed the issue of media use and media training were further tested by Hypothesis 1.

Table 12

Analysis of Variance Comparing Graduate and Non-Graduate Grade
Level Trainers in Terms of Previous Media Training

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Graduates	83	15.6	10.7	15.3	.0001*
Non-Graduates	85	9.8	8.3		

*Significant at the alpha = .05 level

Hypothesis 1:

H₀₁: There will be no significant relationship between the amount of previous media training and the frequency of the use of instructional media by the school teachers and extension agents.

In testing this hypothesis, a total media frequency-of-use score and a total previous media training score was derived for each school teacher and extension agent. This was done by adding the individual media use scores together to form a composite score for each respondent. Similarly, the individual media training scores were summed up to form a composite score for each respondent. Pearson correlation coefficients were then computed in order to test whether or not a relationship existed between the media training scores, and the quantitative use of media by the trainers.

Findings:

A positive correlation of .67 was found between the school teachers' media training and their frequency of use scores. Also, a positive correlation of .40 was found between the extension agents'

media training and their frequency of use scores. The two correlation coefficients were found to be statistically significant at the alpha = .05 level, therefore, the null hypothesis was rejected for both groups (Table 13).

Table 13

The Correlation Between Amount of Previous Media Training and the Amount of Media Use by Formal and Nonformal Trainers

	<u>N</u>	<u>Mean</u>	<u>R</u>	<u>Prob(R)</u>
<u>Formal (School Teachers)</u>				
Media Use	58	12.0	.67	.00*
Media Training	58	16.2		
<u>Non-Formal (Extension Agents)</u>				
Media Use	110	7.5	.40	.00*
Media Training	110	10.8		

*Significant at alpha = .05

A two-tailed test was also performed to determine if the observed difference between the two correlation coefficients is statistically significant. A Z-transformation of each correlation coefficient was computed. ($Z_{.67} = .30$, $Z_{.40} = .43$). The computed Z-difference was 2.23 and it was significant at the alpha = .05 level. This result confirms that the correlation observed between the variables for the school teachers' case is significantly higher than that for the extension agents.

The above findings show that there is a significant relationship between the amount of previous media training and frequency of

instructional media use. Furthermore, the ability to predict media use from previous media training is greater for the formal trainers than it is for the nonformal trainers. In other words, the relationship found between the amount of previous media training and frequency of media use in the formal group is significantly stronger than that found in the nonformal group.

Research Question 5:

What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in educational programs?

Findings:

The school teachers and extension agents responded to five positive and five negative perception statements about instructional media on the questionnaire. The positive perceptions belonged to the category of factors which could facilitate individual trainers' use of instructional media. Conversely, the negative perceptions were categorized among factors which could hinder individual trainers' use of media. The positive perception statements were scored on a 1 to 4 point degree-of-agreement scale where one indicated "strongly disagree" and four indicated "strongly agree". The negative perception statements were also scored on a 1 to 4 point scale but with the points reversed: 1 indicated "strongly agree" and 4 indicated "strongly disagree".

Table 14.1 displays the distribution of the school teachers' responses to the positive perception statements about media. 50.0 percent of the school teachers' responses to the combined five positive perceptions were "strongly agree" and 43.1 percent were "agree". Table

14.2 shows the distribution of responses to each negative perception. 16.2 percent of the school teachers' responses to the combined five negative perceptions were "strongly disagree" and 55.5 percent were "disagree".

Table 15.1 displays the distribution of the extension agents responses to the same set of positive perceptions. 38.0 percent of the responses to the combined five positive perceptions were "strongly agree" and 45.2 percent were "agree". Table 15.2 show the distribution of responses to the negative perceptions. 14.9 percent of the responses to the combined five negative perceptions were "strongly disagree" and 32.9 percent were "disagree".

Table 14.1

Number and Percentage of School Teachers Responding to Positive
Perception Statements About Instructional Media

		Degree of Agreement			
		Strongly Agree	Agree	Disagree	Strongly Disagree
Positive Perceptions					
Instructional media can be used by a teacher:					
1. To motivate learners in educational activities.	F %	40 69.0	17 29.3	1 1.7	0 0
2. To provide for individual learners' learning needs.	F %	20 34.5	30 51.7	6 10.3	2 3.4
3. To stimulate interest on a topic.	F %	34 58.6	24 41.4	0 0	0 0
4. To reduce time for lecturing and note-giving.	F %	21 36.2	28 48.3	8 13.8	1 1.7
5. To reach a greater number of learners at the same time.	F %	30 51.7	26 44.8	2 3.4	0 0

Table 14.2

Number and Percentage of School Teachers Responding to
Negative Perception Statements About
Instructional Media

Negative Perceptions		Degree of Agreement			
		Strongly Agree	Agree	Disagree	Strongly Disagree
1. The cost of most instructional media is out of proportion to their educational value.	F %	3 5.2	13 22.4	29 50.0	13 22.4
2. The personal relationship between the teacher and the student is lost when media are used.	F %	6 10.3	14 24.1	31 53.4	7 12.1
3. The increased use of media will downgrade the teacher's role and eventually put him out of work.	F %	0 0	8 3.8	35 60.3	15 25.9
4. Media are not conducive to teaching in most subjects.	F %	1 1.7	15 25.9	33 56.9	9 15.5
5. Preparation of media materials takes too much of the teachers' personal time.	F %	3 5.2	19 32.8	33 56.9	3 5.2

Table 15.1

Number and Percentage of Extension Agents Responding to Positive
Perception Statements About Instructional Media

Positive Perceptions		Degree of Agreement			
		Strongly Agree	Agree	Disagree	Strongly Disagree
Instructional media can be used by a teacher:					
1. To motivate learners in educational activities.	F %	42 38.2	56 50.9	9 8.2	3 2.7
2. To provide for individual learners' learning needs.	F %	45 40.9	44 40.0	19 17.3	2 1.8
3. To stimulate interest on a topic.	F %	18 16.4	60 54.5	26 23.6	6 5.5
4. To reduce time for lecturing and note-giving.	F %	26 23.6	48 43.6	33 30.0	3 2.7
5. To reach a greater number of learners at the same time.	F %	60 54.5	40 36.4	8 7.3	2 1.8

Table 15.2

Number and Percentage of Extension Agents Responding to
Negative Perception Statements About
Instructional Media

Negative Perceptions		Degree of Agreement			
		Strongly Agree	Agree	Disagree	Strongly Disagree
1. The cost of most instructional media is out of proportion to their educational value.	F %	15 13.6	37 33.6	30 27.3	28 25.5
2. The personal relationship between the teacher and the student is lost when media are used.	F %	15 10.3	48 24.1	32 53.4	15 13.6
3. The increased use of media will downgrade the teacher's role and eventually put him out of work.	F %	38 34.5	40 36.4	21 19.1	11 10.9
4. Media are not conducive to teaching in most subjects.	F %	8 7.3	43 39.1	47 42.7	12 10.9
5. Preparation of media materials takes too much of the teachers' personal time.	F %	11 10.0	32 29.1	51 46.4	16 14.5

The distribution of all trainers' responses to the combined five positive perception statements is summarized in Table 16. The results reveal that a much larger proportion of both school teachers and extension agents support the positive perceptions as compared to those who do not support them. It was also found that formal trainers have more positive perceptions about instructional media than do the nonformal trainers. An analysis of variance results confirmed that the observed difference was statistically significant at $\alpha=.05$ (Table 17).

Table 16

Average Percentage Distribution of School Teachers vs.
Extension Agents for the combined five positive
perceptions about Instructional Media

<u>Opinions</u>	<u>Formal</u> <u>(School Teachers)</u> <u>Responses</u>	<u>Non-Formal</u> <u>(Extension Agents)</u> <u>Responses</u>
Strongly Agree	50.0%	34.7%
Agree	43.1%	45.1%
Disagree	5.9%	17.3%
Strongly Disagree	1.0%	2.9%

Table 17

Analysis of Variance Results Comparing Formal and Non-Formal
Trainers in Terms of their Perceptions About the
Value of Media Use for Instruction

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	31.3	2.9	19.0	.0000*
Non-Formal (Extension Agents)	110	28.2	4.9		

*Significant at the $\alpha=.05$ level

The relationship between perceptions about instructional media and actual media use was tested by Hypothesis 2.

Hypothesis 2

H₀2: There will be no significant relationship between the perceptions about instructional media and amount of media use by the school teachers and extension agents.

In testing this hypothesis, a composite score on media use was formed for each respondent by adding the individual media use scores together. A composite score on media value perception was similarly derived by adding individual perception scores together. Pearson correlation coefficients were then computed to determine whether or not a significant relationship existed between the quantitative use of media by the trainers, and their perceptions about instructional media.

Findings:

An extremely low positive correlation of .01 was found between the school teachers' perceptions about media and their frequency of use scores. The correlation was not statistically significant at $\alpha=.05$. For the extension agents, however, a statistically significant correlation of .18 was obtained (Table 18). The hypothesis was therefore accepted in the case of the formal trainers and it was rejected in the case of the nonformal trainers.

Table 18

The Correlation Between the Amount of Media Use and Perceptions
About the Value of Media Use for Instruction

	<u>N</u>	<u>Mean</u>	<u>R</u>	<u>Prob(R)</u>
<u>Formal (School Teachers)</u>				
Media Use	58	12.0	.01	.47
Perceived Media Value	58	31.3		
<u>Non-Formal (Extension Agents)</u>				
Media Use	110	7.5	.18	.03*
Perceived Media Value	110	28.2		

*Significant at alpha=.05

The supposition that the respondents with more previous media training would tend to have more positive perceptions about instructional media use was tested by Hypothesis 3.

Hypothesis 3:

H₀₃: There will be no significant relationship between the amount of previous media training and the perceptions of the school teachers and extension agents about instructional media.

In testing this hypothesis, composite media training and composite media-value-perception scores were derived for each school teacher and extension agent. Pearson Correlation coefficients were computed to determine whether or not a significant relationship exists between the two variables.

Findings:

A positive correlation of .21 was found between the amount of previous media training received by the school teachers and their

perceived value of media use in instruction. However, this correlation was not statistically significant at the $\alpha = .05$ level. In contrast, a correlation of .48 was obtained between the two variables for the extension agents' group, and it was statistically significant. The hypothesis was therefore accepted in the case of the formal trainers and it was rejected in the case of nonformal trainers.

Table 19

The Correlation Between the Amount of Previous Media Training and Perceptions About the Value of Media Use in Instruction

	<u>N</u>	<u>Mean</u>	<u>R</u>	<u>Prob(R)</u>
<u>Formal (School Teachers)</u>				
Media Use	58	16.2	.21	.06
Perceived Media Value	58	31.3		
<u>Non-Formal (Extension Agents)</u>				
Media Use	110	10.8	.48	.00*
Perceived Media Value	110	28.2		

*Significant at $\alpha=.05$

Research Question 6:

What are the perceptions of the school teachers and extension agents about the value of the use of instructional media for agricultural training in particular?

Findings:

The respondents rated ten categories of instructional media on a three point scale according to their perceived value for training in agriculture (High value = 3, Moderate value = 2, Low value = 1). The summarized data in Tables 20.1 and 20.2 indicate that the school teachers' group and the extension agents group both gave Field

Demonstration medium the highest value rating. This is followed by 3-dimensionals, Displays, and Graphic media devices.

Among the projected media devices, motion picture film had a moderate value rating followed by slides and filmstrips. The school teachers rated television slightly higher than radio, and the extension agents indicated the opposite in their opinion about the use of the two broadcast media for instructional purposes. The instructional medium that was rated the lowest in value by the school teachers was Audio-Taped programs. While the extension agents gave transparencies the lowest value-rating.

Table 20.1

Value-Rating of Instructional Media for Use in
Agricultural Training for School Teachers

<u>Rank</u>	<u>Medium</u>	<u>*Mean</u>	<u>SD</u>
1	Field demonstrations	2.83	.566
2	Models, Real objects	2.76	.601
3	Exhibits, Displays, Bulletin boards	2.53	.628
4	Posters, Wall maps, Charts and Flat pictures	2.50	.627
5	Motion Picture Films	2.21	.720
6	Slides, Filmstrips	2.17	.775
7	Instructional T.V.	2.02	.713
8	Instructional Radio	1.86	.736
9	Transparencies	1.81	.982
10	Audio-taped programs	1.69	.730

*Value points scale: 3 = High, 2 = Moderate, 1 = Low

Table 20.2

Value-Rating of Instructional Media for Use in
Agricultural Training by Extension Agents

<u>Rank</u>	<u>Medium</u>	<u>Mean</u>	<u>SD</u>
1	Field demonstration	2.80	.587
2	Exhibits, Displays, Bulletin boards	2.57	.710
3	Models, Real objects	2.57	.710
4	Posters, Wall maps, Charts and Flat pictures	2.47	.616
5	Motion Picture Films	2.35	.783
6	Slides, Filmstrips	2.07	.673
7	Audio-taped programs	2.02	.824
8	Instructional Radio	2.00	.899
9	Instructional T.V.	1.97	.990
10	Transparencies	1.24	.918

*Value points scale: 3=High, 2=Moderate, 1=Low

The means of the total perceived media value were computed for the formal trainers group (Mean = 22.4) and for the nonformal trainers group (Mean = 22.1). Analysis of variance results comparing the two groups showed no significant difference in their media value perceptions (Table 21.1). Analysis of variance results also comparing graduate and nongraduate grade level trainers showed no significant difference in media value perceptions (Table 21.2).

However, the analysis revealed that a significant positive relationship exists between the nonformal trainers' perceptions about media use in agricultural training and their actual quantitative use of media. A positive relationship was also found between the two variables in the case of formal trainers, but it was not significant at the alpha = .05 level (Table 21.3).

Table 21.1

Analysis of Variance Results Comparing Formal and Nonformal
Trainers' Perceptions About the Values of Media Use
in Agricultural Training in Particular

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	22.4	4.7	.16	.69
Non-Formal (Extension Agents)	110	22.1	4.9		

*Significant at alpha=.05

Table 21.2

Analysis of Variance Results Comparing Graduate and Non-Graduate
Trainers' Perceptions About the Value of Media Use
in Agricultural Training in Particular

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Graduate Trainers	83	22.1	4.3	.03	.86
Non-Graduate Trainers	85	22.2	5.1		

*Significant at alpha=.05

Table 21.3

The Correlation Between Perceptions About the Value of Media
Use in Agricultural Training and the Frequency of Media Use

	<u>N</u>	<u>Mean</u>	<u>R</u>	<u>Prob(R)</u>
<u>Formal (School Teachers)</u>				
Media Use	58	12.0	.15	.14
Perceived Media Value	58	22.4		
<u>Non-Formal (Extension Agents)</u>				
Media Use	110	7.5	.17	.04*
Perceived Media Value	110	22.1		

*Significant at alpha=.05

Research Question 7:

Do the school teachers and extension agents perceive the use of audiovisual media as more valuable for formal or for nonformal types of agricultural training?

