A PROPOSED CURRICULUM FOR
AGRICULTURAL EXTENSION TRAINING IN
GHANA'S AGRICULTURAL COLLEGES

by 6408

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Section I

INTRODUCTION

Ghana, at the time of this study, was classified as a tropical country. Its southern coast extended between latitudes $4\frac{1}{2}^{o}$ at Cape Three Points and $6\frac{1}{2}^{o}$ north in the extreme east, and thus not far from the equator. From the coast, the country extended inland to about 11° north, thus covered a distance of some 420 miles from south to north. The distance across the widest part from east to west was rather less, for it measured about 334 miles between longitudes $1\frac{1}{2}^{o}$ east and $3\frac{1}{2}^{o}$ west. The total area of the country was 92,000 square miles, and the population, according to the last census in 1970, was 8,545,561 of which 70% was in farm families.[1] Rainfall ranged from approximately 100 inches per year in the coastal west and diminished gradually northwards to between 40 and 50 inches per year in the Northern Region. The major departure from this general pattern was in the area lying south and east of a line between Cape Three Points and Ho, where the rainfall decreased to under 30 inches per year. This area, which lay in the region of Accra, the national capital, formed a zone of exceptionally low rainfall along the whole of the Guinea coast.[2] Farming activities were strongly dictated by the rainfall pattern which described a wet season between April and September, and a dry season between October and March.

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[1] Embassy of Ghana, "Ghana's Population on the Increase," Ghana News, Vol. 2 No. 3 (June/July 1970), p. 3.

[2] E. A. Boateng, A Geography of Ghana. (Cambridge: University Printing House, 1966), pp. 3-10 (Adapted).

Climatic influences caused a degree of specialization in farm practices. Major crops were cocoa, rubber, oil palm, coconuts, citrus, coffee, plantains, bananas, cassava, cocoyam, and maize in the southern parts of Ghana, and groundnuts (peanut), guinea corn, rice, millet, yams and cow peas in the north.

Administratively, Ghana was divided into nine regions; and a new national government was elected into office in September 1969, after a military coup d'etat had overthrown the first government in February 1966.

The country's economy had been basically agricultural, with about 22% of its land being arable. Over 90% of the farms were operated by small farmers of subsistence level rather than as commercial farms. About 70% of the country's foreign exchange was earned by the export of agricultural products. At the same time nearly $45 million were expended each year on the importation of commercial foodstuff, mainly maize, wheat, wheaten flour, rice, sugar, and animal products.

Ghana had a reasonable amount of natural resources — enough to almost completely eliminate the necessity for such food imports.[1] But agricultural development required an environment in which the farmer became aware of the existence of alternatives of a wider scope for decision making. The responsibility of change should be recognized and desired by farmers and the necessary knowledge; the skill in applying that knowledge to produce this change should be made available to both the farmers themselves and to extension workers who disseminated the knowledge required by the farmers in order for them to improve their agricultural productivity. What was needed were answers to the questions of why, which, where, and how — under what

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[1] E. A. Boateng, Op. Cit., pp. 63-70.

conditions and within what limits were certain inputs and not others added, or subtracted, or fused with others. If one looked upon agricultural growth as the result of individual changes on millions and millions of farms, then it was difficult to escape the conclusion that such growth was an educational problem.

Significantly, the government recognized that agricultural development was a result of resourcefulness as much as a result of resources, and had, therefore, instituted an Agricultural Extension Division in the Ministry of Agriculture to be responsible for increasing the productivity of farm enterprises.

THE GROWTH OF EXTENSION IN GHANA

To state exactly when agricultural extension work began in Ghana had posed some difficulty. A starting point, partially, depended upon how one defined extension. If it was defined as the spreading of information to farmers without referring to any organization or institution specially responsible for that job, then agricultural extension started in Ghana as early in her history as the peasant farmers learned and adopted new crops or farming practices. Indeed, citrus fruits and avocado pears were spread from the botanical gardens of the Basel Missionary at Aburi as early as the 1850's, and cocoa became widely adopted by subsistence small holders when it was introduced into the country in 1859. The widespread adoption of cocoa after this period, and the increased production of the other crops indicated that an extension function was performed through the interplay of some form of communication and diffusion of information and supplies of planting materials.[1]

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[1]K. B. Dickson, A Historical Geography of Ghana, (Cambridge: University Printing House, 1969), pp. 165-170.

If, on the other hand, extension was defined as an educational service carried out by an agency of government specifically charged with the responsibility of spreading information to and from farmers, then it would be reasonable to state that extension's beginning in Ghana occurred in 1901. It was in this year that the then Department of Agriculture trained its first assistants at Aburi; then in 1907 when the first provincial agricultural station was established at Asuansi in the Central Region.[1]

However, agricultural extension, as a department of the agriculture program, seemed to have begun in 1946. In the early years following 1907, the department's program was mainly regulatory and supply of materials through agricultural instructors employed by the provincial councils. It was in 1946 that some specialization of functions and responsibilities moved extension away from its regulation to education and direct supply of planting materials to farmers.[2]

Thus, agricultural extension could not be defined as a "new" development in Ghana. It became significant as an identifiable organizational unit charged with the operation of agricultural development programs in the rural communities, and, by 1969, it had grown to the point where comparatively large inputs of subject matter specialists, financial and other resources were required. In 1962, the extension services devolved into the hand of the United Ghana Farmers' Cooperative, where inadequately trained personnel and

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[1]Agricultural Training Centre, "General Agriculture" (Unpublished First Year Class notes, 1958).

[2]Ministry of Agriculture, Miscellaneous Information of the Division of General Agriculture--1961/62, (Accra: Ministry of Agriculture, Information and Publication Unit, 1961), p. 62.

alleged corruptions contributed to the depletion of scarce resources and the
credibility of the organization.

It appeared that most of the useful ideas had failed to reach the level
where policy was formed owing to over-centralization of political control and
representation. It was in this area of professional performance and political
representation that brought about the downfall of agricultural extension under
the United Ghana Farmers' Cooperative Council. The extension service was
returned to the Ministry of Agriculture in 1966. It had since been reorganized
to take advantage of national zeal to increase efficiencies in production to
meet food and fiber needs, and to generate foreign exchange for the country.

From this background, it had become immediately apparent that a
well-organized on-going extension service was the only agency of government
best suited to spearhead any national agricultural improvement program. But
the extension service was beset with problems — problems in the development
of leadership and efficiency. The main problems here were development of
staff competent in extension philosophy, principles and methods. Agricultural
skills of the agricultural assistants who performed most of the educational
programs were very small; and the essential professional and technical back-
stopping within the extension service was too limiting for the job at hand.

There was a growing response to the government's educational policies
which increased the number and enrollments of elementary and secondary schools
in the country. This fee-free and compulsory elementary school education had
and continued to increase the youths' receptivity to change, and this change
seemed to withdraw them from the traditions of their forebears — life of
living on the farm — for clerical jobs in urban centers and cities. Perhaps,
the low returns to the peasant farmer's toils in a system characterized by
hand tools and rural poverty offered no inducement to the youth to return to

the land to expand production. Consequently, there was no perceptible response to the country's needs for increment in agricultural supplies for the factories, for export, and for feeding the growing population. The consequence of this situation was that the extension service's clientele remained largely illiterate. This tended to limit the types of extension methods and techniques that could be used for maximal efficiency and profitability. The primary need to improve the profitability of agricultural production and the efficiency of those engaged in farming, therefore, underscored the importance of agricultural extension education at the farm level and for those employed by government to assist the farmer in making this change.

<center>SIGNIFICANCE OF THE PROBLEM</center>

Essentially, the Training and Manpower Division of the Ministry of Agriculture and the universities had attempted to provide a solution to the critical lack of experience and capability in various divisions of the Ministry of Agriculture. Very capable and experienced officers occupied top administrative positions within the Ministry, but the abrupt proliferation of the Ministry and continued growth in activities had left the Ministry short of adequately trained, experienced officers and unable to supply the necessary close supervision needed to satisfy the requirements of the Ministry or training needs of the staff. Felton,[1] analyzing the gross dimensions of the agricultural education problems of the country, commented that the food and fiber economy of Ghana still had its roots deeply implanted in traditional practices and was surrounded by value systems and customs providing a most

[1]M. N. Felton, Evaluation of Agricultural Education in Ghana, with Particular Reference to Ministry of Agriculture Colleges and Farm Institutes and the Associated USAID Technical Assistance Program (unpublished report, Colorado State University/AID/afr-447, 1968), p. 3.

inhospitable climate for modern agricultural technology. In fact, most authorities felt that the traditional farming system would have to be replaced, rather than improved. Thus, the country was faced with introducing totally new concepts of production and training people in procedures difficult to effectively relate to the farmers' and students' previous experience. Indeed, in the educational, training, and extension programs, attempts were being made to equip rural people with the knowledge, the understanding and the skills that would enable them to perform in a modern system of agriculture. Not only did lack of modern example of viable production systems make it difficult to design fully relevant educational programs; it also introduced a strong academic element into the educational and training exercises which in practice should be heavily slanted toward practical application. The lack of this recognized vehicle or framework to which acquired knowledge and skills could be related presented a problem to extension education, as well as many aspects of agricultural development.

Thus, handicapped in visualizing and characterizing the educational experiences needed by the people both in the agricultural colleges and in the extension service, the following facts brought more clearly into focus the significance of the problem at the time of the study:

1. The extension service still employed agricultural supervisors and field assistants with sub-technical competencies to conduct extension activities at sub-district and local levels.