Findings:

The respondents that were considered in the data analysis were limited to those that indicated a clear choice between formal and nonformal training program types, in terms of perceived value of media use. Individuals who felt neutral were excluded.

In Table 22, the data show that a larger proportion of the school teachers perceive the use of media to be more valuable for nonformal type of training. Similarly, a larger proportion of the extension agents perceive media use to be more valuable for nonformal training. A chi square test comparing the two groups showed no significant relationship between group membership (formal and nonformal) and belief that AV media is better for formal or nonformal training.

Table 22

Chi Square Test Comparing Formal and Non-Formal Trainers in the Belief that AV Media Use is More Valuable for Either Formal or Non-Formal Training

	Better for Formal Training N(%)	Better for Non-Formal Training N(%)	Chi-Sq.	P(Chi-Sq.)
Formal (School Teachers)	16 (27.6)	37 (63.8)	2.4	.12
Non-Formal (Extension Agents)	45 (40.9)	60 (54.5)		

*Significant at alpha=.05

In particular regard to the use of instructional broadcast media (TV and Radio), the two groups of trainers were compared in terms of their perceived value for agricultural training. The results of an analysis of variance test comparing the two groups was not statistically significant at $\alpha = .05$ (Table 23).

Table 23

Analysis of Variance Results Comparing Formal and Non-Formal Trainers in the Value-Rating of Broadcast Media Use in Agricultural Training

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	3.89	1.35	.12	.73
Non-Formal (Extension Agents)	110	3.97	1.81		

*Significant at $\alpha=.05$

Furthermore, the relationship between type of agricultural training program and the perceived value of the use of broadcast media was tested statistically by Hypothesis 4.

Hypothesis 4:

H₀4: There is no significant relationship between type of agricultural training program and the perceived value of the use of instructional broadcast media by school teachers and extension agents.

Findings:

The results of data analysis for instructional television (ITV) are shown in Table 24.1. The data show that a larger proportion of both formal and nonformal trainers believe that the use of ITV is better for the nonformal type of agricultural training. A chi square test

comparing the two groups showed no significant relationship between group membership (formal and nonformal) and the belief that ITV is better for formal or nonformal training. Therefore, the null hypothesis was accepted for ITV.

In Table 24.2, the data show that a larger proportion of both formal and nonformal trainers perceive the use of instructional radio to be better for nonformal types of agricultural training. A chi square test comparing the two groups' response patterns was not statistically significant at $\alpha = .05$. Therefore, the null hypothesis was also accepted for instructional radio.

Thus, the above findings support the following conclusion: There is no relationship between program type (formal and nonformal) and the belief that Instructional broadcast media are better for either formal training or for nonformal training.

Table 24.1

Chi Square Test Comparing Formal and Non-Formal Trainers in
Belief that Instructional TV is More Valuable for
Either Formal or Non-Formal Training

	Better for Formal Training N(%)	Better for Non-Formal Training N(%)	Chi-Sq.	P(Chi-Sq.)
Formal (School Teachers)	26 (44.8)	27 (46.6)	.03	.87
Non-Formal (Extension Agents)	51 (46.4)	56 (50.9)		

*Significant at $\alpha=.05$

Table 24.2

Chi Square Test Comparing Formal and Non-Formal Trainers in
Belief that Instructional Radio is More Valuable
for Either Formal or Non-Formal Training

	Better for Formal Training	Better for Non-Formal Training	Chi-Sq.	P(Chi-Sq.)
Formal (School Teachers)	25	30	.07	.79
Non-Formal (Extension Agents)	52	57		

*Significant at $\alpha=.05$

Research Question 8:

What specific support is provided by the Colleges and the Ministry of Agriculture to encourage their school teachers and extension agents to use instructional media?

Findings:

School teachers' responses to eight different types of support which their college organization gives to encourage instructional media use for agricultural training are listed in Table 25.1. All teachers responded to all eight items concerning support. Nearly half (48.3%) of the teachers responses to the combined eight items indicated no support (category chosen was "none"). The percentages of respondents that chose "none" for individual items ranged from 34.5% (circulation and distribution of AV media reports, journals, magazines) to 58.6% (AV media related activities are given special recognition and rewarded).

Forty-three percent (43.3%) of all responses to the eight support items indicated only minimally adequate support was provided. The

percentage of respondents indicating "minimally adequate" support for individual items ranged from 32.8% (AV media related activities and creativeness are given special recognition and rewarded) to 53.4% (provision of AV materials).

Each of the eight support items was scored on a 0-3 point scale where 0 indicated "none" and 3 indicated "very adequate". The grand mean across items was 0.6. The low mean and the high percentage of responses (91.6%) indicating either minimally adequate support or none indicates that teachers did not feel that they received much organizational media related support.

Extension agents' responses to the same eight types of support which the ministry of agriculture is giving to encourage instructional media use for farmer training are listed in Table 25.2. Only 6.9 percent of the responses to the combined eight items indicated adequate support. The percentages of extension agents that chose "adequate" for individual support items ranged from 3.6% (AV media related activities and creativeness are given special recognition and rewarded) to 14.5% (provision of AV services in coordination with agriculture colleges).

Each of the eight support items was scored on the same scale used for the school teachers' responses. The grand mean across items was 0.8. The low mean and the high percentage of responses (90.6%) indicating either minimally adequate support or none indicates that extension agents did not feel they received much media related support from the ministry of agriculture.

Analysis of variance test was performed in order to determine if a significant difference exists between the formal and the nonformal

trainers' perceived media support. The results of the test were not statistically significant at the $\alpha = .05$ level (Table 25). Media related support provided by the formal training system and the nonformal system were similarly minimal.

Furthermore, it was assumed that perceived organizational media support could be related to frequency of media use. To find out the nature of the relationship, Pearson correlation coefficients were computed using total the perceived-media-support score and the total media frequency-of-use score, derived for each respondent.

For the formal trainers group, a positive correlation of .25 was significant at $\alpha = .05$. Similarly, a positive correlation of .26 was obtained for the nonformal trainers' group and it was also statistically significant at $\alpha = .05$ (Table 27). These results indicate that those who used more media were those who received more media related organizational support.

Table 25.1

Number and Percentage of School Teachers Who Received Organizational Support
for Instructional Media Use for Formal Training

Type of Support			Adequacy of Support Received		
			Very Adequate	Adequate	Minimally Adequate None
1. Budget allocation for Audiovisual (AV) media needs.	F	%	0	1	28
			0	1.7	48.3
2. Provision of AV materials in my training subject area.	F	%	1	2	24
			1.7	3.4	41.4
3. Provision of assistance and time release to plan and produce AV materials.	F	%	0	6	30
			0	10.3	51.7
4. AV media related activities and creativeness are given special recognition and rewarded.	F	%	0	5	34
			0	8.6	58.6
5. Provision of service by an AV media center	F	%	0	6	30
			0	10.3	51.7
6. Provision of AV media workshops to practice and produce instructional materials.	F	%	2	3	31
			3.4	5.2	53.4
7. Circulation/distribution of AV media reports, journals, magazines.	F	%	2	6	20
			3.4	10.3	34.5
8. Provision of AV media services in coordination with other colleges and the state agricultural extension.	F	%	2	3	27
			3.4	5.2	46.6

Table 25.2

Number and Percentage of Extension Agents Who Received Organizational Support
for Instructional Media Use for Non-formal Training

Type of Support		Adequacy of Support Received			
		Very Adequate	Adequate	Minimally Adequate	None
1. Budget allocation for Audiovisual (AV) media needs.	F %	2 1.8	5 4.5	73 66.4	30 27.3
2. Provision of AV materials in my training subject area.	F %	1 0.9	5 4.5	68 61.8	36 32.7
3. Provision of assistance and time release to plan and produce AV materials.	F %	3 2.7	7 6.4	68 61.8	32 32.7
4. AV media related activities and creativeness are given special recognition and rewarded.	F %	3 2.7	4 3.6	24 21.8	79 71.8
5. Provision of service by an AV media center	F %	1 0.9	6 5.5	73 66.4	30 27.3
6. Provision of AV media workshops to practice and produce instructional materials.	F %	2 1.8	7 6.4	62 56.4	39 35.5
7. Circulation/distribution of AV media reports, journals, magazines.	F %	7 6.4	11 10.0	35 31.8	57 51.8
8. Provision of AV media services in coordination with agriculture colleges.	F %	3 2.7	16 14.5	65 59.1	26 23.6

Table 26

Analysis of Variance Results Comparing Formal and Non-Formal
in terms of Perceived Media Support

<u>P(F)</u>	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>
Formal (School Teachers) .12	58	4.9	4.0	2.5
Non-Formal (Extension Agents)	110	6.0	4.0	

*Significant at $\alpha=.05$

Table 27

The Correlation Between the Perceived Organizational Support for
Media Use for Formal and Non-Formal Training

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>R</u>	<u>P(R)</u>
<u>Formal (School Teachers)</u>					
Media Use	58	14.9	4.0	.25	.03*
Perceived Media Value	58	12.0	8.6		
<u>Non-Formal (Extension Agents)</u>					
Media Use	110	6.0	4.0	.26	.00*
Perceived Media Value	110	7.5	6.4		

*Significant at $\alpha=.05$

Research Question 9:

What are the self-perceived media skills acquired by the
school teachers and extension agents?

Findings:

The acquisition of media skills is categorized among factors which could facilitate the use of instructional media by the trainers. Table 28.1 contains the results of the school teachers responses to questions

dealing with the operation of twelve media equipment items. The extension agents responses are presented in Table 28.2. Each of the equipment skill items was scored on a 0-3 point scale where 0 indicated "don't know the equipment" and 3 indicated "can operate satisfactorily".

Less than half (41.4%) of the school teachers responses to the combined twelve equipment operation skills reported satisfactory skill level (category chosen was "can operate satisfactorily"). The percentages of respondents choosing the category for individual skill items ranged from 13.8% (operation of movie camera) to 72.4% (operation of audio-cassette recorder/playback machine).

In regard to the extension agents, only 18.4 percent of all the responses to the combined twelve equipment skills reported satisfactory skill level. The percentages of respondents choosing the category "can operate satisfactorily" for individual skill items ranged from 8.2% (movie camera) to 61.8% (audio-cassette recorder/playback machine).

The second aspect of media skills that was investigated concerned (a) the design and production of instructional materials, (b) evaluation of instructional media packages, (c) management of media materials and (d) integration of media in teaching-learning activities. A total of ten media skill items in this section were each scored on a 0-4 points proficiency scale (0 = don't know the medium, 1 = no proficiency, 2 = low, 3 = moderate, 4 = high proficiency).

Only 16.5 percent of the school teachers' responses and 11.1 percent of the extension agents' responses to the combined ten media skills indicated high level proficiency. The instructional materials for which the highest number of school teachers possessed high-level skills to design and produce are wall maps, charts, graphs and

audio-taped programs (Table 29.1). The data, however, reveal that very few teachers (5.2%) possess high level proficiency in integrating instructional media and materials in their teaching.

As shown in Table 29.2 audio-taped programs followed by posters are the top-ranked instructional materials for which the highest number of extension agents have a high level proficiency to design and produce. Similar to the case of formal trainers, only 5.5% of the nonformal trainers possess high-level proficiency in integrating instructional media and materials in their teaching.

Research Question 10:

In what media skill areas do the school teachers and extension agents need training?

Findings:

The media equipment items which the respondents, (a) find difficult to operate, (b) have never operated, and (c) do not know what they are or have no knowledge of their functions, constitute media skill areas in which training is needed (Tables 28.1 and 28.2). Since each of the twelve listed media equipment was cited in the above three categories of responses by teachers and extension agents, training needs to be provided in all twelve media skill areas. For example, 60.3 percent of the school teachers need training to acquire the skill for operating a 16mm film projector. So do 89.1 percent of the extension agents.

For the second aspect of media skills, five levels of proficiency in the designed production of instructional materials were identified (Tables 29.1 and 29.2). Those skills in which the respondents have, (a) low proficiency, (b) no proficiency, and (c) no knowledge of the

function for which the skill is used, constitute areas in which training are needed.

The pattern of responses shows that, training needs to be provided in all of the listed media skill areas. For example, 39.7 percent of the school teachers and 33.6 percent of the extension agents need training to acquire the skill for designing and producing instructional posters.

Research Question 11:

In what areas of agricultural training do the extension agents consult and interact with school teachers the most?

Findings:

The degree of interaction/consultation between the formal and nonformal trainers were obtained on a four-point scale (Very often = 3, Sometimes = 2, Seldom = 1, None = 0). Extent of inter-program training consultation was defined as a combination of frequency of consultation and the number of trainers that were involved in the process. In Table 30, the training program areas in which the school teachers had consultations "very often" with extension agents are shown.

The top five training activities involving the most frequent consultations were: School farm practical training which involved 76 trainers (45.2%) out of the total extension agents and the school teachers, followed by Farming demonstration training on farmers' farms (31.0%), Training in extension methods (24.4%), Field surveys (16.1%) and Farmers agricultural shows and exhibitions (15.5%). The pattern of responses involving the thirteen identified training program areas is presented in Appendix Q.

Table 28.1

Levels of Skill in Operation of Media Equipment
Acquired by School Teachers

Operation of:	Level of Skill			
	Can operate Satisfactorily N(%)	*Find it Difficult N(%)	*Never Operated N(%)	*Don't Know What it is N(%)
Audio cassette machine	42(72.4)	2(3.4)	14(24.1)	—
Video tape recorder	38(65.5)	5(8.6)	15(25.9)	—
Slide projector	35(60.3)	3(5.2)	20(34.5)	—
Overhead projector	29(50.0)	4(6.9)	21(36.2)	4(6.9)
16mm film projector	23(39.7)	—	33(56.9)	2(3.4)
8mm film projector	21(36.2)	2(3.4)	32(55.2)	3(5.2)
Filmstrip projector	21(36.2)	5(8.6)	28(48.3)	4(6.9)
Still camera	20(34.5)	—	29(50.0)	9(15.5)
Reel to reel audio machine	18(31.0)	5(8.6)	22(37.9)	13(22.4)
Opaque projector	17(29.3)	1(1.7)	29(50.0)	11(19.0)
Video camera	16(27.6)	5(8.6)	35(60.3)	2(3.4)
Movie camera	8(13.8)	1(1.7)	45(77.6)	4(6.9)

*Need Training

Table 28.2

Levels of Skill in Operation of Media Equipment
Acquired by Extension Agents

Operation of:	Level of Skill			
	Can operate Satisfactorily N(%)	*Find it Difficult N(%)	*Never Operated N(%)	*Don't Know What it is N(%)
Audio cassette machine	68(61.8)	2(1.8)	37(83.6)	3(2.7)
Video tape recorder	27(24.5)	11(10.0)	70(63.6)	2(1.8)
Still camera	21(19.1)	3(2.7)	70(63.6)	16(14.5)
Slide projector	19(17.3)	15(13.6)	67(60.9)	9(8.2)
Reel to reel audio machine	19(17.3)	10(9.1)	60(54.5)	21(19.1)
Filmstrip projector	14(12.7)	12(10.9)	74(67.3)	10(9.1)
Overhead projector	14(12.7)	11(10.0)	66(60.0)	19(17.3)
Opaque projector	14(12.7)	3(2.7)	68(61.8)	25(22.7)
Video camera	13(11.8)	9(8.2)	82(74.5)	6(5.5)
8mm film projector	13(11.8)	9(8.2)	78(70.9)	10(9.1)
16mm film projector	12(10.9)	9(8.2)	78(70.9)	11(10.0)
Movie camera	9(8.2)	3(2.7)	90(81.8)	8(7.3)

*Need Training

Table 29.1

**Levels of Proficiency in Production of Instructional
Materials Acquired by School Teachers**

Design and Production of:	Level of Proficiency				*Don't know what it is N(%)
	High N(%)	Moderate N(%)	*Low N(%)	*None N(%)	
Wall maps, charts, graphs	20 (34.5)	24 (41.4)	6 (10.3)	8 (13.8)	—
Audio-taped programs	20 (34.5)	15 (25.9)	6 (10.3)	15 (25.9)	2 (3.4)
Posters	14 (24.1)	21 (36.2)	16 (27.6)	7 (12.1)	—
Slides/Filmstrips	13 (22.4)	11 (19.0)	8 (13.8)	24 (41.4)	2 (3.4)
Transparencies	8 (13.8)	14 (24.1)	5 (8.6)	21 (36.2)	10 (17.2)
Instructional radio materials	4 (6.9)	5 (8.6)	15 (25.9)	32 (55.2)	2 (3.4)
Instructional TV materials	4 (6.9)	4 (6.9)	14 (24.1)	33 (56.9)	3 (5.2)
Other Media Skills:					
Media integration in teaching	3 (5.2)	17 (29.3)	8 (13.8)	27 (46.5)	3 (5.2)
Management of instructional media materials	6 (10.3)	8 (13.8)	11 (19.0)	29 (50.0)	4 (6.9)
Evaluation of instructional media packages	4 (6.9)	12 (20.7)	7 (12.1)	31 (53.4)	4 (6.9)

*Need Training

Table 29.2

**Levels of Proficiency in Production of Instructional
Materials Acquired by Extension Agents**

Design and Production of:	Level of Proficiency				*Don't know what it is
	High N(%)	Moderate N(%)	*Low N(%)	*None N(%)	
Audio-taped programs	32(29.1)	3(2.7)	4(3.6)	50(45.5)	21(19.1)
Posters	28(25.5)	45(40.9)	12(10.9)	25(22.7)	—
Wall maps, charts, graphs	25(22.7)	49(44.5)	12(10.9)	24(21.8)	—
Slides/Filmstrips	16(14.5)	25(22.7)	12(10.9)	52(47.3)	5(4.5)
Transparencies	4(3.6)	17(15.5)	14(12.7)	68(61.8)	7(6.4)
Instructional TV materials	3(2.7)	19(17.3)	19(17.3)	64(58.2)	5(4.5)
Instructional Radio	1(0.9)	24(21.8)	17(15.5)	65(59.1)	3(2.7)
Other Media Skills:					
Media integration in teaching	6(5.5)	18(16.4)	26(23.6)	53(48.2)	7(6.4)
Management of instructional media materials	5(4.5)	25(22.7)	14(12.7)	61(55.5)	5(4.5)
Evaluation of instructional media packages	2(1.8)	26(23.6)	13(11.8)	64(58.2)	5(4.5)

*Need Training

Table 30

The Top Five Training Program Areas in Which Formal Trainers
Consulted Very Often with Non-Formal Trainers

<u>Training Activity</u>	<u>No.</u>	<u>Percentage</u>
1. School farm practical training	76	45.2
2. Farming demonstration training on farmers' farms	52	31.0
3. Training in extension methods	41	24.4
4. Field surveys	27	16.1
5. Farmers' agricultural shows/fairs/exhibitions	26	15.5

Research Question 12:

What are the sources from which the school teachers and extension agents obtain information about instructional media?

Findings:

Six possible sources of information on instructional media were identified and responses on the frequency of information from each source were scored on a four-point scale (Very often = 3, Sometimes = 2, Seldom = 1, None = 0). The data show that the school teachers and extension agents most frequently obtain media information through talking with colleagues within their school and extension division respectively.

In general, the frequency of media information obtained from the six sources by the school teachers was quite low. The mean calculated for each source ranged from 1.02 to 1.69 out of 3 points (Table 31.1). For the extension agents' responses the means ranged from 1.01 to 2.04

out of 3 points (Table 31.2). The numbers and percentages of responses for each source of media information are presented in Appendix R.

Table 31.1

Sources From Which School Teachers Obtained Information About
Instructional Media (Arranged in Descending Order
of Information Frequency)

<u>Source of Information</u>	<u>Mean</u>	<u>SD</u>
1. By talking to colleagues within your school.	1.69	.995
2. By reading audiovisual journals, magazines, reports. 1.45 .902		
3. By talking to colleagues outside your school who have similar teaching concerns with you.	1.41	.937
4. Information circulated from media center.	1.12	1.044
5. Correspondence with head of school.	1.05	1.016
6. Information supplied by manufacturers or distributors of AV aids.	1.02	.868

Table 31.2

Sources From Which Extension Agents Obtained Information About
Instructional Media (Arranged in Descending Order
of Information Frequency)

Source of Information	Mean	SD
1. By talking to colleagues within your school.	2.05	.971
2. Correspondence with head of your extension division.	1.61	.094
3. By reading audiovisual journals, magazines, reports.	1.50	1.081
4. By talking to colleagues outside your division who have similar teaching concerns with you	1.43	1.009
5. Information circulated from media center.	1.07	.955
6. Information supplied by manufacturers or distributors of AV aids.	1.01	.904

Research Question 13:

What are the chief constraints on the use of instructional media as perceived by the school teachers and extension agents?

Findings:

The results summarized in Table 32.1 show that budget constraint was the most frequently cited major constraint on media use by the school teachers. This is followed by non-availability of required media equipment and materials, irregular electrical power supply, and lack of media skills.

In regard to the extension agents responses, the most frequently cited major constraint is the non-availability of required media equipment and materials, This is followed by budget constraint, lack of

media skills, and the inadequacy of teaching-learning environment necessary to effectively use some AV media (Table 32.2). The decision to rate each constraint as major, moderate, minor or nil was made by each respondent.

Table 32.1

Number and Percentage of Formal Trainers Perceiving Constraints as a "Major" Problem on Use of Instructional Media

<u>Rank No.</u>	<u>Perceived Constraint</u>	<u>Number of School Teachers</u>	<u>Percentage</u>
1	Insufficient budget to provide for my AV needs	41	70.7
2	Non-availability of required media equipment and materials	30	51.7
3	Irregular supply of electrical power	16	27.6
4	I need more training on how to operate some media equipment	14	24.1
5	I need more training to know what media and materials are suitable for teaching some of my subject content	10	17.2
6	Lack of information about instructional media	8	13.8
7	Inadequate structuring of classrooms for AV media use	7	12.1
8	Teaching load does not allow enough time to plan for instructional media use	6	10.3
9	It is difficult to integrate AV media in the subject content that I teach	2	3.4

Table 32.2

Number and Percentage of Non-Formal Trainers Perceiving Constraints
as a "Major" Problem on Use of Instructional Media

<u>Rank No.</u>	<u>Perceived Constraint</u>	<u>Number of Extension Agents</u>	<u>Percentage</u>
1	Non-availability of required media equipment and materials	82	74.5
2	Insufficient budget to provide for my AV needs	81	73.6
3	I need more training on how to operate some media equipment	52	47.3
4	Inadequacy of teaching environment for AV media use	47	42.7
5	Lack of information about instructional media	42	38.2
6	I need more training to know what media and materials are suitable for teaching some of my subject content	38	34.5
7	Irregular supply of electricity	32	29.1
8	Non-educational extension duty load does not allow enough time to plan for instructional media use for farmers training programs	25	22.7
9	It is difficult to integrate AV media in the subject content that I teach	25	22.7

The relationship between perceived constraints and frequency of media use was tested by Hypothesis 5.

Hypothesis 5:

There is no significant relationship between frequency of media use and perceived constraints on media use by school teachers and extension agents.

Findings:

For the formal trainers' group, a negative correlation of $-.29$ was found, and it was statistically significant at $\alpha = .05$. Similarly, a negative correlation of $-.18$ was obtained for the nonformal group and it was also statistically significant at the $.05$ level (Table 33). Therefore, the hypothesis was rejected for both groups. These results indicate that those who used more media were those who perceived less constraints.

The data did reveal that the nonformal trainers perceived more constraints (mean = 26.6) than the formal trainers (mean = 23.1). However, the results of analysis of variance comparing the two groups showed that the observed difference was not statistically significant at $\alpha = .05$ level (Table 34).

Table 33

The Correlation Between Media Use and Perceived Constraints
for Formal and Non-formal Trainers

	<u>N</u>	<u>Mean</u>	<u>R</u>	<u>Prob(R)</u>
<u>Formal (School Teachers)</u>				
Media Use	58	12.0	-.29	.03*
Constraints	58	23.1		
<u>Non-Formal (Extension Agents)</u>				
Media Use	110	7.5	-.18	.01*
Constraints	110	26.6		

*Significant at $\alpha=.05$

Table 34

Analysis of Variance Results Comparing Formal and Non-Formal
Trainers in Terms of Constraints on Media Use

	<u>N</u>	<u>Mean</u>	<u>Sx</u>	<u>F</u>	<u>P(F)</u>
Formal (School Teachers)	58	23.1	3.9	3.2	.08
Non-Formal (Extension Agents)	110	26.6	5.6		

*Significant at alpha = .05

Multiple Regression

In the initial stage of the multiple regression analysis the following independent variables were entered into a stepwise regression equation to determine which were the most powerful predictors of media use.

Independent Variables:

1. Constraints
2. Previous media training
3. Perceptions about media
4. Perceived media value for agriculture training
5. Formal program (or non-formal by default—entered as a dummy variable)
6. Graduate grade (or non-graduate by default—entered as a dummy variable)
7. Ph.D. degree yes or no (entered as a dummy)
8. Masters degree yes or no (entered as a dummy)
9. Bachelors degree yes or no (entered as a dummy)
10. Senior "HND" Diploma (or Junior "OND" diploma by default—entered as a dummy variable)
11. Years of teaching experience
12. Ability to operate media equipment
13. Ability to design and produce media materials
14. Quantity of media available in the school
15. Media related organizational support

The stepwise regression indicated that the subset of variables which were the best combined predictors of media use were: Media training,

Ph.D. degree qualification, Media support, Formal training, Ability to design and produce media, Bachelors degree, Senior diploma and Masters degree qualifications. This subset of predictors were entered into both a standard regression equation and a stepwise equation. In the standard regression, all independent variables were entered into the equation concurrently. In the stepwise regression, the most powerful predictor was entered first and then the next most powerful predictor was entered (the next most powerful predictor after separating out any predictive power it had in common with the first predictor). The remaining variables were added in a similar fashion. Table 35 displays the results of both the standard and stepwise regression procedures.

Table 35

Standard and Stepwise Regression Results for Predicting Media Use

	<u>R Square</u>	<u>R Square Increase</u>	<u>F</u>	<u>P(F)</u>
Standard Regression (all variables concurrently)	.455	.455	15.941	.000*
Stepwise Regression				
Step 1. Media Training	.313	.313	75.681	.000*
Step 2. Ph.D. Degree	.351	.038	44.690	.000*
Step 3. Media Support	.368	.017	31.936	.000*
Step 4. Formal Training Program	.390	.022	26.147	.000*
Step 5. Design and Produce	.408	.018	22.285	.000*
Step 6. Bachelors Degree	.421	.013	19.527	.000*
Step 7. Senior "HND" Diploma	.437	.016	17.731	.000*
Step 8. Masters Degree	.445	.008	15.942	.000*

*Significant at alpha = .05

As can be seen from the table, when all of the variables were entered into the equation the R square was .445. This indicates that

the independent variables shown accounted for 44.5% of the variation in media use. Training taken alone accounted for 31.3% of the variance in media use. The possession of a Ph.D. degree adds approximately 3.8% to the amount of media use variance which can be predicted by training alone, and being in a formal training program adds another 2.2% etc.

Summary of Findings

In this chapter, thirteen Research Questions were examined and five Null Hypotheses were tested (one tailed tests) at the .05 level of significance. Each hypothesis was tested separately for the formal and nonformal trainers.

Research Question 1:

A media inventory taken in both the formal and the nonformal training systems revealed a low level of media availability. Among the thirteen equipment items on the checklist, the slide projector was the only item that amounted to an average quantity of one per each college studied. All others summed up to an average of less than one. On the other hand, only two types of media equipment were available in the nonformal training system--the 16mm projector and the audio tape recorder both of which amounted to an average of less than one per Extension Divisional Circle.

Among the instructional materials available in the two systems, those in high quantities were the 3-dimensional and graphic media types.

Research Question 2:

Formal trainers used more instructional media (Mean = 12.0) than the nonformal trainers (mean = 7.5). The observed difference in amount of media use was statistically significant at $\alpha = .05$.

In formal training, the media types used by more trainers at higher frequencies (7-9 times, 10 and above) in a 16-week academic semester were: real objects (56.9% - combined percentage for the two frequency categories), field demonstrations (36.2%), and wall maps/charts (36.2%). The media used by more trainers but at lower frequencies (1-3, 4-6 times) were: posters (53.5%), exhibits/displays (53.5%), and models (44.8%).

In nonformal training, the media used by more trainers at higher frequencies were: field demonstrations (26.4%), real objects (14.6%) and exhibits/displays (13.6%). Those used by more trainers but at lower frequencies were: posters (46.4%), exhibits/displays (35.5%), field demonstrations (31.8%).

Research Question 3:

The Graduate trainers (possess university degree qualification) used more media than the Non-Graduate trainers (possess nondegree diploma qualification). However, the observed difference was not statistically significant at $\alpha = .05$.

Research Question 4:

On the average, 52 percent of the formal trainers' responses, and 68 percent of the nonformal trainers' responses indicated that they had no previous media training in any of the listed 22 media skills.

Overall, the formal trainers had more media training (mean 16.2) than the nonformal trainers (mean 10.8), and the observed difference was statistically significant at $\alpha = .05$.

Also, the graduate trainers had more media training (mean = 15.6) than the nongraduate trainers (mean = 9.8), and the observed difference was statistically significant at $\alpha = .05$.

Research Question 5:

Responses to five positive and five negative perception statements about instructional media were examined. Ninety-three percent (93.1%) of the formal trainers' responses, and 79.8 percent of the nonformal trainers' responses ("Strongly Agree" and "Agree") supported positive perceptions about media use.

Also, 71.7 percent of the formal trainers' responses and 47.8 percent of the nonformal trainers' responses ("Strongly Disagree" and "Disagree") did not support negative perception statements.