2. There had been no formal effort made to identify the level and type of skills needed by the agricultural assistant in training in relation to his subsequent activities in the extension service upon graduation.

3. When the research institutions were expanded in the early 1960's, the government recognized the need for an organization to disseminate

information of the new materials and techniques to the farming communities. However, a greatly expanded Ministry of Agriculture and the still unsatisfied demand for extension workers resulted.

4. Extension skills of the agricultural assistant were almost insignificant; and essential professional and technical backstopping internal to the extension division was spaced widely and thinly on the basis of complete administrative area coverage.

5. It was essential to motivate the farmer to change the knowledge, skills and attitudes which he had acquired through time proven methods only for modern agricultural practices.

Hence, to meet the multiplicity of competing necessities for increasing agricultural productivity and promoting a more rewarding life, rural people will depend on the development of a core of well trained extension workers at the agricultural colleges.

Objectives

The general objective of this study was to establish a basis for understanding the development of a curriculum that covered the knowledge, skills, and attitudes or values that were necessary to the needs of agricultural extension training in Ghana. Specifically, the development of such subject matter suitably structured and geared to the background of the country's agriculture and intellectual level of the students in the agricultural colleges constituted a major goal of this study. The writer did not intend to develop courses as entirely new disciplines. This would neither be necessary nor desirable in view of the fact that it was not possible for the writer to survey the actual situation of extension educational needs of the country for this purpose. However, this study would lean heavily on the rich

store of research and written materials that had been fashioned for various levels of extension training in the United States, and, by synthesis of appropriate parts, create a training pattern for extension training in Ghana.

Scope and Limitation

This study was essentially descriptive and exploratory. It was neither meant to test any hypothesis nor was it intended to evaluate a particular program of the Ministry of Agriculture of any of its divisions. The focus was largely on identifying information and concepts relevant to the training needs of agricultural assistants at the agricultural college level from the comparative extension education literature; and, on the basis of such information, propose a curriculum for improving the extension training program. This information and concepts would merely be a few of many different targets and strategies which an agricultural college could encompass. The writer, however, intended to move rapidly from this beginning effort to the broader area of developing curricula for national extension training needs based on the critical incidents of the extension workers when the writer returned to his post in the Ghana Ministry of Agriculture.

DEFINITION OF TERMS

A standard terminology was adopted and, as far as possible, maintained throughout this study. The following terms had been employed to fit the context according to popular usage in the Ghana government circles.

Ministry Organizations:

MINISTRY OF AGRICULTURE: A Ministry in the government of Ghana responsible for agricultural development including extension programs, and the

non-degree training of staff at the agricultural colleges and farmers at the Farm Institutes.

DIVISION: would refer to a major administrative unit of a ministry, for example, Training and Manpower Division, or Animal Husbandry Division.

Staff Designations:

OFFICER: would indicate the highest staffing ranks. The incumbents of officer positions usually had one or more university degrees or had achieved the rank as a result of considerable job experience. Examples were Agricultural Officer, Agricultural Training Officer, or Animal Husbandry Officer. Officers might also be designated "Chief" as in Chief Agricultural Training Officer, or Chief Agricultural Officer, etc.; "Deputy Chief" as in Deputy Chief Extension Officer; "Principal" as in Principal Agricultural Officer, etc.; "Senior" as in Senior Agricultural Officer, or Senior Animal Husbandry Officer, etc. These prefixes designated ranks and/or responsibilities at higher levels than Agricultural Officer. Senior Agricultural Officers and Agricultural Officers were generally the administrators in charge of a district or region.

SENIOR TECHNICAL OFFICER: designated the senior intermediate level of staff. The incumbents of Senior Technical Officer positions usually had completed post-secondary three-year agricultural college course, had had at least a two-year university training, or had achieved the rank as a result of commensurate job experience. Senior Technical Officers might also be designated as grade one or two, with grade one marking a position or higher rank and/or responsibility. These officers were usually responsible to the Agricultural Officers and served as

supervisors of extension activities within a district, or served in sub-professional capacities in other divisions.

AGRICULTURAL ASSISTANT: designated the junior intermediate level staff for those positions which required two to three years of training in an agricultural college, or incumbents had achieved a commensurate work experience. An Agricultural Assistant might be designated a "Senior" to denote higher rank and/or responsibility within the Assistant cadre. It was the Agricultural Assistant who carried out most of the Ministry's policies at the local level, and provided the principal contact between the government and the farmers in the rural communities.

FIELD ASSISTANT: designated non-trained junior officers. An incumbent to this position should have had at least five years' experience as an Agricultural Supervisor. Field Assistants might be designated grade one or two with grade one being the higher rank and/or responsibility. The Field Assistant marked the lowest rank in the junior staff cadre.

AGRICULTURAL SUPERVISOR: designated a non-trained or relatively untrained assistant. Incumbents usually started as laborers and were given about two weeks ad hoc course of training after about 3 years' service. Agricultural supervisors were generally responsible to agricultural assistants.

Institutions:

AGRICULTURAL COLLEGE: referred to schools which had been established by the Ministry of Agriculture to provide a three-year education and training required for the Agricultural Assistant grade. The qualifications for acceptance of candidates were:

1. General Certificate of Education or West African School Certificate (High School diploma) with passes in English and two or three science subjects; or

2. Five years or more satisfactory experience as Field Assistant; or

3. A Certificate (three or four years' technical education) from City and Guild Mechanics or Agricultural Engineering programs.

There were three agricultural colleges in Ghana at the time of this report.

FARM INSTITUTE: referred to an institution organized by the Ministry of Agriculture to provide one year agricultural training for school leavers who were desirous of making farming their career. A farm institute also provided short-term and week-end courses for farmers. The training included both classroom instruction and practical field experience with most emphasis on the latter. The Ministry of Agriculture had seven such institutes in the country.

Section II

MANPOWER TRAINING IN AGRICULTURE IN GHANA

Section I dealt briefly with some geographic and economic aspects of Ghana and the growth of agricultural extension in the country. The significance of the problem for this study was also discussed, and the objectives, scope and limitations, and the terms employed were defined. This section discusses the manpower training needs in agriculture in Ghana, and carries a review of some of the studies on training needs and methods used in the determination of training needs in extension training.

Agriculture in Ghana was faced, primarily, with the task of introducing appropriate levels of technology and expertise to help the rural masses move and emerge from frontier isolation. The training of agricultural officers and senior technical officers had been in the domain of the University of Ghana, Legon, and Kumasi University of Science and Technology since these institutions were established in 1948 and 1952 respectively. Training at the Agricultural Assistant level was carried out by the Ministry of Agriculture in the Agricultural Colleges at Kwadaso-Kumasi (Ashanti Region), Nyankpala (Northern Region), and Ohawu (Volta Region). In addition to these colleges, the Ministry of Agriculture had also ambitiously developed seven Farm Institutes with training programs for helping school leavers to settle on farms. Two such institutes were located in the Volta Region and one each in the Central, Ashanti, Brong Ahafo, and Upper Regions.

The Agricultural College at Kwadaso was the sole producer of
Agricultural Assistants from 1923[1] until the Agricultural Training Centre at
Nyankpala and the Ohawu Farm Mechanization School were reorganized for staff
training in 1966.

The expansion in facilities was intended to solve the inadequacies in
the staffing situation. Although the expansion in the overall activities of
the Ministry of Agriculture had multiplied several times by the end of 1966,
Johnson[2] commented that "future agricultural manpower requirements for skilled
manpower to meet minimal needs of Extension, Research, and University teach-
ing are in jeopardy." He stated further that the two agricultural
universities had beautiful campuses. They had buildings suitable for needs
well into the future; however, their enrollment was so disastrously low. If
facilities of both Kumasi university and Legon were combined and if student
enrollment were tripled, Ghana's needs could not be met as far as an effective
country-wide production in the next five years was concerned. This viewpoint
on the attrition of the staffing position was supported by a manpower survey
of the Ministry of Agriculture which identified 1,124 vacancies for people

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[1]The initial date of establishment of personnel training in the
agricultural assistant cadre was 1903 when the first trainees were accepted at
the Aburi Botanical Gardens. Training was discontinued in 1909. In 1923, the
school was re-established and named "Cadbury Hall" after Cadbury Brothers
(then principal buyers of Ghana's cocoa), who provided the physical plant
facilities in Kumasi. The school was moved to its present site at Kwadaso in
1952 when the Ministry realized that the facilities at Cadbury Hall could no
longer provide for the increasing demands of agricultural training in the
country. The school was known as "Agricultural Training Centre" from 1952
until 1968 when the Ministry decided to rename its staff training institutions
"Agricultural Colleges." (Sources: (1) Unpublished Syllabus of the Agricul-
tural Training Centre, Kwadaso-Kumasi, 1965, p. 2. (2) Letter by the Chief
Agricultural Training Officer, titled "Rationalisation of The Names of The
Schools of The Training And Manpower Division, Ministry of Agriculture, Accra,
Nov. 15, 1968).

[2]Ray G. Johnson, "Ghana Agricultural Extension Organization." (Mimeo.
report, Accra: Ministry of Agriculture, Inf. and Publication Unit, Nov. 1966),
p. 26.

with formal training in agriculture, nearly 55% of its approved establishment of 2,038 in this category in 1966. In 1968, 818 vacancies were listed at this level, now expanded to 2,119.[1] There were about 200 sub-districts to be manned by extension staff assistants at the time of this study, and more districts would likely be created as need arose.

It could be accepted that the success of a development program was largely dependent upon the competence and the educational background of the staff associated with it. Similarly, the method of developing and raising the farm production and, ultimately, the level of living of farmers, could be classified as an educational process which must be considered a crucial factor in the training of the extension personnel. Consequently, the growing numbers of staff required to assist the farmer in acquiring the knowledge and essential skills needed in modern agriculture — staff who will be willing to live with the farmer in his rural community and gain the confidence required to establish the essential communication bridge between the farmer and the government — must be supplied by the Agricultural Colleges.

GENERAL TRAINING NEEDS

While the approach in the past had been one of proliferating the levels, types and kinds of educational activities in response to specific training needs, it was the opinion of the writer that Ghana could not afford to continue such proliferation. A stage had been reached where a more conscious and conscientious effort could be made to integrate the institutional and curriculum components of the Agricultural Colleges into a system

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[1]Ministry of Agriculture, Ghana. Staff List, Manpower Reports . (Accra, Ghana: Training and Manpower Division), 1966-1968.

which (1) provided for greater flexibility in response to changing demands for different levels and kinds of skills; (2) facilitated mobility of trained manpower particularly with regard to improving the ability to transfer agricultural skills from the agricultural colleges to the farm community level; (3) established a continuity of purpose that enabled agricultural extension workers to advance in their training within limits of their abilities, and as compatible with requirements for trained manpower at various levels of skills development as possible.

A study meant to establish a basis for training needs should similarly establish a standard for the terms "need" and training." Since these terms would occur frequently in this study, it would be necessary to review their pertinent meanings at this stage.

The Nature of "Need"

"Needs," Barnett[1] contended, were relative to time and place and were highly particularistic. He posited that the concept of need had application only with reference to the individual. A need was a psychological state which could have a locus only in the mind of the individual. It had, moreover, an intellectual personal quality about it. He stated further that "it is suffused with feeling so that there is a keen appreciation of self-involvement in it. This, in fact, is what gives a need its motivational force."

Leagans[2] had asserted that changes that were important to people were those which helped them meet their needs for biological, economic, social,

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[1]H. G. Barnett, Innovation: The Basis of Cultural Change. (New York: McGraw-Hill Book Co. Inc., 1953), p. 98.

[2]J. Paul Leagans, "A Concept of Needs," Journal of Cooperative Extension, Vol. 11, No. 2 (Summer 1964), pp. 89-96.

aesthetic, or moral well-being. He set forth six implicit implications of the meaning of the term "need" to build a functional concept:

(1) Needs represent an imbalance, lack of adjustment, or gap between the present situation or status quo and a new or changed set of conditions assumed to be more desirable.

(2) People's needs are identified by finding the actual, the possible, and the valuable through situation analysis.

(3) People have to recognize the gap between the actual, the possible, and the desirable and place value on attaining the desirable before they become motivated to change.

(4) Human behavior and the status of things can only be judged by some standard, and that standard can only be derived from a concept of what is desirable to attain.

(5) The needs of people may be classified according to different forms and categories.

(6) Final decisions about the selection or rejection of needs to include in a program should be made with great care.

Tyler[1] also regarded "need" as a gap or difference revealed when comparing the present conditions of the learner with some desirable standard of acceptable norms or some standard of philosophic value and the actual status. He considered studies that identified these gaps as necessary to provide a basis for the selection of objectives upon which primary emphasis in training programs should be put. Frutchey[2] emphasized that the needs of people were generally of two kinds; those of which they were aware and those with which they were unaware. These had been referred to as "felt" and "unfelt" needs. When needs were recognized people realized there was a gap between where they were and where they would want to be. The need, therefore,

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[1] R. W. Tyler, Basic Principles of Curriculum and Instruction. (Chicago: University of Chicago Press, 1969), pp. 7-8.

[2] F. P. Frutchey, "The Learning-Teaching Process," The Cooperative Extension Service. (Englewood Cliffs, N. J., Prentice Hall Inc., 1966), p. 56.

became a motivation to action. These concepts had been illustrated as follows:

<u>What Ought to Be</u> - Desired Situation

GAP=NEED - Disparity, Difference, Requirement, or Vacancy

What Is - Present or Actual Situation

A NEED[1]

Maslow[2] presented the problem of "needs" in a hierarchical order of lower needs to higher needs. He proposed the following as the basic needs of men:

(1) PSYCHOLOGICAL NEEDS, having to do with the actual needs or lack in the body such as hunger, thirst, etc.

(2) SAFETY NEEDS which have to do with safety.

(3) AFFECTION NEEDS which have to do with belongingness, love, a place among one's peers.

(4) ESTEEM NEEDS which have to do with value, success, self-respect, recognition, etc.

(5) NEED FOR SELF-ACTUALIZATION which has to do with the desire for self fulfillment.

(6) COGNITIVE NEEDS which have to do with the desire to know, explain, and understand; and has a part in construction of values.

Maslow's hierarchy began with physiological needs. The physical needs must be thoroughly satisfied before the psychological needs could emerge in

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[1]F. P. Frutchey, <u>Op. Cit.</u>, p. 92; and Leagans , <u>loc. cit.</u>, Adapted.

[2]A. H. Maslow, <u>Motivation and Personality.</u> (New York: Harper & Bros., 1954), pp. 80-92.

the development of the individual. Desires in human beings, according to him, were a means to an end rather than ends in themselves, for they set the upper limits to the gap that represented "needs."

The concern of the extension educator in the development of training programs relative to the needs of his students could emerge under the spot- lights of these elements of "needs." Perhaps it need be added that the future of people and their conditions would be influenced by the decisions reached about their needs and the physical and human resources that would have to be committed in helping meet their needs. It would be a mistake to believe that "needs" were wholly individual in attachment, for some needs might be common among particular groups in a given time and place. The nature and extent of needs would also depend upon the nature of disparity against which individuals strove to make improvements.

Since effective extension education needs be an intentional effort, carefully designed to fulfill certain specifically predetermined and presum- ably important needs, the needs of the extension workers in Ghana would depend on their conception of the desirable conditions and how the existing conditions differed from them.

The Nature of "Training"

Matthews[1] in developing methods for determining the training needs of county agents, contended that all activities aimed at improving the ability of the county agent to do his work, including acquiring information, developing abilities and fostering attitudes which resulted in greater professional

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[1] J. L. Matthews, "Methods for Determining the Training Needs of County Agents as a Basis for Planning Training Programs." (Unpublished Ph. D. Thesis, University of Chicago, 1950), p. 3.

competence, constituted "training." Indeed training was termed one of the most important factors that influence the effectiveness of workers in any kind of employment. Several definitions had been given to the term, but each definition had been designed to reflect the objectives of the organization that instituted the training program. Halsey,[1] however, called training "the process of aiding employees to gain effectiveness in their present or future work through development of appropriate habits of thought, action, skills, knowledge, and attitudes." DePhillips, et al.,[2] also stated that training was the process by which an organization sought through a planned, coordinated and continuous manner to develop in all employees those understandings, skills, and attitudes that would maximize an individual's present and future efficiency and the effectiveness of the over-all operation of the organization. McGhee and Thayer[3] had defined "training" as "the formal procedure which a company uses to facilitate employees' learning so that their resultant behavior contributes to the attainment of the company's goals and objectives."

Implied in these statements were the facts that "training" (1) involved the improvement of skills, (2) was meant to aid employees settle to the demands of the organization and to change as part of the organization, and (3) to be justifiable, must contribute to the efficiency of the job. It had also been affirmed that agricultural extension work was essentially an educational process. Thus, the broad concepts of developing skills, knowledge, and attitudes would be preferable and should become a systemized, orderly

[1]G. D. Halsey, _Training Employees._ (New York: Harper Bros, 1949), p. 2.

[2]Frank DePhillips, W. Berliner, and James Cribben, _Management of Training Programs._ (Homewood, Ill.: Richard Irwin Inc., 1960), p. 24.

[3]William McGhee and P. W. Thayer, _Training in Business and Industry._ (New York: Wiley & Sons Inc., 1961), p. 3.

procedure, constructively applied to personnel improvement and to solution of organizational problems and achievement of goals. Mosher[1] summarized the definition of "training" aptly when he stated "by training we mean the process of developing each person's ability to carry on a particular activity successfully; that activity may be the person's occupation within which he is paid for the services he performs, or it may be an activity apart from his occupation in private life."

REVIEW OF STUDIES ON TRAINING NEEDS

This section was intended to deal with a summary of literature on the objectives and subject matter on extension training in the Agricultural Colleges in Ghana. A thorough search for literature relating to the problem was not fruitful because there had been no work done in this area in the country. However, the literature was replete with information on various facets of extension training and education in the United States and other countries. Therefore, in line with Savile's observation that "though people and conditions may vary widely, the basic principles of all extension remain the same...,"[2] the writer proposed to dwell heavily on some of those studies as guidelines for this study.

The process of extension training program development had a major topic of discussion and research conducted at various levels of the Cooperative Extension Service. These covered the role of the educator, job analysis, and

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[1]Arthur T. Mosher, "Implications of the 'Development' Setting and Training," Training for the 70's: Proceedings of the 12th Conference on Foreign Agricultural Training Affairs. (Washington, D. C., Oct. 6-8, 1969), p. 53.