Results of one-way ANOVA test comparing the two groups showed that, formal trainers' support of positive perceptions and non-support of negative perceptions were significantly greater than those of nonformal trainers.

Research Question 6:

Field demonstration medium, 3-dimensionals, displays, and graphic media types were rated the highest among others in terms of perceived value of use in technical agricultural training. Positive Pearson Correlations of .15 for the formal group and .17 for the nonformal group were obtained between the amount of media used and perceived value of

media use in agricultural training. The correlations are rather low, but that of the nonformal group was statistically significant at $\alpha = .05$.

Research Question 7:

Overall, it was found that 69.8 percent of formal trainers and 57.1 percent of nonformal trainers perceive media use as more valuable for nonformal agricultural training than for formal training.

Research Question 8:

It was found that the formal trainers as well as the nonformal trainers received very minimal media-related organizational support. 48.3 percent of the formal trainers' responses and 37.4 percent of the nonformal trainers' responses to the combined eight support items indicated no support.

Positive correlations were found between perceived media support and frequency of media use for both groups of trainers. (Formal group: $r = .25$, Nonformal group: $r = .26$). Both correlations were statistically significant at $\alpha = .05$.

Research Question 9:

The media equipment items which the highest percentage of formal trainers can satisfactorily operate are: audio cassette recorder (72.4%), projector (60.3%), and overhead projector (50%). In the case of nonformal trainers, the audio cassette recorder is the item which the highest percentage of them can operate satisfactorily (61.8%).

Graphic and audio-taped materials are the top-ranked instructional media for which the highest number of trainers have high level

proficiency to design and produce. Only about 5 percent reported having high level proficiency in integrating media in teaching.

Research Question 10:

Those trainers that reported having low or no proficiency in media equipment operation and production of instructional materials need media training. This constitutes: (a) 74.2% of formal trainers' responses and 53.9% of nonformal trainers' responses to the combined twelve equipment skill items; (b) 65.2% of formal trainers' responses and 60.9% of nonformal trainers' responses to the combined ten items on media production, management, evaluation and media integration in teaching.

Research Question 11:

The training program activities in which the formal trainers had common interest and consulted/interacted with the nonformal trainers the most were: (a) practical training conducted in school farms for students (involved 45.2% of trainers), (b) demonstration training conducted on farmers' farms (31.0%), (c) training in extension methods conducted in the school (16.1%), and (d) farmers' agricultural shows and exhibitions (15.5%). The findings indicate the potential are areas of agricultural training in which instructional media programs can be collaboratively developed and utilized efficiently.

Research Question 12:

The formal trainers most frequently obtain media information through talking with colleagues within their school. This is followed in rank by reading audiovisual journals, magazines and reports. The nonformal trainers also most frequently obtain media information through

talking with colleagues within their extension division. This is followed in rank by correspondence with the head of the extension division. Generally, the frequency of media information received from these sources was quite low.

Research Question 13:

The major constraints on media use most frequently cited by the formal trainers were: budgetary constraints; followed by non-availability of required media equipment and materials; irregular electrical power supply; and lack of media skills. Those most frequently cited by the nonformal trainers were: non-availability of required media equipment and materials, followed by budget constraints; lack of media skills; and inadequacy of teaching-learning environment necessary to effectively use some AV media.

Overall, it was found that the nonformal trainers perceived more constraints on media use than the formal trainers, but the observed difference was not statistically significant at $\alpha = .05$ level.

Hypothesis - H₀₁:

There will be no significant relationship between the amount of previous media training and the frequency of the use of instructional media by the school teachers and extension agents.

Decision: The hypothesis was rejected for both the formal and nonformal groups.

Hypothesis - H₀₂:

There will be no significant relationship between the perceptions about media and frequency of media use by the school teachers and extension agents.

Decision: The hypothesis was accepted for the formal group and it was rejected for the nonformal group.

Hypothesis - H₀₃:

There will be no significant relationship between the amount of previous media training and the perceptions of the school teachers and extension agents about instructional media.

Decision: The hypothesis was rejected for both the formal group and the nonformal group.

Hypothesis - H₀₄:

There will be no significant relationship between the trainers' perceptions about use of broadcast instructional media and type of agricultural training program.

Decision: The hypothesis was accepted for both the formal group and the nonformal group.

Hypothesis -H₀₅:

There will be no significant relationship between the perceived constraints on media use and the frequency of instructional media use by school teachers and extension agents.

Decision: The hypothesis was rejected for both the formal group and the nonformal group.

Multiple Regression

A subset of eight independent variables out of a total of fifteen were found to be the best combined predictors of media use. When the eight independent variables were entered into a regression equation concurrently, the R square was .445. This indicates that the eight variables account for 44.5% of the variation of media use.

In a stepwise regression, Previous media training taken alone accounted for 31.3% of the variance in media use. The next most powerful predictor, after separating out any additive power it had in common with training, was the possession of a Ph.D. degree (3.8%); Formal training program (2.2%); Ability to design and produce instructional media (1.8%); Media-related organizational support (1.7%); Possession of Senior "HND" diploma (1.6%); Bachelors degree (1.3%); and Masters degree (0.8%).

In Chapter V, the findings of the analysis of data will be discussed, conclusions drawn, and recommendation set forth. The chapter will conclude with a set of implications for further research.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to examine patterns of use of instructional media in formal nondegree agricultural training programs and in nonformal education of farmers in Bendel State of Nigeria. Also, to determine the factors which could influence the individual readiness of the agricultural educators for instructional media innovation., The following objectives were set:

1. To determine the extent to which instructional media materials are utilized by nondegree agriculture teachers and by agricultural extension agents in formal and nonformal training programs respectively.
2. To identify areas of instructional media skills in which the school teachers and the extension agents need training.
3. To identify the media equipment and materials available to the school teachers and extension agents for use in their respective training programs.
4. To determine the relationship between the trainer's use of instructional media and (a) amount of previous media training; (b) type of training program; (c) professional qualification grade; (d) perceptions about instructional media; and (e) perceived constraints.

The ultimate aim was to draw conclusions about factors that influence the trainers' use of instructional media. Furthermore, to make recommendations for providing them with the necessary skills and support services needed to effectively use instructional media to improve the quality of agricultural training.

The study population was comprised of 58 agriculture school teachers and 110 agriculture extension agents in Bendel State who were actively engaged in teaching. Using a questionnaire instrument, data

for the study were collected in Nigeria in June - September of 1984 with the researcher's presence at each location. 100 percent response was achieved.

Thirteen research questions were examined and five null hypotheses were tested at .05 level of significance. Each hypothesis was tested separately for the formal and nonformal groups of trainers.

Research Questions

1. (a) What instructional media equipment and materials are available to the teachers of technical agriculture in nondegree institutions for agricultural training in Bendel State of Nigeria?

(b) What instructional media equipment and materials are available to extension agents of Bendel State Ministry of Agriculture and Natural Resources?
2. (a) What instructional media techniques and materials do the school teachers make the most use of in formal agricultural training?

(b) What instructional media techniques and materials do the extension agents make the most use of in nonformal agricultural training?
3. What grade level school teachers and extension agents make the most use of instructional media?
4. At what levels did the school teachers and extension agents have previous training in instructional media skills?

5. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in educational programs?
6. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in agricultural training?
7. What are the perceptions of the school teachers and extension agents about the value of the use of instructional media in formal agricultural training in comparison with use in nonformal training?
8. What are the perceptions of the school teachers and extension agents about their organizational support for instructional media use in agricultural training?
9. What are the self-perceived media proficiencies acquired by the school teachers and extension agents?
10. In what media skill areas do the teachers and extension agents need more training?
11. In what areas of agricultural training do the school teachers and extension agents interact and consult with one another the most?
12. What are the sources from which the school teachers and extension agents obtain information about instructional media?
13. What are the chief constraints on the use of instructional media as perceived by the school teachers and extension agents?

Hypotheses

- H₀1: There will be no significant relationship between the amount of previous media training and the frequency of use of instructional media by the school teachers and extension agents.
- H₀2: There will be no significant relationship between the perceptions about instructional media and the frequency of media use by the school teachers and extension agents.
- H₀3: There will be no significant relationship between the amount of previous media and the perceptions of the school teachers and extension agents about instructional media.
- H₀4: There will be no significant relationship between the trainers' perceptions about use of broadcast instructional media and type of agricultural training program.
- H₀5: There will be no significant relationship between the perceived constraints on media use and the frequency of instructional media use by school teachers and extension agents.

Conclusions

Given the stated limitations of the study, the research findings support the following conclusions:

First, there is a positive relationship between the frequency of instructional media items used and the amount of previous media training received (Hypothesis 1). It was significant for the formal trainers' group and for the nonformal group. It is concluded, therefore, that the frequency of instructional media use is significantly higher when the trainers have media training.

Second, there is a positive relationship between the trainers' perceptions about instructional media and the frequency of their use of media (Hypothesis 2). It was significant for the nonformal group only. It is concluded, therefore, that the frequency of instructional media use is significantly higher when the extension agents have more positive perceptions about instructional media. (This relationship did not reach

the .05 significant level for the formal trainers' group. This could have been due to the relatively smaller group size.)

Third, there is a positive relationship between the amount of previous media training and the perceptions about instructional media (Hypothesis 3). This was significant for the formal group and for the nonformal group. The conclusion drawn from this finding is that, the trainers who received previous training in instructional media have significantly more positive perceptions about instructional media than their counterparts without previous media training.

Fourth, there is no significant relationship between program type and the belief that instructional broadcast media (TV, Radio) are better for either formal training programs or for nonformal training programs (Hypothesis 4). It is concluded, therefore, that the trainers perceive the use of instructional broadcast media to be similarly suitable for formal and nonformal types of agricultural training.

Fifth, there is an inverse relationship between the perceived constraints on media use and the frequency of the use of instructional media (Hypothesis 5). This was significant for the formal group and for the nonformal group. It is concluded, therefore, that the frequency of instructional media use is significantly higher when the trainers perceive less constraints on media use.

Sixth, there is a positive relationship between the amount of media related organizational support received and the frequency of the use of instructional media. This was significant for the formal and nonformal groups. The conclusion drawn from this finding is that frequency of

media use is significantly higher when the trainers receive more media support from their organizations.

Seventh, in a multiple regression analysis, a subset of eight variables out of a total of fifteen independent variables were found to be the best combined predictors of media use (1. previous media training, 2. possession of a Ph.D. qualification, 3. media support, 4. formal training program, 5. ability to design and produce instructional media, 6. possession of a Bachelors degree qualification, 7. Senior "HND" diploma qualification, and 8. Masters degree qualification). All eight variables account for 44.5% of the variance in media use (standard regression - R square = .445). Media training variable taken alone in a stepwise regression gave an R square of .313. It is, therefore, concluded that among the subset, media training is the most powerful predictor variable. It accounts for 31.3% of the variance of media use.

Furthermore, information derived from the data analysis and research findings lead the researcher to the general conclusions that:

1. There is an extremely low utilization of instructional media in nonformal agricultural training programs and in formal agricultural training at the nondegree level in Bendel State of Nigeria.
2. The formal and nonformal agricultural training systems are similarly characterized by extremely low level availability of media equipment and instructional materials.

3. A majority of the trainers do not possess the necessary training level skills to effectively use instructional media in their training programs.
4. The sources from which the trainers obtain information about instructional media are quite limited and the frequency of information is low.
5. The perceived level of media support provided by the colleges of agriculture and the ministry of agriculture is minimal.
6. The formal agricultural trainers have a higher level of individual readiness to utilize instructional media than do the nonformal trainers. (The formal trainers have more media training, more positive perceptions about instructional media, use more media in teaching, and perceive less constraints on media use.)
7. The formal trainers conduct their teaching activities in a highly structured "institutional" setting for a relatively younger student body, while the nonformal trainers conduct farmer training activities in mostly non-institutional settings. The results of data analysis indicate that there are some training activities in the two systems in which the formal and nonformal trainers interact and consult with one another the most. This finding supports the conclusion that there are potential areas in the two types of agricultural training in which the formal and nonformal trainers could consult and interact with one another in the development of instructional media programs.

Precedent literature and the conclusions of this study suggest that availability of instructional equipment and materials is a vital prerequisite but it is not enough to ensure media use by the trainers. A combination of this factor together with the provision of necessary media skills training, media support services, funds, positive attitude and cooperation among trainers will go a long way toward ensuring the effective utilization of instructional media in teaching and learning.

Recommendations

This study has identified some problems and deficiencies in both the formal and the nonformal technical agricultural training programs in Bendel State of Nigeria. The following recommendations which are presented in two parts are proposed as means to help solve the identified problems and deficiencies. Part I consists of priority recommendations based on specific findings of this study. Part II presents a more comprehensive framework for implementing a proposed system-wide Instructional Media Innovation Program (IMIP).

Priority Recommendations

1. Media Training: The results of this study indicate that: (a) over half of the trainers received no form of training in the use of instructional media; (b) among those who received media training, the graduate trainers (who had a preservice university degree) had significantly more media training than the nongraduate trainers (who had a preservice nondegree diploma); and (c) trainers who received previous media training used significantly more media than those without media training.

Based on these findings, it is recommended that:

- (I) Preservice training should be part of the requirements for the professional certification of agriculture school teachers and extension agents alike;
- (II) Inservice media training should be provided for trainers who are already in the service and have no previous media training. Such inservice training in the form of workshops, seminars, lectures, and symposia should be regularly organized for trainers to update their media knowledge and skills; and
- (III) Preservice media training programs that are currently offered at the nondegree level for agricultural educator candidates should be revised and upgraded. In general, both degree and nondegree media training programs should be planned and developed to better equip agricultural educator candidates with the competencies for utilizing various media and materials for both formal and nonformal learning situations.

2. Media Competencies: Findings of this study indicate that a majority of the trainers: have either low or no competency in: (a) operating some media equipment, (b) designing and producing instructional materials, (c) integrating media in instructional activities, (d) evaluating and administering instructional media packages.

Based on these findings, it is recommended that preservice and inservice media training should emphasize the following competencies:

- (I) Operation of basic media equipment such as projectors of slides, filmstrips, transparencies and motion pictures. Other

media competencies should include operation of a 35mm still camera, 8mm and 16mm movie cameras, portable video camera, recorder and TV monitor.

- (II) Design and production of simple graphic instructional materials such as wall posters, maps, charts, and flat pictures. This should include techniques for mounting, laminating, enlarging, reducing, basic photography and photographic reproduction of media materials. Other competencies should include production of: audiovisual packages— transparencies; slides; filmstrips; single concept films supported with audio track or live narration; instructional modules for educational television and radio broadcasts; 3-Dimensional models; flannel/felt board.
- (III) Techniques for selecting and integrating media in teaching and in different learning formats—individual instruction, small-group and large-group instruction; techniques for improvising with locally available materials.
- (IV) Evaluation of instructional media packages.
- (V) Administering media equipment and instructional materials including how to prepare and use physical facilities.
- (VI) A working knowledge of communication theory and learning theory underlying the use of audiovisual materials and equipment in teaching and learning; understanding the relationship of audiovisual materials to the instructional content.