[2]A. H. Savile, Extension in Rural Communities, (London: Oxford University Press, 1965), p. 5.

specific needs of county agents. It was not the aim of the writer to cite all the literature in this field. Rather, a brief survey of the objectives of extension training programs, selected results of previous studies relative to training needs, and methods used in determining training needs of extension workers would be the major concern of this review.

The real basis for emphasis on the education of the agricultural assistants who in turn trained the farmer was simply a function of a democratic society as illustrated by the following statement by Dewey:[1]

> The devotion of democracy to education is familiar fact. The superficial explanation is that a government resting upon popular sufferage cannot be successful unless those who obey their governors are educated. Since a democratic society repudiates the principles of external authority, it must find a substitute in voluntary disposition and interest: these can be created only by education.

The concern of the agricultural colleges in this area of agricultural development could be prodigious; but a start could be made by testing out and adapting some of the more relevant research findings and proposals for agricultural extension training.

The Joint Committee on Extension Programs, Policies, and Goals recommended objectives for the development of educational programs for the training of extension workers. These objectives were broad in scope and were amply general to be applicable to the education of extension workers regardless of State, type of work, sex, or race. They were aimed at preparing extension workers who:

1. Are basically grounded in the physical and social sciences of significance to life in rural America.

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[1]John Dewey, _Democracy and Education_, (New York: MacMillan & Co., 1961), p. 87.

2. Are familiar with reliable sources of important information.

3. Understand the background, philosophy, objectives, policies, and organizations of the extension system.

4. Are skillful in applying principles of psychology and education to extension teaching, supervision and administration.

5. Can organize rural people and stimulate leadership among them.

6. Understand the processes by which rural people cooperating can analyze local problems, arrive at potentially sound solutions, and develop a county extension program.

7. Know the problems and procedures of adult and out-of-school youth education.

8. Are skillful in organizing, interpreting, and presenting basic economic, social, technical and scientific data, and their implications in rural life.

9. Understanding the techniques and processes of evaluating the effectiveness of extension programs.[1]

Among the earliest studies on training needs was that of Crosby.[2] He concluded from his survey of 40 Extension Directors and 1,414 county agents that:

1. The primary function of county agents is educational in nature.

2. The directors of extension believe that county agents need professional training and in specifying study needs in this connection have mentioned professional studies in education more frequently than any other.

3. Ninety percent of county agents who expressed opinions believe in specialized training for their positions and gave psychological subjects in education a large part in the program.

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[1]The Joint Committee Report on Extension Programs, Policies, & Goals. U. S. D. A. & Association of Land-Grant Colleges, (Washington, D. C., U. S. Government Printing Office, 1948), pp. 43-44.

[2]Dick J. Crosby, "The Training of Extension Workers," Proceedings of the 36th Annual Convention of the Land-Grant Colleges & Universities, (Washington, D. C., Nov. 21-23, 1922), pp. 223-230.

While it was recognized that each person had specific training needs that were more or less unique to the individual, there were some common needs among groups of individuals. The National Task Force on Cooperative Extension In-Service Training[1] considered nine areas of competency important for all extension workers:

1. The Cooperative Extension Service
   a. Extension objectives, organization, and policies
   b. Policy making
   c. Job operation and standards, personnel evaluation
   d. Office management, business procedures
   e. Responsibilities and qualifications of the extension personnel at all levels within the organization
   f. Relationships of segments of the extension organization to other segments
   g. Forces which caused Extension Service to come into being; unique features of the extension program

2. Human Development
   a. Developmental processes of people, behavior patterns
   b. Group dynamics, group interactions
   c. Principles and techniques of effective counseling
   d. Understandings and skills needed in human relations

3. Program Development
   a. Program determination; how to determine, analyze, and evaluate situations; how to identify, clarify, and give priority to problems; how to determine and state objectives clearly
   b. Program execution; how to organize and carry out plan of action (plan of work, teaching methods, management of time and energy)
   c. Program evaluation; how to measure results of teaching efforts in terms of stated objectives
   d. The role of the extension worker, use of lay leaders and committees, and the involvement of people

4. Educational Process
   a. Principles of learning
   b. Teaching-learning process — methods and techniques
   c. Educational philosophy
   d. Adult education programs

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[1] Recommendations of the National Task Force on Cooperative Extension Inservice Training. Federal Extension Training Branch, (Washington, D. C.) pp. 13-14 nd.

       e. How to motivate people
       f. Decision making

5. Social Systems
    a. Basic reference groups (family, community, school, church, clubs)
    b. Power structure clique (control) groups
    c. How to identify local culture (social, economic, race, and other status groups)
    d. How to identify and develop leaders; what types of leaders are useful in relation to different kinds of groups, both formal and informal
    e. How to involve people in identifying their individual common and related needs in their natural environments
    f. Group process, social action

6. Communication
    a. Language and semantics
    b. Oral communication (speaking, counseling, face-to-face contacts)
    c. Written communication (letters, reports, articles)
    d. Mass media methods and techniques (radio, television, news releases, news letters, exhibits, circular letters)
    e. Individual and group contacts — methods and techniques
    f. Relationship of thinking to communication
    g. Analysis and interpretation of data
    h. Responsibility for accuracy in communication

7. Philosophy and Values
    a. The nature of culture; values as part of cultural heritage
    b. Value orientations of low-income people; value orientation differences between urban and rural people
    c. Basic value premises of our American heritage, value premises in other areas of the world
    d. Interpreting United States Cooperative Extension Service in world wide extension programs
    e. Citizenship and public responsibility
    f. Philosophy of education — its nature and utility

8. Technology
    a. Up-to-date information in subject matter fields pertinent to the job
    b. Identification and effective use of resources (specialists and others)
    c. How to interpret and use research findings
    d. Methods and techniques of disseminating subject matter

9. Research and Evaluation
    a. Action research — measuring the effectiveness of on-going programs
    b. Value of experimental approach (pilot projects)

    c. Methods and techniques of both progress and end results
       in relation to program objectives

    d. Methods of assisting people in the evaluation of their
       efforts

As a basis for planning a state-wide program of training extension

personnel in Wisconsin, Clark[1] reported that the following functional areas

ranked highly among all age groups:

LEADERSHIP. How to develop one's own ability, method and
    techniques of selecting leaders, training, group dynamics.

PROGRAM PLANNING. How to involve people in need determination,
    organization of program planning committees, program plan-
    ning procedures.

CONDUCTING THE PROGRAM. Basic principles of communication,
    principles of adult teaching, effective use of mass media
    methods.

PUBLIC AFFAIRS. A knowledge of public affairs issues and
    problems; methods and techniques of dealing with contro-
    versial issues.

FAMILY LIVING AND YOUTH DEVELOPMENT. Individual values, needs,
    and attitudes and their influence on family goals and
    decisions

FARM AND HOME MANAGEMENT. Principles and procedures.

EVALUATION. Building evaluation procedures into the program,
    principles and procedures of extension evaluation, develop-
    ing behavioral objectives.

In following the subject preference for extension training in Ohio,

Mount[2] also mapped out these ten areas:

1. Extension Education — psychology and principles of
   education

2. Agricultural journalism

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[1]H. E. Clark, "An Analysis of the Training Needs of Wisconsin County
Extension Personnel." Unpublished Ph. D. Thesis. (University of Wisconsin,
1960), pp. 54-165.

[2]John T. Mount, "Training for Extension Workers in Agriculture."
Unpublished Master's Thesis. (University of Wisconsin, 1949), p. 95.

3. Speech — group thinking and conference leadership

4. Organization of soil and crop management systems

5. Plant diseases and control

6. Advanced farm management

7. Extension evaluation

8. Principles of adult education

9. Planning rural community education programs

10. Rural youth and social living

The training needs of Manitoba Extension Service field personnel in the two general areas of technical subject matter and extension organization and operation were studied by Smith.[1] He identified these subject matter areas with technical agriculture: Agricultural economics, farm buildings and machinery, animal science, soils, horticulture, and field crops. In technical home economics, Smith studied the subject matter area of home management, family living, foods, and clothing. In the area of extension organization and operation, the subject matter areas Smith identified were: program development, communications, 4-H and adult organizations, and extension organization and policies.

An attempt had been made to identify the training needs of extension agents in Western Nigeria. In this study, Williams[2] classified the functions of the extension agent into five major categories:

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[1]Keith R. Smith, "An Inventory of Professional Training Needs of Extension Service Field Staff in Manitoba," (Unpublished Master's Thesis, University of Wisconsin, Madison, 1959), p. 108.

[2]S. K. T. Williams, "Identification of Training Needs of Extension Workers in Western Nigeria as a Basis for Developing a College Training Curriculum," (Unpublished Ph. D. Thesis, Cornell University, Ithaca, N. Y., 1967), p. 124.

1. Creative appropriate teaching-learning situations for clientele.

2. Planning, organizing and implementing extension programs and projects.

3. Demonstrating interpersonal relationships with staff members within agency and with outside agencies.

4. Working with groups of clientele.

5. Conducting and organizing training programs for co-workers and clientele.

It was obvious from the study that an important step in building a program that effectively supplied the background for accomplishing these functions was completely linked with the educational needs of the extension workers. A great deal had been accomplished in this area, and Williams concluded that for effective performance of his duties, the extension worker in Western Nigeria required training in the social and behavioral sciences in addition to technical agriculture. He also identified these specific training needs among the respondents: (a) teaching-learning theory, (b) program planning, (c) social systems, leadership and social action process, (d) planned change and change process, (e) principles of human relations, (f) theory of motivation, and (g) communication.[1]

In proposing strategies for the improvement of agricultural extension work and non-degree agricultural training in Nigeria, Kincaid[2] recommended that:

> ... more deliberate attention be devoted to a determination
> of what is expected of a majority of trainees upon their

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[1]S. K. T. Williams, loc. cit.

[2]James M. Kincaid, Jr., Strategies for the Improvement of Agricultural Extension Work and Non-Degree Agricultural Training in Nigeria. Consortium for the Study of Nigerian Rural Development, (East Lansing, Mich., Michigan State University, Sept. 1968), p. 141.

completion of a particular training curriculum. Once this is fully specified, the curricula and course syllabi should be planned so that the basic skill requirements for the work to be done are met. Further planning should provide for the implementation of specialized in-service training and/or short courses after the trainee has assumed his particular job responsibilities. The specialized training would be designed to meet special requirements for skills by limited numbers of persons. In addition, there should be a constant appraisal of what is being taught in each course to ensure that relevance is being maintained.

Leagans[1] on the desirability of training, stated that "what is known to-day about professional training all points to the necessary prerequisite to training." He suggested that professional training in extension must aim at the following:

1. Knowledge and understanding of subject matter

2. Understanding extension and its educational role

3. Skill in human relations

4. Ability to plan

5. Ability to clarify objectives

6. Ability to organize

7. Communication skill

8. Skill in relating principle to practice

9. Skill at inquiry

10. Ability to evaluate

Frutchey[2] also recognized the following as additional disciplines relevant to the extension worker's training:

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[1] J. P. Leagans, "Give Your Fitness A Check Up," *Extension Service Review*, Vol. 29, No. 1 (Jan. 1958), p. 6.

[2] Fred P. Frutchey, "Differential Characteristics of the Most Effective and Less Effective Teachers," A Summary Report of Nine Studies Made for the Office of Naval Research, Department of the Navy (Washington, D. C., Federal Extension Service, 1953).

1. Additional work in the social science area

2. Continued efforts in agricultural subject matter

3. Organization of people

4. Formulation, classifying and stating objectives

5. Program procedures

6. Organization and administration of personnel

7. Communication

8. Understanding people and human behavior

9. Human relations

And so, at the most general level, the possible means of coping with the situation in the most capable manner seemed to be through combining these principles with the recommendations of Felton[1] concerning the development of curriculum in the agricultural colleges that:

1. the basic training in the agricultural sciences build upon the secondary school experiences;

2. the economic and management concepts involved in production agriculture;

3. instruction in the skills and procedures attendant to the student's expected role in the ministry; and

4. a first hand acquaintance with the application and use of the tools and systems of modern agriculture.

Although general curriculum improvement in the agricultural colleges was aimed at the critical need for highly competent extension workers, one approach at the training problem lay in retraining extension workers in service to handle new methods and technological changes, and introduce them to new materials and patterns. There was considerable literature concerned with

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[1]M. W. Felton, Op. Cit., p. 15.

that task of in-service training. Brunner and Yang[1] commented that "the rapid advances in knowledge as a result of and the expanding educational program of extension alike, make in-service training an imperative activity. The aim of such training is, therefore, not only to increase an employee's proficiency but also to keep him up-to-date as to content and method. Extension is an adult education agency which takes large quantities of its own medicine." But the major reasons for a strong in-service training were advanced by Collins[2] as being to (a) remove deficiencies in preservice and previous in-service preparations, and (b) the continuance of the growth of extension personnel.

In this connection, the National Task Force's definition could be very instructive:

> Inservice training is that phase of organized learning experience which is provided employees by the agency throughout the employment period. It is training directed towards developing understanding of job operations and standards, agency philosophy, policies and procedures, as well as current technical research findings.[3]

Bajaj[4] assessed the felt training needs of extension personnel in Oklahoma and suggested seven major areas to be included in an in-service training program:

1. TECHNICAL SUBJECT MATTER - farm management, control of insects and pests of crops, fertilizers

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[1]Edmund S. de Brunner and E. H. Pao Yang, Rural America and the Extension Service (New York: Bureau of Publications, Columbia University, 1949), p. 138.

[2]Mary L. Collins, "In-service Education of Extension Workers," Federal Extension Service (Washington, D. C., U. S. Govt. Printing Office, 1954), p. 1.

[3]The National Task Force, Op. Cit., p. 1.

[4]D. R. Bajaj, "Determining the Needs of the Agricultural County Agents in Oklahoma as a Basis for Planning Their Inservice Training Programs." (Unpublished Master's Thesis, Oklahoma State Univ., Stillwater, 1962), passim.

2. UNDERSTANDING EXTENSION PROGRAM - understanding rural communities, understanding laws related to extension programs, understanding aims, history, and philosophy of extension program

3. PLANNING, ORGANIZING, AND DETERMINING OBJECTIVES - organizing 4-H programs, organizing training programs, planning and conducting meetings

4. COMMUNICATION - teaching by local leaders, radio, and lecture meetings

5. EDUCATIONAL PROCESS AND TEACHING METHODS - creating people's interest and initiative in programs, creating and improving local leadership, motivation

6. PUBLIC DEALINGS - relationships with commercial firms, county commissioners, rural organizations — Farm Bureau, Farm Union, etc.

7. EVALUATION - stating reliable questions to obtain unbiased data, evaluating extension work, evaluating appropriate methods of obtaining information from the farmers

In Colorado, Eckard[1] surveyed the felt training needs of extension personnel and tabulated those competencies in which training was urgently needed:

TECHNOLOGY - up-to-date information on subject matter, developing and carrying out new extension programs, identifying, clarifying and giving priority to problem situations. Research and program evaluation, human development, understanding and skill in human relations

COMMUNICATION - written

EDUCATIONAL PROCESS - motivating people

ORGANIZATION AND ADMINISTRATION OF THE STATE EXTENSION SERVICE - approved business procedures, and office management

PHILOSOPHY AND VALUES - creativity of worker

SOCIAL SYSTEMS - involving people in identifying their common needs

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[1]M. L. Eckard, "Inservice Training for Colorado Extension Workers." (Unpublished Master's Report, Colorado State Univ., Fort Collins, 1962), passim.

By implication, at least, there was not much difference between the general training needs and the needs for in-service training programs; the two were closely linked. Thus, the recognition of such necessary linkages might itself have been the motivation for the various methods used for determining training needs.

Methods of Determining Training Needs

Several methods had been proposed for possible utilization in determination of training needs of extension workers. The Fifth National Advisory Workshop of Extension Administrators proposed a means by which training needs could be identified. They stated that:

1. A job description is the basis for determining training needs.

2. People performing the job must be involved in deciding the specific function of the job and the training needs.

3. A state-wide committee with "across the board representation" (4-H, agriculture, home economics, special county workers, specialists, resident staff and experiment station personnel) should advise on the training needed.

4. New workers should be considered when thinking of training needs.

5. Potential promotions in the county and to specialist and supervisory positions should be a part of the consideration on training.

6. Agents, supervisors, and specialists should have an opportunity to express their needs for training.[1]

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[1] Report of the National Administrative Workshop, Cooperative Extension Administration, National Agric. Extension Center for Advanced Study, University of Wisconsin, Madison, 1956, p. 56.

In a supervision workshop organized for participants from North Central States,[1] the following were listed as some of the most important methods of training need determination:

1. The formal study of the job through analysis

2. A survey of the training needs

3. A listing by the supervisors of what they feel the training need to be

4. A review of the material, such as workshops, community and special reports on training needs for the job

5. A review of research and studies from other states with related problems

6. Ask people who are actually doing the job to indicate what their needs are

Crosby[2] supported the direct involvement of the people for whom training programs were intended. He observed that "when one contemplates the training of full-grown men and women, it is well to consult the trainers and trainees." For maximum effectiveness of training programs, Reed[3] emphasized the same procedure when he said, "Go back to the individuals to be taught and find out what they feel they need in the way of development. What topics they feel are most important for consideration." Williams[4] used the critical

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[1]Report of North Central States Workshop in Supervision, Middle Management in the Cooperative Extension Service, (Madison: Univ. of Wisconsin, 1957), p. 80.

[2]Dick J. Crosby, Op. Cit., p. 230.

[3]Ernest H. Reed, "What Training Does to You?" Training Programs for Maximum Manpower Effectiveness, Research & Technical Report No. 12, Industrial Relations Center, Univ. of Minnesota, February 1952, p. 2.

[4]S. K. T. Williams, Op. Cit., pp. 31-49.

incident technique to determine the training needs of extension workers in Western Nigeria. Flanagan[1] was generally recognized as the originator of the critical incident technique; and as described by him, the technique consisted of a set of procedures which facilitated the collection of direct observations of human behavior in such a way as to facilitate potential usefulness in solving practical problems and developing broad psychological principles.

Traxler[2] reported on the use of the survey device from industry and testified to its usefulness as a means of discovering training needs. He concluded, however, that in order to maximize their effectiveness, survey devices should be used in conjunction with other methods of identifying training needs. Contrariwise, Woods[3] concluded from his study that the training needs of specific management groups could be objectively assessed through the questionnaire method.