3. Major Constraints and Organizational Support: Besides lack of media skills, other major constraints on media use most frequently cited by the trainers were: (a) insufficient funds, (b) non-availability of required media equipment and materials, (c) irregular electrical power supply, and (d) lack of physical facilities to support media use. Overall, the data revealed that the trainers received very little organizational media support. A significant positive relationship was found between amount of organizational media support received and the frequency of media use. Also, a significant inverse relationship was found between perceived constraints and the frequency of media use.

It is evident from these findings that the trainers need to be provided with more encouragement and support for media use in their training programs, in order to help minimize the above constraints and to facilitate the use of instructional media:

- (I) Budgetary support for instructional media programs should be given by the central administration of the agricultural colleges and of the Ministry of Agriculture and Natural Resources (MANR).
- (II) Through the judicious use of allocated media funds, the problem of non-availability of relevant instructional materials should be tackled by improving/providing technical facilities and services for repairing and servicing media equipment; repairing and servicing media equipment; producing simple instructional materials locally; providing assistance and time-release for trainers to practice and produce

materials tailored to meet their individual instructional needs; and by setting up a procedure for a collaborative use of media facilities available in the different colleges. (See page (131) for details of how each college and MANR-based media unit should be improved and upgraded to provide relevant media support services.)

Efforts should be made to prioritize the production of instructional media materials most frequently required and utilized by the trainers. As revealed in the findings of the study, the media types used by more trainers and rated the highest in value for their training programs were: field demonstrations, posters, charts, maps, display media, models and real objects.

(III) Policies should be formulated to help create/sustain positive attitudes toward instructional media use.

(a) Accepting instructional media related activities as part of the criteria for teacher evaluation and promotion.

(b) Providing financial sponsorship for trainers to participate in instructional media conventions and in training workshops.

(c) Financing for: instructional development projects, participation in agricultural exhibitions, etc.

4. Sources of Media Information: The study revealed that the frequency of media information received by the trainers were extremely low. There should be an effective communication system to foster media information exchange and dissemination. The study

revealed that more trainers obtain media information through talking to colleagues. This should be further encouraged by organizing regular luncheon seminars and meetings. Other methods for keeping the trainers up to date on media information should include regular:

- (I) Distribution/circulation of media reports and newsletters from the media center and AV aids Manufacturers/suppliers.
- (II) Subscription to AV journals and magazines.
- (III) Display of media news on bulletin boards at the media center, luncheon staff rooms, and classrooms.

5. Interaction/Consultation Between Formal and Nonformal Trainers:

This study identified five agricultural training program activities in which agricultural school teachers and extension agents interact with one another most frequently: (a) School farm practical training, (b) Training in extension methods, (c) Farming demonstration on farmers' farms, (d) Field surveys, and (e) Farmer's agricultural shows and exhibitions.

These training program activities constitute potential areas in which the formal and nonformal training systems can collaborately develop and utilize instructional media efficiently. Efforts should be made to facilitate this interaction process through an effective communication system between college-based instructional resource centers/units and the one based at the Ministry of Agriculture. This should include organization of inter-system media symposia, seminars, and workshops during which the trainers can meet in groups to exchange

information and update their knowledge and skills in the program areas of common interest.

Instructional Resource Centers (IRCs):

The audiovisual aids unit of each of the colleges of agriculture should be upgraded to an IRC which should provide both materials and support services to facilitate instructional media use by the college teachers. The audiovisual aids available to the agricultural extension agents are currently not administered in a coordinated fashion. An IRC should be instituted at the ministry headquarters to coordinate and provide support services for all five Extensional Divisional Circles.

A mobile -- "media unit on wheels" staffed by qualified media specialists and technicians should be an important arm of the IRC at the headquarters. Such a mobile unit should provide assistance in the form of distributing instructional media materials, literature, carry out equipment maintenance jobs, demonstrate new materials and equipment, as well as conduct short training workshops for extension agents at the zonal fields.

The following is a general guideline of technical facilities and service which each college-based and extension division IRC should strive to provide for its clients.

- (i) Possession of at least one of the following media equipment items:

- Motion picture projector
- Slide projector
- Filmstrip projector
- Overhead projector
- Opaque projector
- Audio Cassette or reel-to-reel recorder/playback machine
- Portable Instructional video/T.V. unit
- Still camera (Single Lens Reflect)

- (ii) Provision of space and facilities for minor repairs and servicing of media equipment items.
- (iii) Provision of space and facilities for local production of instructional materials and programs. This will include provisions for the clients to practice their production skills.
- (iv) Flexibly structured space and facilities for:
 - Small group reading, listening and viewing.
 - Large group viewing and conferencing.

These facilities should include provision of optimal lighting conditions, color, electrical power supply (with a standby power generator), thermal and acoustics.

- (v) Administering nonprint media in coordination with the print library. This service should include (a) working with the teachers in planning the use of instructional media early in the process of preparing instructional courses; (b) media information dissemination and exchange through newsletters, displayed bulletins, exhibitions and meetings.

The ability of the IRCs to provide the above support services would be dependent on adequate staffing. Each IRC should be managed by a Media Specialist/Director who should be responsible to the college dean or provost. The professional staff should include at least: one media specialist/consultant, one instrumentalist/technician, two media aides/projectionists and a nonprofessional staff to handle secretarial, clerical and storage functions.

Comprehensive Recommendations

The literature on the introduction of educational innovations stresses that a commitment by the central administration of the adopting system is crucial to the successful implementation of innovation programs (Havelock, 1973; Abedor and Sachs, 1978; Diamond, 1974). For example, Diamond wrote that, ". . . change will not occur without a serious commitment by the central administration. The commitment must be in action as well as in words and must be supported by a budget specially allocated for the purpose (1974, p. 14)."

From this viewpoint, it is proposed that the recommendation set forth above should be implemented as part of a system-wide Instructional Media Innovation Program (IMIP). The proposed program would necessitate the setting up of an inter-system steering committee made up of representatives from both the formal and nonformal training system. The job of securing the support and commitment of the central administration of the colleges of agriculture and of the state ministry of agriculture should be managed by the steering committee. A commitment from the central administration of both systems in terms of funds, time, personnel, and policies, should form the base for implementing the IMIP on a system-wide basis.

Components of the Proposed Innovation Program:

The organizational structure of the program is presented in Appendix T. Two components in the program have been discussed. These are: the college based IRCs serving the formal training system clients, and the agricultural extension IRC with its mobile media unit.

The third proposed component is a Center for Educational Technology (CET) which will provide inter-system support services for both the formal and the nonformal training system. Such an inter-system component is needed to coordinate the functions of the IRCs and to provide more comprehensive services for the two training systems.

According to Berquist and Phillips (1975):

Since piecemeal efforts to improve college and university teaching have generally proven ineffective, we must turn to a comprehensive approach to faculty development, through which we can develop new methods of evaluation and diagnosis, find viable ways of introducing new technology and curricula, and explore new approaches to instructional improvement (p. 177).

Center for Educational Technology:

The center should be designed to provide professional media support for both the formal and nonformal agricultural training programs. The centers' functions should include: (a) small-scale and large-scale design, development and production of instructional media materials; (b) distribution and circulation of media information; (c) in-service media training workshops; (d) consultation service; and (e) technical services — major equipment repair and servicing. Details of the functions of the proposed Center for Educational Technology are in Appendix S.

It is hoped that the proposed Instructional Media Innovation Program will go a long way toward tackling the problems and deficiencies that have come to light as a result of this study. Since the proposal has implications for some re-organization within the agricultural training systems, the following factors need to be taken into consideration in the planning and implementation process.

1. Limited educational funds and resources.
2. General inertia of teachers toward educational innovations.

Implications for Further Study

This study has examined the factors which influence the individual readiness of technical agricultural teachers and extension agents in Bendel State of Nigeria for instructional media innovation.

In order to provide a more complete picture of factors that could facilitate or impede media innovation programs in the systems future research should examine:

1. the factors which could influence the organizational readiness of both the formal and the nonformal agricultural training systems for media innovation.
2. the general attitudes of the agricultural school students and farmers toward media use in instruction.
3. the pre-service media training programs offered at the degree and nondegree level for agricultural educators (an evaluation study).

A P P E N D I X A

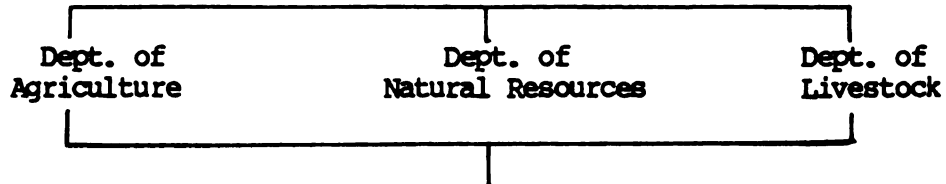
A.1 ORGANIZATIONAL STRUCTURE OF BENDEL STATE MINISTRY OF AGRICULTURE AND NATURAL RESOURCES (MANR)

A.2 AGRICULTURAL EXTENSION STAFF HIERARCHY

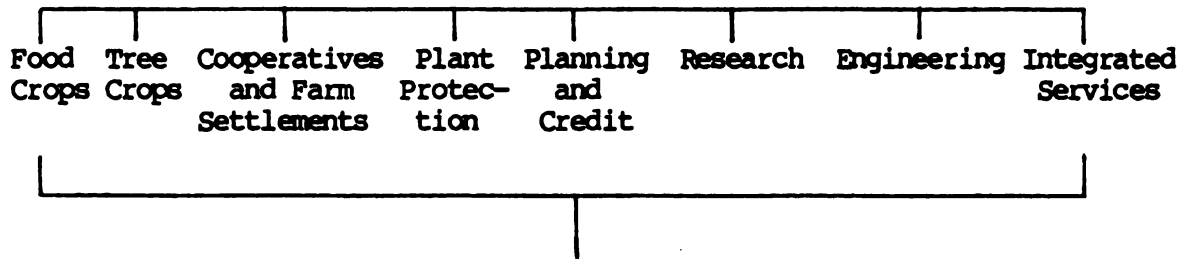
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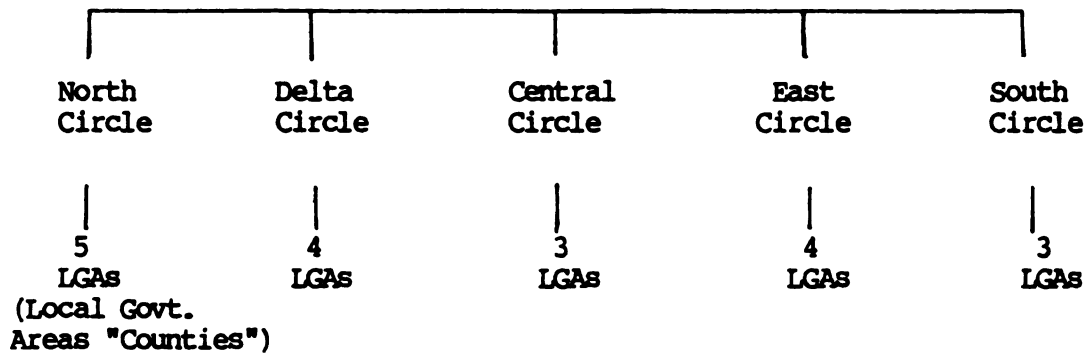
MANR



DIVISIONS



EXTENSION SERVICE



A.2

Agricultural Extension Staff RanksOfficer Staff Ranks

(Most Recent Qualification - A University Degree)

Chief Agricultural Officer	(CAO)
Deputy Chief Agricultural Officer	(DCAO)
Assistant Chief Agricultural Officer	(ACAO)
Principal Agricultural Officer	(PAO)
Senior Agricultural Officer	(SAO)

Intermediate Staff Ranks

(Most Recent Qualifications - A Non-Degree Diploma)

Senior Intermediate (With Higher National Diploma "HND")

Chief Agricultural Superintendent	(CAS)
Assist. Chief Agricultural Superintendent	(ACAS)
Principal Agricultural Superintendent	(PAS)
Senior Agricultural Superintendent	(SAS)
Higher Agricultural Superintendent	(HAS)
Agricultural Superintendent	(AS)

Junior Intermediate (With Ordinary National Diploma "OND" or equivalent Certificate)

Assistant Agricultural Superintendent (AAS)

JUNIOR STAFF RANKS

Field Overseer	(FO)
Extension Aides	
Laborers	

A P P E N D I X B

FARM FAMILIES - EXTENSION AGENT RATIOS

Farm Families Per Junior Technical Agricultural
Staff by States 1975/76*

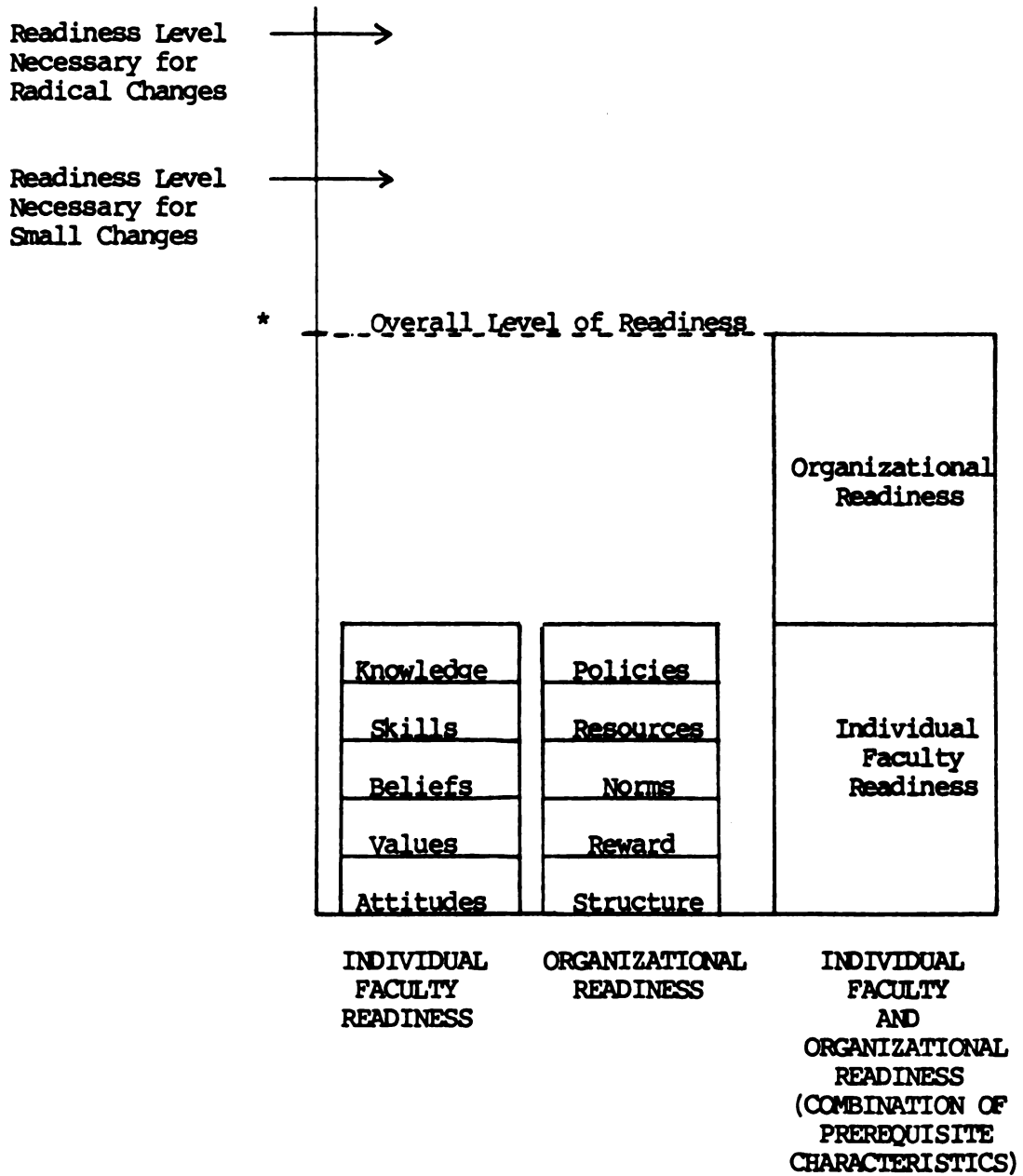
<u>States</u>	<u>Farm Families Per Agricultural Agent</u>
Lagos	382
Ogun, Ondo, Oyo	946
Kwara	994
Bendel	1293
Anambra, Imo	2784
Niger, Sokoto	3006
Kaduna	3528
Bauchi, Bornu, Gongola	3821
Rivers	4088
Cross River	5528
Kano	6315
Plateau	*
Maiduguri	*

* Estimate not available

Source: Obi, J.C. and Forni, N. (1976) "Achievements and Constraints of Agricultural Manpower Development in Nigeria."

A P P E N D I X C

INSTRUCTIONAL INNOVATION READINESS PROFILE



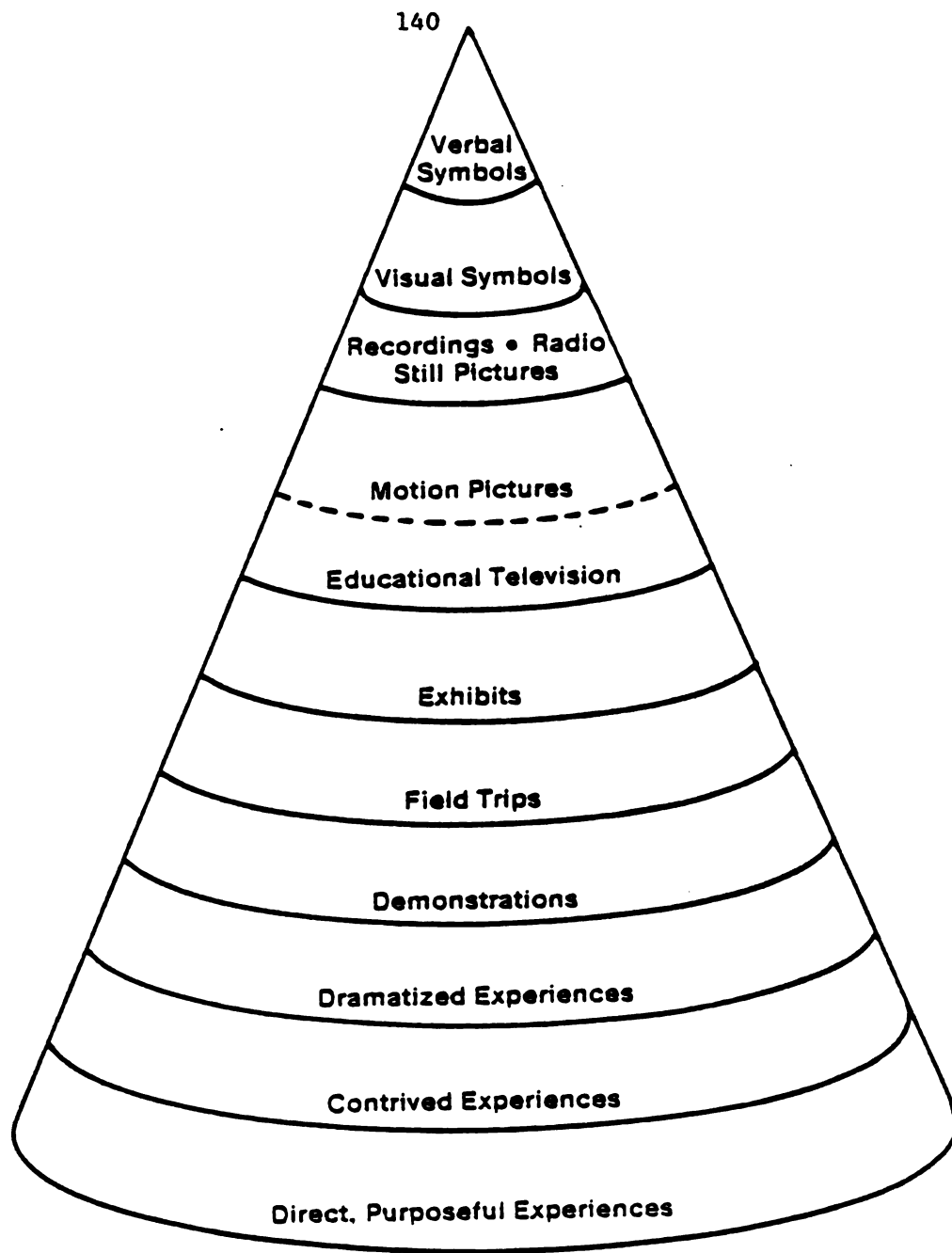
*Unlikely to Innovate

Source: Abedor, A.J. and Sachs S.G. (1978) "The Relationship Between Faculty Development (FD), Organizational Development (OD), and Instructional Development (ID): Readiness for Instructional Innovation in Higher Education."

A P P E N D I X D

D.1 DALE'S CONE OF EXPERIENCE

D.2 ADAPTATION OF DALE'S CONE



Dale's Cone of Experience

Source: Dale, E. (1969) Audiovisual Methods in Teaching

D.2

A Continuum of Audiovisual Media¹ (Adapted from Dale's Cone)

Community Resources	Dramatization Devices	3-D Objects	Demonstration Devices	Display Devices	Projection Devices	Still Picture Devices	Audio Devices	Graphics Devices	Teaching Testing Services
Educational Tours	Dramatic Play	Objects	Chalk Boards	Bulletin Boards	Motion Pictures	Flat Pictures	Disc Recordings	Maps	Teaching Machines
Resource People	Dramatization	Models	Flannel Boards	Pegboards	Television	Film-strips	Tape Recordings	Charts	Programmed Text
Museums	Puppets	Dioramas	Plastic Boards	Hook and Loop Boards	Videotapes	Slides	Radio	Diagrams	Scrambled Books
	Marionettes	Mock-ups	Magnetic Boards	Displays		Transparencies			Electric Boards
	Simulation	Specimens				Stereographs			Computer Assisted Instruction
		Globes				Microprojector			

¹Media arranged in a general way from those which are concrete to those which are abstract

SOURCE: McMahan, M.E. (1968) A Study of the Feasibility of a System of Preservice Teacher Education in Media (Unpublished Ph.D. Dissertation)

A P P E N D I X E

QUESTIONNAIRE USED IN GATHERING DATA

DATA COLLECTION INSTRUMENT

Please respond to all items in this questionnaire using your best judgement. No names are required because no individual respondent will be identified in the research project. All information will be held in strict confidence.

SECTION A: BACKGROUND INFORMATION

Please supply the following background information by indicating your response with a mark (x) in the space that is provided beside the correct option.

1. Including this year how many years have you been teaching agriculture? (Also count the period you taught agriculture in other institutions and in other states if applicable)

_____ Less than 1 year
_____ 1 - 2 years
_____ 2 - 3 years
_____ 3 - 4 years
_____ 4 - 5 years
_____ 5 - 6 years
_____ over 6 years

2. Present professional qualification (Specify most recent one)

_____ Ph.D. degree
_____ Masters degree
_____ Bachelors degree
_____ Senior Intermediate/HND diploma/NCE
_____ Junior Intermediate/OND diploma
_____ Other (Please specify)

3. In what month and year did you obtain your professional qualification indicated above?

_____ Month

_____ Year

4. In what institution did you obtain your professional qualification indicated in No. 2 above.

5. Write below your present rank in the service (Be specific).

SECTION B: SELF-PERCEIVED PROFICIENCY IN MEDIA SKILLS

Please indicate (x) the level of your proficiency in the following media skills.

<u>Media Skill</u>	<u>Don't know what this is</u>	<u>Have never operated</u>	<u>Find difficult to operate</u>	<u>Can operate satis- factorily</u>
<u>(I) Operation of:</u>				
1. 16 mm projector	_____	_____	_____	_____
2. 8 mm projector	_____	_____	_____	_____
3. Slide projector	_____	_____	_____	_____
4. Filmstrips projector	_____	_____	_____	_____
5. Overhead projector	_____	_____	_____	_____
6. Opaque projector	_____	_____	_____	_____
7. Audio cassette machine	_____	_____	_____	_____
8. Reel to reel audio machine	_____	_____	_____	_____
9. Video Tape recorder	_____	_____	_____	_____
10. Video camera	_____	_____	_____	_____
11. Movie camera	_____	_____	_____	_____
12. Video camera	_____	_____	_____	_____
<u>(II) Design and Production of:</u>				
1. Posters	_____	_____	_____	_____
2. Maps, charts, graphs	_____	_____	_____	_____
3. Overhead transparencies	_____	_____	_____	_____
4. Slides, film strips	_____	_____	_____	_____
5. Audio tape recordings	_____	_____	_____	_____
6. Instructional materials for educational tele- vision	_____	_____	_____	_____

<u>Media Skill</u>	<u>Don't know what this is</u>	<u>Have never operated</u>	<u>Find difficult to operate</u>	<u>Can operate satisfac- factorily</u>
<u>(II) Design and Production of continued:</u>				
7. Instructional materials for educational radio	_____	_____	_____	_____
<u>(III) Other Media Skills:</u>				
1. Instructional materials	_____	_____	_____	_____
2. Evaluation of instruc- tional media packages	_____	_____	_____	_____
3. Integration of media in instructional activities	_____	_____	_____	_____

SECTION C: LEVEL OF PREVIOUS MEDIA TRAINING

Please indicate (x) your level of training in the following media skills.

<u>Media Skill</u>	<u>LEVEL OF TRAINING</u>		
	<u>No training</u>	<u>Informal (Self-taught)</u>	<u>Formal training</u>
(I) <u>Operation of:</u>			
1. 16 mm projector	_____	_____	_____
2. 8 mm projector	_____	_____	_____
3. Slide projector	_____	_____	_____
4. Filmstrips projector	_____	_____	_____
5. Overhead projector	_____	_____	_____
6. Opaque projector	_____	_____	_____
7. Audio cassette machine	_____	_____	_____
8. Reel to reel audio recorder	_____	_____	_____
9. Video Tape recorder	_____	_____	_____
10. Video camera	_____	_____	_____
11. Movie camera	_____	_____	_____
12. Video camera	_____	_____	_____
(II) <u>Design and Production of:</u>			
1. Posters	_____	_____	_____
2. Maps, charts, graphs	_____	_____	_____
3. Overhead transparencies	_____	_____	_____
4. Slides, film strips	_____	_____	_____
5. Audio tape recordings	_____	_____	_____
6. Instructional materials for educational television	_____	_____	_____

<u>Media Skill</u>	<u>LEVEL OF TRAINING</u>		
	<u>No training</u>	<u>Informal (Self-taught)</u>	<u>Formal training</u>
<u>(II) Design and Production of continued:</u>			
7. Instructional materials for educational radio	_____	_____	_____
<u>(III) Other Media Skills:</u>			
1. Instructional materials	_____	_____	_____
2. Evaluation of instructional media packages	_____	_____	_____
3. Integration of media in instructional activities	_____	_____	_____

SECTION D: FREQUENCY OF USE OF INSTRUCTIONAL MEDIA

Please mark (x) to indicate the average number of times you actually use each of the following media in your teaching activities in a school semester. (mark only one space per medium.)

<u>AUDIOVISUAL MEDIUM</u>	<u>0</u> <u>time</u>	<u>1-3</u> <u>times</u>	<u>4-6</u> <u>times</u>	<u>7-9</u> <u>times</u>	<u>10 times</u> <u>and above</u>
1. Posters	_____	_____	_____	_____	_____
2. Models	_____	_____	_____	_____	_____
3. Wall maps, charts, graphs	_____	_____	_____	_____	_____
4. Flat pictures	_____	_____	_____	_____	_____
5. Real things/objects	_____	_____	_____	_____	_____
6. Motion picture films	_____	_____	_____	_____	_____
7. Slides	_____	_____	_____	_____	_____
8. Film strips	_____	_____	_____	_____	_____
9. Overhead transparencies	_____	_____	_____	_____	_____
10. Audio taped programs	_____	_____	_____	_____	_____
11. Opaque projections	_____	_____	_____	_____	_____
12. Instructional television	_____	_____	_____	_____	_____
13. Instructional radio	_____	_____	_____	_____	_____
14. On site physical demonstrations	_____	_____	_____	_____	_____
15. Exhibits, displays, bulletin boards	_____	_____	_____	_____	_____

**SECTION E: TRAINING PROGRAM AREAS IN WHICH SCHOOL TEACHERS AND
EXTENSION AGENTS CONSULT/INTERACT WITH EACH OTHER**

Please mark (x) in the appropriate column to show how often in the past you have consulted/interacted with Ministry of Agriculture Extension agents on matters relating to agricultural training as listed below.

<u>Training program activities</u>	<u>FREQUENCY OF CONSULTATION/INTERACTION</u>			
	<u>Very often</u>	<u>Sometimes</u>	<u>Seldom</u>	<u>Never</u>

(I) NONFORMAL PROGRAM:

1. Farmers' agricultural shows and exhibitions.	_____	_____	_____	_____
2. Farmers' short-term training workshops.	_____	_____	_____	_____
3. Farmers' cooperative training activities.	_____	_____	_____	_____
4. Field surveys.	_____	_____	_____	_____
5. Agricultural mass media campaigns.	_____	_____	_____	_____
6. Farming demonstration on farmers' farms.	_____	_____	_____	_____
7. Farmers' training excursions/tours.	_____	_____	_____	_____
8. Production of instructional materials for use in nonformal training.	_____	_____	_____	_____

(II) FORMAL PROGRAM

1. School farm practical.	_____	_____	_____	_____
2. School exhibitions/shows.	_____	_____	_____	_____
3. School training workshops.	_____	_____	_____	_____
4. Production of instructional materials for use in formal training.	_____	_____	_____	_____
5. Training in extension methods.	_____	_____	_____	_____

SECTION F: ORGANIZATIONAL SUPPORT FOR AUDIO-VISUAL MEDIA USE

Please indicate (x) your opinion about the adequacy of the support which your organization is providing to encourage your use of audiovisual media in teaching.