Individual goals essential for healthy development of personality, and organizational goals, necessary for efficiency of production, were often different and even antagonistic. Resolution of this antagonism could create a situation in which the worker tended to be dependent on management, which the worker further resisted. Management responded, in turn, by measures which widened the gap. This, in brief, was the "dependency concept" elaborated upon by Argyrus.[4] To find a way out of this circular process, Jackson and

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[1] J. C. Flanagan, "The Critical Incident Technique." _Psychological Bulletin_, Vol. LI, No. 4, (July 1954), p. 327.

[2] Ralph N. Traxler, "Training Needs Spotted by Attitude Surveys." _Personnel_, Vol. XXXIV, No. 3 (May, 1957), p. 15.

[3] Wendell F. Woods, "Identification of Management Training Needs." _Dissertation Abstracts_, Vol. XVI, p. 2518.

[4] Chrys Argyrus, "The Individual and the Organization: Some Problems of Mutual Adjustments," _Administrative Science Quarterly_, (June, 1957), pp. 1-24.

MacKinney[1] did propose these methods for determining training needs:

EMOTIONAL METHOD in which decisions to set up a particular
program were influenced by purely irrational considerations
such as keeping up with the Joneses, habit or ego
involvement.

RATIONAL METHOD in which though not empirically based, did
provide practical and useful data on training needs; for
example, opinion polls, interviews, and group decisions.

EMPIRICAL METHOD which involved a reasonably systematic attempt
to collect data on which judgements of training needs could
be based; for example, performance evaluation, job analysis,
psychological tests, etc.

Similarly, McGhee and Thayer[2] suggested three methods by which

training needs could be identified and analyzed:

ORGANIZATIONAL ANALYSIS: placed emphasis on a study of the
entire organization, its objectives, its resources, and the
allocation of these resources as they relate to the organ-
izational objectives. It serves as a basis for determining
where the training emphasis can and should be placed.

OPERATIONAL ANALYSIS: focuses on the task or job regardless of
the employee performing that job. It includes a determin-
ation of what an employee must do, the specific behavior
required if the job is to be performed effectively. It is
in this area that job descriptions are important.

MAN ANALYSIS: focuses on the man. It involves (a) determining
the knowledge, skills, and attitudes of the incumbent in a
position, and (b) the knowledge, skills, and attitudes
which he must develop if he is to fulfill the job require-
ments. The focus is clearly on the individual in his
present position and in future possible positions.

The chairman of the subcommittee on training, Extension Committee on

Organization and Policy of the Land-Grant Colleges Association, appointed the

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[1] B. B. Jackson and A. C. MacKinney, "Methods of Determining Training
Needs." Personnel, Vol. XXXVI, No. 5 (Sept. - Oct., 1959), pp. 60-61.

[2] McGhee and Thayer, Op. Cit., p. 25.

National Task Force in 1957.[1] The terms of reference were, among other

things, to:

1. Outline a comprehensive training policy and program adequate
   to meet extension's current and anticipated needs.

2. Analyze and evaluate the training activities now underway, as
   set against the objectives stated in the 1948 policy report.

3. Prepare some recommendations regarding in-service training
   that will overcome present inadequacies for identification
   of training needs.

The committee recommended the following nine steps to be followed:

1. Determine needs as expressed by extension personnel

2. Analysis of present research

3. Consider what experts say is needed

4. Analyze results of program efforts

5. Analyze performance of personnel

6. Use of validated instruments
   (a) Psychology tests
   (b) Reading comprehension tests
   (c) Strong interest inventory

7. Analysis of policy statements

8. Analysis of job description

9. Use of forms now available

These steps which seemed to be the standard for Extension

Administrators could be borrowed for initial operations, following the advice

of Mosher[2] who insisted on the importance of pilot projects, and admonished

that: "These (pilot projects) may borrow heavily from methods from other

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[1]The National Task Force on Inservice Training, Op. Cit., p. 9.

[2]Arthur T. Mosher, Variations of Extension Education and Community
Development: Comparative Extension Publication No. 2 (New York: Cornell
University, 1958), p. 107.

countries, but every effort should be made to build them out of an analysis of local conditions and need."

Stemming from these training objectives, training needs, and methods for determining training needs was the fact that training was an intentional act of providing the means for anybody to learn. This implied that training efforts must be based on recognized or felt needs of the people concerned. The literature indicated that the training needs of the individual were influenced by previous experience and training. Thus, the desire for additional training in the social sciences was quite apparent especially for workers with responsibilities in selection and training of leaders, program planning, or youth and adult organizations.

The ascription by these studies of training as a factor in goals achievement could not be realistically denied. Yet, how to determine whether a given training program covered the actual needs of the people for whom it was planned posed an almost insoluble methodological difficulty in the past. This had been complicated by the influence of rapidly changing technological, economic, and social conditions of the rural communities in which the extension personnel operated. With the totality of the extension program so constantly challenged, the works cited in this study, though not exhaustive, would proffer the basic criterion for making identification and analysis of training needs an important and continuous aspect of extension training programs.

Although summary data were considered in most of the studies as best for determining the over-all levels of need and for determining major areas of emphasis in training programs, it would still behoove the extension educator to identify the specific training requirements of his student. In this respect, the in-service approach of training would only be a partial solution

to the situation in Ghana since nothing had been done to determine the needs. The crux lay in the training of the prospective extension worker while he was still enrolled in the Agricultural College, introducing him to the new materials and patterns.

Section III

CURRICULUM FOR EXTENSION TRAINING IN THE AGRICULTURAL COLLEGES

Discussed in the previous section were manpower training in agriculture, "needs," "training," and some methods by which training needs of extension personnel were determined. This section would consider the natures of educational philosophy, objectives, policies, curriculum, and concepts; and procedures for the use of the concept approach in curriculum construction for training in extension.

Some of the subject matter areas considered by the National Task Force on Cooperative Extension Service Training, and other studies previously cited in this study, would be formulated into concepts for the construction of a model curriculum for the agricultural colleges.

THE NATURE OF EDUCATIONAL PHILOSOPHY, OBJECTIVES, POLICIES, AND PROCEDURES

Suggesting criteria and advocating a time-consuming process of formulating an educational philosophy, objectives, policies, and procedures was not unlikely to arouse opposition among officers who were impatient to meet the training needs of extension; and who felt that the teaching staff and the students served were either uninterested or incapable of participating intelligently in discussing objectives. However, the central purpose of this section was that mere administrative order would not do the job. It would take an informed staff, with a core of officers in every division of the Ministry of Agriculture if the agricultural colleges were to approach the realization of efficient extension training.

This support and understanding could be best attained by involving the teaching staff in the preparation of a carefully formulated document on the scope and responsibility of the college. This document might be called "A Statement of Philosophy and Objectives," and it might well be supplemented with a statement of policies and procedures. With wide involvement of staff and a conscious attempt to communicate to the staff, this document could be the basis upon which the college could adapt its extension training program and curricula, could arrange for effective learning situations, and could evaluate its efforts. For this purpose, it was deemed necessary to identify the nature of philosophy, objectives, policies, and procedures as applied to extension educational programs.

Educational Philosophy

Educational philosophy meant the body of principles which underlay extension education. It was generally considered as a framework of basic principles which expressed the institution's convictions on a given point. Philosophy provided directions to objectives and therefore affected every activity of an educational institution.

Tyler[1] regarded philosophy as the screen through which the objectives could be effectively screened. He pointed out that objectives determined by a faculty or any other interested group might be so numerous that there would be no possibility of attaining them all, and that some objectives, if carefully analyzed, would be consistent with the basic philosophy of the institution.

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[1]Ralph W. Tyler, _Op. Cit._, pp. 33-37.

Philosophy statements were often broad and all-inclusive. In commenting on the major function of the Cooperative Extension Service as stated by the Smith-Lever Act, the Subcommittee on Scope and Responsibility of the Cooperative Extension Service said:

> This broad charter clearly identifies Extension's function as education. This is not education in the _abstract_, but education for _action_. It is education of an informal and distinct type. It is education directed to help people solve the various problems they encounter from day to day in agriculture, home economics, and related subjects.[1]

Here was, in a sense, a statement of philosophy that indicated Cooperative Extension's belief in learner-centered education and planned programs based on problems.

Educational Objectives

An educational objective was considered a statement indicating direction for the educational effort — a statement that indicated "what is taught," "who is to be taught," and "what changes are expected," according to Boyle.[2] They could be said to be expressions toward which efforts were directed.

Or, as Tyler[3] said, "ends or objectives are defined in terms of the kind of behavior involved and the content with which the behavior deals."

Objectives, according to several authors, could be at several levels. Five levels often cited were:

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[1]Subcommittee on Scope and Responsibility, "The Cooperative Extension Service Today - A Statement of Scope and Responsibility." American Association of Land-Grant Colleges and State Universities. April 1958, pp. 1-3.

[2]Patrick C. Boyle, "Basic Program Terminology." Processed Paper for Course, "Program Development in Cooperative Extension." U. of Wis. Spring, 1964.

[3]R. W. Tyler, _Op. Cit._, p. 63.

1. Somewhat remote, all-inclusive broad statements that were actually part of the philosophy of the institution or agency involved, based on legislation, a developed body of interpretations, educational philosophy, etc.

2. Interpretations of this broad philosophy on a very wide basis such as the SCOPE report.

3. Objectives of a unit of teachers, such as a college, department, or county extension office.

4. Objectives of the individual teacher.

5. Objectives of the learner himself.

This study would concern only the first two levels. If a statement of objectives of the Agricultural College were to become too specific as to include the last three levels, in the initial stages, the college would be imposing upon the working unit and the instructor unnecessary restrictions which would seriously hamper their teaching efforts.

Policies

Policies were standing plans, according to LeBrenton and Henning.[1] They served as guides to future decision making that shape these decisions to maximize their contributions to the objectives of the organization. They were the means by which objectives were changed into action.

Procedures

Procedures were also standing plans, according to LeBrenton and

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[1]Preston P. LeBrenton and Dale A. Henning, *Planning Theory*. (Englewood Cliff, N. J.: Prentice-Hall, Inc., 1961), p. 9.

Henning, but they were less general than policies. They were courses of actions that had been predetermined. They were manners or methods of doing things and were always subordinate to and a reflection of policy.[1]

Both policies and procedures were formulated after objectives were firmly established and need less involvement of staff than the determination of objectives. They could be extremely important because they controlled, somewhat automatically, the actions and decisions of the teaching staff.

CRITERIA FOR OBJECTIVES, POLICIES, AND PROCEDURES

Objectives

Any consideration of objectives, whether determined by administrative action or by staff involvement, might be made with definite criteria in mind. Indeed, objectives themselves could become the criteria by which any program or plan would be evaluated later.

The following criteria for judging objectives were largely adapted from those suggested by Kelsey and Hearne[2] in "Cooperative Extension Work," McFarland[3] in "Management Principles and Practices," Tyler[4] in "Basic Principles of Curriculum and Instruction," and Doll[5] in "Curriculum Improvement."

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[1] Ibid.

[2] L. D. Kelsey and C. C. Hearne, Cooperative Extension Work. (Ithaca, N. Y.: Comstock Publishing Associates, 1963), pp. 129-131.

[3] D. E. McFarland, Management Principles and Practices. (New York: The MacMillan Co., 1958).

[4] R. W. Tyler, Op. Cit., pp. 3-43.

[5] Ronald C. Doll, Curriculum Improvement: Decision-Making and Process. (Boston, Mass.: Allyn & Bacon, Inc., 1970), pp. 31-35.

1. Were they consistent with the over-all philosophy of the institution and of cooperative government and local agencies?

2. Were they related to the needs of the educational institution and the clientele it served?

3. Had they considered the economic, social, and political situation from which they arose?

4. Could they be achieved with the resources potentially available?

5. Were they related to one another so that they were internally consistent and minimize internal conflicts?

6. Were they socially desirable?

7. Could they be achieved with the clientele to be served?

8. Were they reasonable, logical and intelligent?

9. Were they clear and did they appear to be realistic?

10. Could they be defined in terms of behavior or changes in people?

11. Could they be evaluated? Could they or the more specific objectives growing out of them be measured in terms of progress?

12. Were they dynamic, leaving opportunity for change?

Policies

A too tightly drawn statement of policy would restrict unnecessarily the activities of the instructors. On the other hand, lack of policy would hinder the understanding of the job and stand in the way of real accomplishments. Some criteria for policy statements had included:

1. Did they indicate the general role and responsibilities of the teaching staff in extension training?

2. Did they specify external and internal relations?

3. Did they intelligently guide the use of time, money and other resources?

4. Did they indicate the nature and scope of the activities of the College in Extension training programs?

5. Did they represent a framework within which the activities of the organization were carried out?

6. Did they leave room for individual instructor's initiative and decision making and did they maintain the rights of the profession?

7. Did they serve as a guide rather than as restriction on the staff?

Procedures

Without doubting their essential nature, this study did not attempt to set up criteria for procedures because any attempt to more than suggest at the top level would unduly restrict the operating levels as far as procedures were concerned. In the opinion of the writer, procedures should be formulated, for the most part, nearer the operating level.

Formulation of objectives, policies, and procedures was often considered entirely an administrative responsibility, but the involvement of the staff in that process, especially in the clarification of objectives, would strengthen the possibility of an improved program of extension training and should assure greater support from the teaching staff.

THE NATURE OF CURRICULUM

Having considered philosophy, objectives, policies, and procedures, the writer turned to the consideration of curriculum or the course of study.

It was felt that the term curriculum was simply a name for the organized pattern of a school's educational program. A complete description

of the curriculum had at least three components: (1) WHAT was studied — the
"content" or "subject matter" of instruction; (2) HOW the study and teaching
were done — the "method" of instruction; and (3) WHEN the various subjects
were presented — the order of instruction. The first of these components —
the content — included the whole range of matters in which the student was
expected to gain some competence.[1]

The comprehensiveness of the meaning of the term curriculum was
revealed in the following excerpt from the Kansas Curriculum Guide for
Elementary Schools:

> What is the curriculum? Basically, the curriculum is what
> happens to children in school as a result of what teachers
> do. It includes all of the experiences of children for
> which the school should accept responsibility. It is the
> program used by the school as a means of accomplishing its
> progress.
>
> Direct teaching in the classroom is a part of the curriculum.
> School activities - such as clubs, sports, student councils
> and the like - are also parts of the curriculum, since these
> presumably have been planned by the school to help achieve
> certain educational objectives. School services - such as
> libraries, health services, guidance, and counseling - are,
> in a like manner, parts of the curriculum. Even the climate
> of interpersonal relationships prevailing in a school at a
> given time is a part of the curriculum, since it is an
> important conditioning factor in the learning and adjustment
> of children for which the schools accept responsibility.[2]

The central theme of this quotation was supported by Doll[3] who affirmed
that "the commonly-accepted definition of the curriculum has changed from con-
tent of courses of study and lists of subjects and courses to all the

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[1]Philip H. Phenix, "Curriculum." Philosophy of Education, (New York:
Holt, Rinehart & Winston, Inc., 1958), pp. 57-75.

[2]Kansas State Department of Education, Curriculum Guide for Elementary
Schools, (Topeka, Kansas), 1958. revision p. 3.

[3]Ronald C. Doll, Op. Cit., p. 21.

experiences which are offered to learners under the auspices or direction of the school." Neagley and Evans[1] also stated that curriculum should be defined as all of the planned experiences provided by the school to assist pupils in attaining the designated learning outcomes to the best of their abilities.

A curriculum planner, then, would be one who sought to create conditions that would improve learning by determining the particular knowledge, skills, and attitudes that would be of greatest benefit in satisfying the needs of the students. Thus a concept of curriculum as the total environment planned by the institution implied action.

Curriculum Designs[2]

The pattern used in selecting, planning, or organizing educational experiences in a school had been called the curriculum design. The curriculum designed influenced or determined to a great extent the outcomes which would be achieved by the school.

Three major curriculum designs were:

A. The Subject Centered Curriculum in which each subject field existed as a selectively independent teaching area with a logic and organization of its own. Its distinctive characteristics were that (a) subject matter was classified and organized in accordance with the aim of explanation; (b) learning activities took place within organized fields of knowledge; and (c) the major emphasis in teaching method was placed upon the techniques of explanation. Among its essential characteristics were that constant subjects

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[1]Ross L. Neagley and N. Dean Evans, Handbook for Effective Curriculum Development (Englewood Cliff, N. J.: Prentice-Hall, Inc., 1967), p. 2.

[2]J. Harvey Littrell, "Independent Study on Curriculum Designs," class notes for Course Curriculum Development (Manhattan, Kansas; Fall, 1970) Adapted.

constituted the "general education program," constants and electives were determined in advance of teaching, and individual differences cared for by electives, differentiated assignments, and special programs.

Administratively, teachers were required to be thoroughly trained in at least one subject field, and also, special arrangements for meeting needs other than subjects ought to be made, such as remedial work, extra-class activities.

B. Experience Curriculum in which activities that were really related to the needs of the students. The major purpose was for the students to gain knowledge needed for pursuing the student's needs or interests. Educational program determined by felt interests and needs of students, pursuance of common interests leading to common learnings, and experiences not planned in advance formed the distinctive characteristics of the experience curriculum. Some of its essential attributes were that activities were planned cooperatively by students and teachers, dominant method was problem-solving or inquiry approach, individual needs were met within the program, and, that special subjects provided for specialized interests.

The administrative arrangements of the experience curriculum required that teachers should have had general education, educational psychology, guidance, and knowledge of the project method of teaching; the buildings must be flexible to care for many activities (activity rooms as well as classrooms); equipment and materials must be supplied to follow interests of students, and required no graded sequence in grouping based on interests.

C. Core Curriculum in which activities were concerned with present day needs of the country and the world. They were centered about life today. The major purpose of this design would be to provide students with a common body of socially significant experiences. Distinctively, emphasis was on a core of

social values, structure was fixed by broad social problems or themes of
social living, and subject matter was employed to solve problems. Essentially,
core was required of all students, activities were also cooperatively planned
by teachers and students, provision was made for special needs and interests
outside of core, and skills were taught as needed.

The administrative arrangements required teachers to have broad
general education and special training in social foundations of education,
psychology, social groups, guidance and problem method teaching. Activity
rooms would be necessary, and a public relations program would have to be
continuous and effective.

It had been recognized that teachers were key persons in curriculum
construction and change, and that curriculum study was one of the most profit-
able means of professional improvement of the teacher. But since a good
curriculum usually contained a common body of suggestions and aids for the
teacher, the curriculum planner could find the accumulated experience of
specialists in curriculum development quite helpful.