<u>Type of Support</u>	<u>ADEQUACY OF SUPPORT</u>			
	<u>Very Adequate</u>	<u>Adequate</u>	<u>Minimally Adequate</u>	<u>None</u>
1. Budget allocation for AUDIOVISUAL (AV) media needs.	_____	_____	_____	_____
2. Provision of AV media materials in my training subject area.	_____	_____	_____	_____
3. Provision of assistance and time release for teachers to plan and produce AV media materials.	_____	_____	_____	_____
4. AV media related activities and creativeness are given special recognition and rewarded.	_____	_____	_____	_____
5. Provision of service by an AV media center.	_____	_____	_____	_____
6. Provision of media workshops for practicing and producing media materials.	_____	_____	_____	_____
7. Circulation/distribution of AV media technology reports, journals, magazines.	_____	_____	_____	_____
8. Provision of AV media services in coordination with other schools and Ministry of Education.	_____	_____	_____	_____

SECTION G: PERCEIVED CONSTRAINTS ON AUDIOVISUAL MEDIA USE

The following statements represent some of the constraints or barriers to audiovisual media use in educational activities. Indicate (x) the degree at which you perceive each of the constraints.

1. AUDIOVISUAL (AV) materials and equipment are frequently not available for my teaching needs.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

2. I need more training in operating some media equipment.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

3. I need more training to know what AV media are suitable for teaching some of my subject content.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

4. My teaching load does not allow enough time to plan the use of AV media.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

5. Lack of information about AV media.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

6. The teaching/learning environment or classrooms are not suitably structured for using AV media.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

7. There is constant interruption of electricity power supply needed to operate electrical media equipment.

Major constraint	Moderate constraint	Minor constraint	Not a constraint
---------------------	------------------------	---------------------	---------------------

8. The budget is not sufficient to provide for my AV media needs.

Major
constraint

Moderate
constraint

Minor
constraint

Not a
constraint

9. It is difficult to integrate AV media into the subject contents
that I teach.

Major
constraint

Moderate
constraint

Minor
constraint

Not a
constraint

SECTION H: SOURCES OF INFORMATION ABOUT AVAILABLE AUDIOVISUAL MEDIA

Indicate (x) how often you received information about Audiovisual media from the following sources.

<u>Source of Information</u>	<u>FREQUENCY OF INFORMATION</u>			
	<u>Very Often</u>	<u>Sometimes</u>	<u>Seldom</u>	<u>None</u>
1. Correspondence with head of school.	_____	_____	_____	_____
2. Information supplied by manufactures or distributors of AV aids.	_____	_____	_____	_____
3. By talking to colleagues within your school.	_____	_____	_____	_____
4. By talking to colleagues outside your school.	_____	_____	_____	_____
5. Information circulated from AV Media Center.	_____	_____	_____	_____
6. By reading AV magazines, journals, reports.	_____	_____	_____	_____

SECTION I: PERCEPTIONS ABOUT AUDIOVISUAL MEDIA

The following statements represent various perceptions about AUDIOVISUAL media. Indicate (x) how much you agree or disagree with each of the statements.

1. AUDIOVISUAL media can be used to motivate learners in educational activities. (Mark only one)

Strongly Agree Agree Disagree Strongly Disagree

2. AUDIOVISUAL Media can be used to provide for individual learner's learning needs.

SA A D SD

3. AUDIOVISUAL Media can be used to stimulate interest on a topic.

SA A D SD

4. AUDIOVISUAL Media can be used to reduce teacher's time for lecturing and note-giving.

SA A D SD

5. AUDIOVISUAL Media can be used to reach greater numbers of learners at the same time.

SA A D SD

6. The cost of most AUDIOVISUAL Media is out of proportion to their educational value.

SA A D SD

7. The personal relationship between the teacher and the student is lost when AUDIOVISUAL Media are used.

SA A D SD

8. The increased use of AUDIOVISUAL Media will downgrade the teacher's role and eventually put him out of work.

Strongly Agree Agree Disagree Strongly Disagree

9. AUDIOVISUAL Media is not conducive to teaching/learning in most subjects.

SA A D SD

10. Preparation of AUDIOVISUAL Media takes too much of the teacher's personal time.

SA A D SD

SECTION J: PERCEPTION ABOUT USE OF AUDIOVISUAL MEDIA IN AGRICULTURAL TRAINING PROGRAMS

What is your opinion about the value of the use of the following AUDIOVISUAL Media as aids in teaching agriculture.

<u>AUDIOVISUAL Media</u>	<u>Extremely valuable</u>	<u>Moderately valuable</u>	<u>Minimally valuable</u>
1. Poster, Wall maps, charts, and flat pictures.	_____	_____	_____
2. Models, Real objects.	_____	_____	_____
3. Motion picture films.	_____	_____	_____
4. Slides, filmstrips.	_____	_____	_____
5. Audio taped programs.	_____	_____	_____
6. Overhead transparencies.	_____	_____	_____
7. Instructional T.V.	_____	_____	_____
8. Instructional Radio	_____	_____	_____
9. On site physical demon- strations.	_____	_____	_____
10. Exhibits, displays, bulletin boards.	_____	_____	_____

SECTION K: PERCEPTIONS ABOUT USE OF AUDIOVISUAL MEDIA AS MORE SUITABLE FOR EITHER FORMAL OR NONFORMAL AGRICULTURAL TRAINING

Formal agricultural training program = training designed for agricultural students in schools of agriculture. Nonformal agricultural training program = training designed for farmers and conducted outside school settings such as in their farms, homes, community centers, etc. Indicate (x) the type of agricultural training program that you think the use of each of the following media will be MORE suitable.

	<u>PROGRAM TYPE</u>	
	<u>Formal training for school students</u>	<u>Nonformal training for farmers</u>
<u>Nonprojected Media</u>		
Posters	_____	_____
Charts, maps, graphs	_____	_____
Models	_____	_____
Real things/objects	_____	_____
Flat pictures	_____	_____
Exhibits, displays, bulletin boards	_____	_____
<u>Projected Media:</u>		
Motion picture films	_____	_____
Slides/Filmstrips with audio recording or live narration	_____	_____
Overhead transparencies	_____	_____
<u>Broadcast Media:</u>		
Instructional television	_____	_____
Instructional radio	_____	_____
<u>Other Multimedia techniques</u>		
Instructional games/simulations	_____	_____
Folk media concert	_____	_____
Agricultural shows and fares	_____	_____
Audiovisual workshops	_____	_____
On-site physical demonstrations	_____	_____

Please indicate (x) to show how much you agree or disagree with the following statement.

AUDIOVISUAL media are generally More valuable as aids for teaching adult farmers in a nonformal environment than for teaching school students in formal classrooms.

Strongly Agree

Agree

Disagree

Strongly Disagree

A P P E N D I X F

MEDIA INVENTORY CHECKLIST

INSTRUCTIONAL MEDIA INVENTORY CHECKLIST

<u>MEDIA EQUIPMENT</u>	<u>NUMBER SERVICEABLE</u>
1. 16mm film projector	
2. 8mm film projector	
3. Slide projector	
4. Filmstrip projector	
5. Overhead projector	
6. Opaque projector	
7. Audio Cassette tape machine	
8. Reel to reel audio tape machine	
9. Video tape recorder	
10. T.V. Monitor	
11. Video Camera	
12. Movie Camera	
13. 35mm SLR still camera	

<u>INSTRUCTIONAL MATERIALS</u>	<u>NO. OF PIECES AVAILABLE</u>
1. Posters	
2. Maps, charts, graphs	
3. Models	
4. Flat pictures	
5. Real objects	
6. Physical demonstration sites	
7. Motion picture films	
8. Slides/filmstrips	
9. Overhead transparencies	
10. Opaque projection materials	
11. Educational T.V. materials	
12. Educational radio materials	
13. Audio taped programs	
14. Video taped programs	

A P P E N D I X G

**LETTER OF INTRODUCTION FROM
PROFESSOR JAMES L. PAGE**

MICHIGAN STATE UNIVERSITY

COLLEGE OF EDUCATION · DEPARTMENT OF COUNSELING,
EDUCATIONAL PSYCHOLOGY AND SPECIAL EDUCATION

EAST LANSING · MICHIGAN · 48824-1034

June 7, 1984

Heads of Schools of Agriculture/Agric. teachers/
Ministry of agric. Officials/Agric. extension agents
Federal Republic of Nigeria.

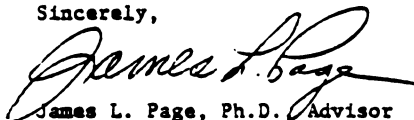
To Whom This May Concern:

Ms. Ewemade Ehi Ohenhen, Ph.D. candidate in the College of Education, Michigan State University, is gathering data for her thesis. Her thesis is entitled
INSTRUCTIONAL MEDIA USE IN TECHNICAL AGRICULTURE TRAINING IN BENDEL STATE OF
NIGERIA: A COMPARATIVE STUDY OF SELECTED NONFORMAL AND FORMAL TRAINING PROGRAMS.

The study is exploratory descriptive research using survey research methodology. The population in the study includes teachers of technical agriculture in non-degree schools of agriculture and agricultural extension agents of Bendel State Ministry of Agriculture and Natural Resources. The subject for study relates to the availability and utilization of instructional materials in the formal and nonformal training programs.

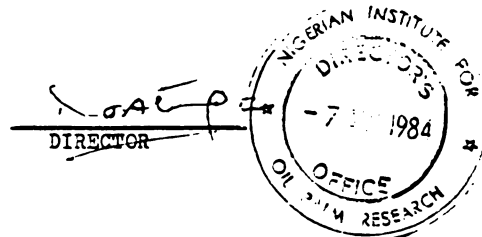
Any assistance you can give to Ms. Ohenhen to facilitate the acquisition of the necessary data will be most appreciated. She will make abstracts of her findings available to the participants if they so desire. It is hoped that the results of her work will be helpful to the programs studied.

Sincerely,



James L. Page, Ph.D. Advisor
Professor of Education
College of Education
Michigan State University

ENDORSED BY:
NIGERIAN INSTITUTE FOR OIL PALM RESEARCH
BENIN CITY; BENDEL STATE, NIGERIA
(Employer & Sponsor)



A P P E N D I X H

**LETTER TO THE PERMANENT SECRETARY, MINISTRY OF
AGRICULTURE AND NATURAL RESOURCES,
BENDEL STATE**

College of Education
Dept. of Counseling Ed. Psychology
and Special Education
(Educational Systems Development)
Michigan State University
East Lansing, Michigan 48824
U.S.A.

July 24, 1984

The Permanent Secretary
Ministry of Agriculture
and Natural Resources
Bendel State, Nigeria

ATTENTION: Chief Research Officer

Dear Sir,

REQUEST FOR RESEARCH PERMIT

I am a Nigerian Ph.D. research student at Michigan State University, USA and under the sponsorship of the Nigerian Institute for Oil Palm Research (NIFOR). I have come home this summer to conduct a field study on Instructional Media use in agricultural training programs in Bendel State of Nigeria.

The study is aimed at identifying and comparing important factors influencing the use of instructional media and materials by agricultural teachers in formal training programs and by extension agents in nonformal programs. In addition to providing the necessary empirical data for my doctoral dissertation, it is hoped that the findings of the research effort will particularly be valuable in planning and developing instructional media programs for improving the quality of agricultural training programs.

The divisional extension agents under the department of agriculture have been designated to participate in the study by responding to a set of questionnaire items. I would be grateful for your permission to conduct this study. At the same time, I am requesting your endorsement of this letter to serve to introduce me to the extension agents and to ask their cooperation in the research project.

Please be assured that all responses of participants will be treated with utmost confidence; only aggregate results will be included in the research report.

Yours Sincerely,

Sgd.

E.E. Okenhen
Ph.D. Candidate

A P P E N D I X I

**LETTER FROM THE PERMANENT SECRETARY, MINISTRY
OF AGRICULTURAL AND NATURAL RESOURCES,
BENDEL STATE**

Telegram: PERMINAT. BENIN

Telephone:



BENDEL STATE

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

P. M. B. 1060

BENIN CITY

BENDEL STATE OF NIGERIA

Your Ref:

Our Ref: ADC. 73 Vol.8T/36

23rd June 1984

Miss Ewemade Ohenhen,
Michigan State University,
College of Education,
Dept. of Counseling, Ed. Psych.,
East Lansing, Michigan. 48824
U.S.A

I am making response to the letter addressed to us by your advisor, Dr. James Page requesting us to assist you in acquiring the necessary data for your Ph.D Programme.

I wish to assure you that my Establishment will be willing to give you assistance to facilitate the acquisition of all the necessary data that you require for your Thesis.

Please call on us for all your academic needs as soon as you arrive in the country.

Thank you.


(Olu Ezechia-Isaiah)
for Permanent Secretary
Ministry of Agriculture
and Natural Resources.

A P P E N D I X J

**LETTER FROM THE PRINCIPAL, SCHOOL OF AGRICULTURE,
ASABA, BENDEL STATE**

SCHOOL OF AGRICULTURE

ANWAI - ASABA
BENUE STATE, NIGERIA

Your Ref:

Our Ref: No. SAA/AD. 206/1



26th July, 19 84.

BENUE STATE

Miss Eweade Oshenhen
Michigan State University
College of Education
Dept of Counseling, Ed. Psych.
East Lansing, Michigan. 48824
U.S.A

THESIS - GATHERING OF MATERIALS FOR

I wish to refer to the letter sent to us by Dr. James L. Page and to inform you that approval has been given to you to gather materials for your thesis from this institution.

I wish to assure you that all possible assistance will be given to you in this regard. You are therefore free to call on us anytime you may wish to do so.

(B. O. Osula)
Principal
School of Agriculture,
Anwai - Asaba.

A P P E N D I X K

**LETTER FROM THE HEAD, DEPARTMENT OF AGRICULTURAL
SCIENCE, COLLEGE OF EDUCATION,
BENIN CITY, BENDEL STATE**

DEPARTMENT OF AGRIC. SCIENCE
COLLEGE OF EDUCATION
ABRAKA
BENDEL STATE, NIGERIA.

Cables: PROVOST ABRAKA, BENDEL NIGERIA.

Telephone: ABRAKA 4



Your Reference:

16th August, 1984.

Our Reference:

Miss Ewenade Ohenhen
Michigan State University,
College of Education,
Department of Counseling, Ed. & Psychology,
East Lansing,
Michigan 48824,
USA.

Dear Miss Ohenhen,

Thank you for your letter dated 7th June 1984. Let me assure you that the Department is prepared to assist you in any way possible. All lecturers in the Department will be willing to help you.

Thank you and I wish you success.

Yours faithfully,

[Signature]
G.M.A. UDOHEN,
Head, Agric. Science Department,
College of Education, Abraka.

A P P E N D I X L

**LETTER FROM THE HEAD, DEPARTMENT OF AGRICULTURAL
SCIENCE, COLLEGE OF EDUCATION,
WARRI, BENDEL STATE**

COLLEGE OF EDUCATION

P. M. B. 1251

WARRI



BENDEL STATE OF NIGERIA

Provost: Dr. H. S. A. ALUYI, B.Sc. (Ife), M.Sc. Ph.D. (Manchester)

Tel. (063) 230036

Your Ref _____

14th Aug. 19 84.

Our Ref _____

Department of Agriculture.

Ms. Ewemade Ehi Ohenhen,
College of Education,
Michigan State University.

I wish to refer to the letter from Professor James L. Page, introducing you as a Ph D candidate in the College of Education, Michigan State University, and the Study you are carrying out.

I wish to inform you that my department is very willing to assist you in our capacity to make your study a success. I wish to state also that you can approach us any time you need our help in the future.

I hope that our assistance will be of benefit to your study.

Thank you.

SEPT 1984
ECHONOGOR J.N.
HEAD, DEPT OF AGRIC. SC.
for: (HEAD, SCH. OF APPLIED SC.).



College Of Education Agbor

P. M. B. 2090, AGBOR, BENDEL STATE, NIGERIA. TELEPHONE: 055-25145.

Our Ref:

Date: 24th August, 1984

Your Ref:

Head: Department of Agric. Sciences,
College of Education,
Agbor.
Nigeria.

Prof. James L. Dage,
Professor of Education,

Through:-

Miss Ewemade Ehi Ohenhen,
College of Education,
Michigan State University.

Sir,

I wish to inform you that permission was granted to Miss Ewemade Ehi Ohenhen to carry out her research on Instructional Media Use in Technical Agriculture Training in Bendel State of Nigeria. She was also granted permission to use all available resources in the College.

Thanks.

Yours faithfully,

D. O. Dibia.

A P P E N D I X O

RESEARCHER'S LETTER TO RESPONDENTS

College of Education
(Educational Systems
Development)
Michigan State University
East Lansing, Michigan 48824

June 24, 1984

Dear Respondent,

DOCTORAL DISSERTATION QUESTIONNAIRE

I am a Nigerian Ph.D. research student at Michigan State University, USA and sponsored by the Nigerian Institute for Oil Palm Research, (NIFOR). The attached questionnaire is designed to collect research data on Instructional Media use by technical agricultural trainers in Bendel State of Nigeria.

With the permission of the Head of Agriculture Department, all listed agricultural trainers (in nondegree colleges of agriculture, agricultural extension service) have been designated to participate in the study by completing the questionnaire.

The study is aimed at identifying the individual factors influencing the use of instructional media materials by agriculture teachers in formal training, and by extension agents in nonformal training programs. It is expected that the findings and recommendations of the research effort, will particularly be useful in planning and developing instructional media Innovation programs for agricultural training. The data will be used for my doctoral dissertation entitled:

INSTRUCTIONAL MEDIA USE IN FORMAL AND NONFORMAL
AGRICULTURAL TRAINING PROGRAMS IN BENDEL
STATE OF NIGERIA

For the research project to be successful your cooperation is vital. Please, kindly complete the questionnaire independently, completely and as objectively as possible.

The term INSTRUCTIONAL MEDIA as intended for this study is defined as follows:

"Instructional media" or "Audiovisual media" or "Audiovisual aids" are terms interchangeably used to refer to both materials and equipment used for communicating in instruction. This includes, motion picture films, television, radio, audio recordings, graphic and photographic materials, exhibits, models, specimens, real objects etc. But this

definition does not include the exclusive use of chalkboards, textbooks and other print materials.

Thank you for your cooperation.

Sincerely,

Sgd.

Ewenade E. Ohenhen
Ph.D. Candidate,
Michigan State University
U.S.A.

A P P E N D I X P

LEVEL OF MEDIA TRAINING

PERCENTAGE DISTRIBUTION OF RESPONDENTS AMONG MEDIA
TRAINING LEVELS FOR EACH MEDIA SKILL

<u>Media Skill</u>	<u>Formal Coursework</u>		<u>Informal Self-taught</u>		<u>No. Training</u>	
	<u>School Teachers</u>	<u>Extension Agents</u>	<u>School Teachers</u>	<u>Extension Agents</u>	<u>School Teachers</u>	<u>Extension Agents</u>
<u>Equipment Operation</u>	%	%	%	%	%	%
16mm movie projector	24.1	10.9	15.5	1.8	60.3	87.3
8mm movie projector	22.4	10.0	17.2	3.6	60.3	86.4
Slide projector	34.5	19.1	24.1	4.5	37.9	76.4
Filmstrip projector	24.1	14.5	20.7	2.7	55.2	82.7
Overhead projector	32.7	14.5	22.4	3.6	44.8	81.8
Opaque projector	24.1	9.1	6.9	6.4	70.0	84.5
Audio cassette machine	12.1	6.4	60.3	55.4	27.6	38.2
Reel to reel audio	5.1	0.9	34.5	24.5	60.3	74.5
Videotape recorder	10.3	1.8	63.8	27.3	25.9	70.9
Video camera	5.1	1.8	25.9	13.6	70.0	84.5
Movie camera	5.1	1.8	12.1	7.3	82.8	90.9
Still camera	17.2	0.9	20.7	20.0	62.1	79.1
<u>Production of Instructional Materials</u>						
Posters	43.1	59.1	37.9	18.2	19.0	22.7
Maps/Charts	60.3	65.5	24.1	10.0	15.5	24.5
Transparencies	30.0	21.8	13.8	7.3	55.2	70.9
Slides/filmstrips	37.9	13.6	15.5	32.7	46.6	53.6
Audio recorded packages	17.2	6.4	53.4	26.4	29.3	67.3
ITV packages	20.7	18.2	20.7	10.0	58.6	71.8
Instructional radio packages	19.0	20.9	24.1	12.7	56.9	66.4
<u>Other Skills</u>						
Administering media equipment and materials	27.6	24.5	10.3	13.6	62.1	61.8
Evaluating media materials	29.3	25.5	6.9	10.9	63.8	63.6
Integrating media in teaching	36.2	29.1	5.2	10.9	58.6	60.0

A P P E N D I X Q

**TRAINING PROGRAM ACTIVITIES IN WHICH EXTENSION
AGENTS INTERACT WITH SCHOOL TEACHERS**

RANK	TRAINING PROGRAM ACTIVITIES	FREQUENCY OF INTERACTION/CONSULTATION			
		Very Often N(%)	Sometimes N(%)	Seldom N(%)	None N(%)
1.	School farm practicals	76(45.2)	27(16.1)	36(21.4)	29(17.3)
2.	Farming demonstration on farmers' farms	52(31.0)	62(36.9)	34(20.2)	20(11.9)
3.	Training in extension methods	41(24.4)	48(28.6)	42(25.0)	37(22.0)
4.	Field surveys	27(16.1)	52(31.0)	55(32.7)	34(20.2)
5.	Farmers' agricultural shows and exhibitions	26(15.5)	80(47.6)	44(26.2)	18(10.7)
6.	Agricultural school training workshops	26(15.5)	48(28.6)	44(26.2)	50(29.8)
7.	Agricultural school exhibitions/shows	22(13.1)	53(31.5)	55(32.7)	38(22.6)
8.	Agricultural mass media campaigns	20(11.9)	41(24.4)	62(36.9)	45(26.8)
9.	Farmers' cooperative training activities	17(11.3)	60(35.7)	53(31.5)	36(21.4)
10.	Farmers' training excursions/tours	12(7.1)	52(31.0)	70(41.7)	34(20.2)
11.	Farmers' short term training workshops	10(6.0)	63(37.5)	70(41.7)	25(14.9)
12.	Production of instructional materials for use in formal training	7(4.2)	40(23.8)	53(31.5)	68(40.5)
13.	Production of instructional materials for use in nonformal training	5(3.0)	37(22.0)	55(32.7)	71(42.3)

A P P E N D I X R

SOURCES OF MEDIA INFORMATION

R.1 Distribution of School Teachers' Responses

R.2 Distribution of Extension Agents' Responses

R.1 Number and Percentage of School Teachers'
Responses for Each Source of
Media Information

RANK	SOURCE OF INFORMATION	FREQUENCY OF INTERACTION/CONSULTATION			
		Very Often N(%)	Sometimes N(%)	Seldom N(%)	None N(%)
1.	By talking to colleagues within your school.	14(24.1)	20(34.5)	16(27.6)	8(13.8)
2.	By reading A.V. magazines, journals, reports.	7(12.1)	21(36.2)	21(36.2)	9(15.5)
3.	By talking to colleagues outside your school.	7(12.1)	21(36.2)	19(32.8)	11(19.0)
4.	Information circulated from media center.	6(10.3)	17(29.3)	13(22.4)	22(37.9)
5.	Correspondence with head of school.	5 (8.6)	16(27.6)	14(24.1)	23(39.7)
6.	Information supplied by manufacturers or distributors of A.V. aids.	2 (3.4)	16(27.6)	21(36.2)	19(32.8)

R.2 Number and Percentage of Extension Agents'
Responses for Each Source of
Media Information

RANK	TRAINING PROGRAM ACTIVITIES	<u>FREQUENCY OF INTERACTION/CONSULTATION</u>			
		Very Often N(%)	Sometimes N(%)	Seldom N(%)	None N(%)
1.	By talking to colleagues within your extension division.	42(38.2)	40(36.4)	18(16.4)	10 (9.1)
2.	By reading A.V. magazines, journals, reports.	24(21.8)	32(29.1)	28(25.5)	26(23.6)
3.	Correspondence with head of extension division.	22(20.0)	41(37.3)	29(26.4)	18(16.4)
4.	By talking to colleagues outside your extension division.	15(13.6)	41(37.3)	29(26.4)	25(22.7)
5.	Information circulated from media center.	8 (7.3)	30(27.3)	34(30.9)	38(34.5)
6.	Information supplied by manufacturers or distributors of A.V. aids.	6 (5.5)	27(24.5)	39(35.5)	38(34.5)

A P P E N D I X S

**SUMMARY OF THE FUNCTIONS OF THE PROPOSED
CENTER FOR EDUCATIONAL TECHNOLOGY**

SERVICES FOR BOTH FORMAL AND NONFORMAL AGRICULTURAL TRAINING

1. Customized production of instructional media in various formats.
2. Provision of print and nonprint media library services, including equipment and materials loan service.
3. Closed circuit instructional television and other facilities for large-group as well as small-group presentations.
4. Technical services including major equipment installation, repairs, and maintenance.
5. Inservice media training for teachers. This should include organization of workshops, seminars, and symposia.
6. Consulting services for both small-scale and large-scale course/instructional package development.
7. Coordinating and complementing the services of the college-based Instructional Resource Centers and that of the ministry of agriculture.
8. Regular communication of media information to clients including distribution of media technical journals, newsletters, magazines and reports.

A P P E N D I X T

MODEL FOR INSTRUCTIONAL MEDIA INNOVATIONS PROGRAM

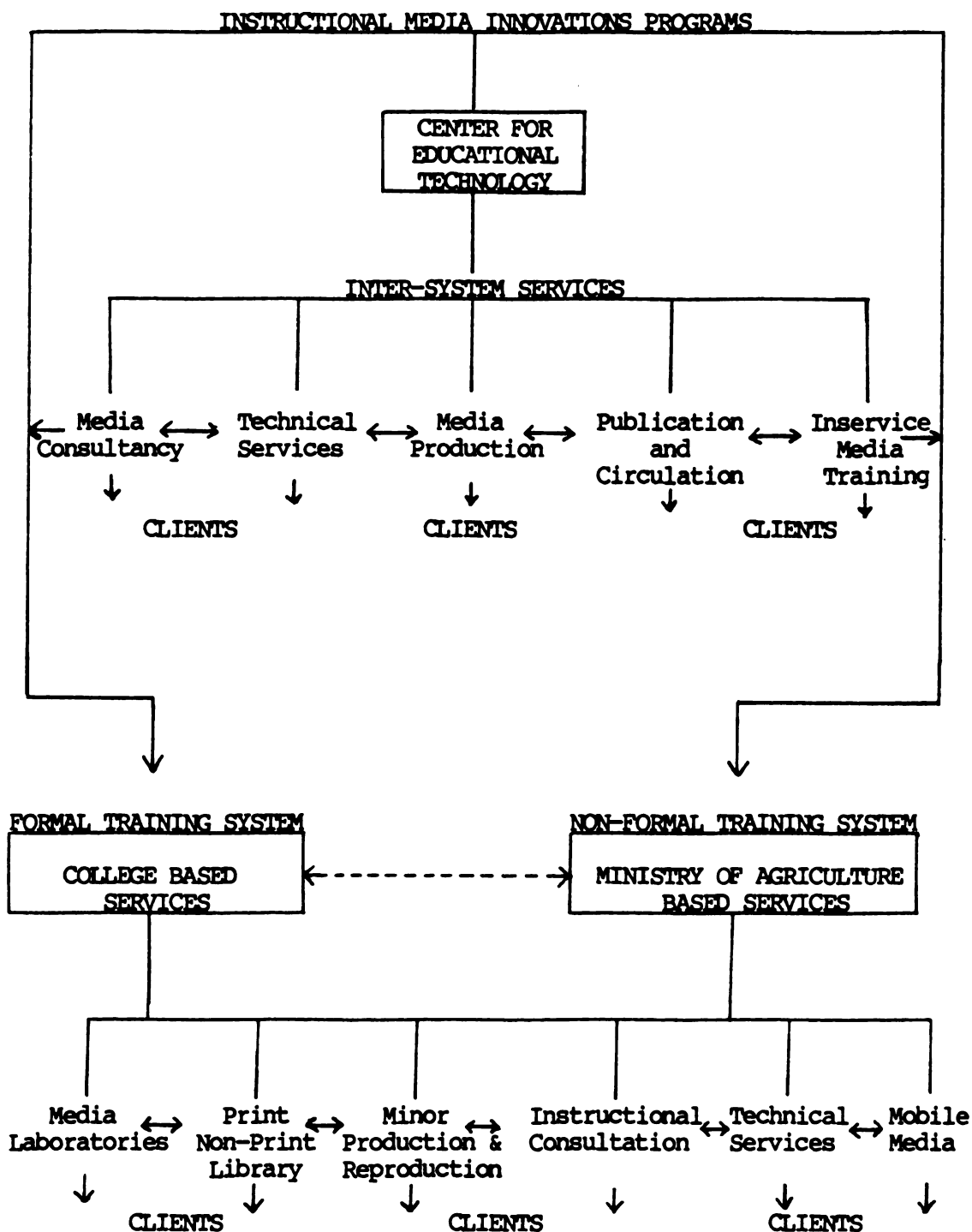


Figure 1: Proposed Model For Instructional Media Innovations Program for Agriculture Training and Development, Bendel State

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