A searching study by the writer of what should be expected in a good
curriculum revealed as desirable items:

1. Suggested goals or directions for the curriculum, with
   illustrations of how to translate these general goals into
   behavioral terms. Such statements often included the point
   of view of the teaching staff concerning the curriculum.

2. Suggestions on how to plan with students, indicating how each
   teacher could use the on-going situation in developing with
   students the problems on which the group will work. Tech-
   niques for using the problem-solving approach might be
   included.

3. The general framework for the scope and sequence (content, and when or at what level the subject must be taught) of the curriculum. This was usually presented in a chart form showing the areas of experience, areas of interest, social functions, or some other general category around which the curriculum was planned for the different grade levels.

4. Suggestions on how to study students, indicating specific kinds of techniques to be used and the types of records to be kept.

5. A statement of characteristics, needs, and developmental tastes of students.

6. A list of types of experiences to aid students in achieving their desired kinds of behavior.

7. Suggestion for the use of audio-visual materials and other resources.

8. Suggested means of evaluation. Suggestions were included to assist teachers in evaluating growth toward various kinds of behavior outcomes.[1]

Wheeler,[2] discussing social needs and values in curriculum orientation, contended that the curriculum in a society with a long tradition of formal schooling was closely related to and derived from the cultural past. The

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[1]For examples of curriculum development, and the decision-making process employed, plus some discussions of principles concerning their making, see R.C. Doll, Op. Cit.; Edmond C. Short and George D. Marcondit (eds.), Contemporary Thought on Public School Curriculum. (Dubuque, Iowa: William C. Brown Co., Publishers, 1968). Hilda Taba, Curriculum Development Theory and Practice. (New York: Harcourt Brace & World, 1962). For practices in the development of curriculum and course guides, see Eleanor Merritt and Henry Harap, Trends in the Production of Curriculum Guides. (Nashville: George Peabody College for Teachers, 1955).

[2]D. K. Wheeler, Curriculum Process. (London: University of London Press, 1967), p. 13.

purposes, whether stated or implicit, would most certainly reflect the universals present in the cultural core. The subject matter would be that which was believed to encompass the most valuable knowledge and the skills and the significant ideas and values of the society. The methods of dealing with the subject matter should largely be conditioned by the educational history of the society and the extent to which it had been affected by social and technical innovation and discovery.

Thus, the task of expending a major effort on reforming the curriculum in agricultural extension training in the agricultural colleges might be faced squarely working in collaboration with the faculty of these colleges. This kind of curriculum reform, to be effective, must involve the entire educational experience of the prospective extension worker. As in other sectors of curriculum development, the writer believed that not only might courses be updated and improved, but also the very structure of the colleges' curriculum in extension training must be recast. The programs leading to the type of curriculum remodeling suggested by this study called for intimate and continuing interaction between the teachers of the colleges and officials responsible for extension programs in the country.

THE NATURE OF "CONCEPT"

Many and varied attempts had been made to define "concept." Gagne and Bolles[1] had proposed that concepts were used in human behavior where numerical calculation was required to determine a line of action, where rules had to be selected to match situations and then applied, and particularly where

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[1] Robert M. Gagne and Robert C. Bolles, "A Review of Factors in Learning Efficiency," in Automatic Teaching: The State of the Art, Eugene Galanter (ed.), (New York: John Wiley & Sons, 1959), pp. 13-53.

generalizations must be applied to situations to find an explanation or select an appropriate response. Tasks of this kind were not the same as those which were mastered by direct practice. Instead, the individual must have learned something which remained with him in the form of an insight, and which mediated his reaction to a situation through recollection, review, and decision-making. The "something" that he had learned was called a concept. Efficient learning, then, according to these authors, was learning useful concepts that had application to the situations one met in life.

One of the first studies which established a causative relationship between values, concepts and attitudes was conducted by Woodruff and DiVesta.[1] This study provided the first clear evidence that knowledge played a direct and important role in the determination of attitudes, by showing that one's behavior tended to follow a line which the individual believed would foster the things he valued most highly, and that when his beliefs changed, his behavior would change accordingly. They concluded that education which was meant to affect behavior and attitudes should probably make its attack on the conceptual patterns of individuals, by introducing meaningful information in a way which provided the student with understanding and which made application to one's daily choices clear.

Concept, in the area of curriculum development, had been defined by Woodruff[2] who stated that it was "some amount of meaning more or less organized in an individual mind as a result of sensory perception of external

[1]Asabel D. Woodruff and Francis J. DiVesta, "The Relationship Between Values, Concepts, and Attitudes," Educational Psychological Measurement, Vol. 8, No. 4 (Winter, 1948), pp. 645-659.

[2]Asabel D. Woodruff, "The Use of Concepts in Teaching and Learning," Journal of Teacher Education, Vol. 15 (March, 1964), p. 84.

objects or events and the cognitive interpretation of the perceived data. A concept is important because it is the internal mediating variable that accounts for the direction of a person's response to a situation."

Brunner et al.[1] also defined concept "as a way of grouping an array of objects or events in terms of those characteristics that distinguish this array from other objects or events in the universe."

Burlingame[2] published a survey of determinants of ease and difficulty in concept learning in which she stated a number of propositions that had some experimental and theoretical support. The following were some of her propositions:

1. Subject matter becomes more meaningful and more directly transferable to behavior when it is transformed from verbal form to conceptualized form.

2. Student behavior is most likely to be made responsive to the best in our vast modern knowledge when priority is given to the most useful instrumental concepts in all fields.

3. Complex social processes can be learned best by concentrating on learning the concepts of those processes rather than practicing the processes without systematic concept learning.

4. Creative behavior, both of the inventive kind and the artistic kind, will be helped by direct development of concepts of the technical processes involved and whatever we can learn to do to

[1] Jerome Brunner, Jacquelline Goodnow and George Austin, _A Study of Thinking_ (New York: John Wiley & Sons, 1950), p. 275.

[2] Mildred Burlingame, "Some Determinants of Concept Formulation," _The College of Education Record_, Vol. 2, 1419, 1963 (Univ. of Idaho).

encourage imaginative and intuitive response to one's environment as part of the regular cognitive learning processes.

5. Curriculum content reveals three kinds of concepts: processes, structures, and qualities. The perceptual materials for each of them should be distinguished so that there can be relevance between learning materials and expected end products.

6. Concepts sometimes have hierarchical structure in which advanced concepts can be learned only when supporting concepts are already possessed. When this is the case, learning will be greatly facilitated by observing the hierarchy by means of sequencing. Sequencing seems to be irrelevant when there is no real hierarchy.

7. Concepts development proceeds faster and more accurately when the relevant features of the teaching materials are emphasized and the irrelevant features are counter emphasized.

8. New concepts take form faster when students are given cues and information as to what to look for in the learning materials.

9. Retention and transfer of concepts is facilitated to the extent students either discover for themselves or in some equivalent way obtain a discoverer's intimacy with the conceptual structure.

10. Irrelevant materials become increasingly disconcerting to students as the complexity of the subject matter increases. They should be avoided if possible; but if this is not possible, increasing amounts of time must be provided for the attainment of clear concepts.

11. Insights obtained from feedback processes must be given enough time to be ingested before attention is diverted to a next step or the benefit of feedback will be lost.

12. When students are being introduced to new phenomena from which concepts are to be developed, they should be permitted to explore this phenomena overtly. In later stages of concept learning, convert mental reactions may become more dominant and more profitable for concept development.

The relevance of concept approach to curriculum development for extension training was thought to be the fact that extension program situations provided positive feelings for the elements involved in the modification of values. The most obvious mark of teaching was that students were active. The activity must be in those things which were known to produce efficient learning. Action for its own sake had little or no value. It was only when action was directed so that it matched the nature of learning that knowledge, understanding, and practical wisdom in the making of decisions was produced. Extension training programs abounded with such an action; therefore, when concepts were properly developed, they would serve as blocks from which training procedures would be built.

PROPOSED CURRICULUM FOR TRAINING AGRICULTURAL ASSISTANTS
BASED ON SUBJECT-MATTER AREAS
INFERRED FROM WORKS CITED IN THIS STUDY

The development of first-rate courses geared to the background of the
students involved had been recognized to involve the cooperative effort of the
students, the entire faculty, curriculum specialists, representatives from the
other divisions of the Ministry of Agriculture, and lay leadership participa-
tion. Since an advance was evident of governmental and public appreciation of
extension education both in the agricultural colleges and at the rural com-
munity level, it was necessary to develop a curriculum concerned with
producing agricultural assistants equipped with new skills of problem-solving
and who could apply those skills from one task to another. Concepts were used
to guide behavior by means of rules, and more importantly, they were generally
employed in eliciting new responses by generalization in situations that
involve problem solving.

It had also been recognized that the problem of efficiency of the
extension worker could best be solved through efficient learning of useful
information that did not interfere with the realization of the broad national
extension objectives. On the basis of the definition of concept developed in
this study, the writer sought to explicate in some detail the concept approach
of curriculum construction. This explication or conceptual elaboration then
was used in developing a model curriculum for the agricultural colleges based
on some of the subject matter areas considered as important in some of the
works cited in this study.

I. Concept: "Technical Agriculture Background"

Curriculum Content: Training in general agriculture and home economics
sciences at a high enough level to give the extension worker confidence

to deal with his clientele.

Desired Behavior Changes

A. Knowledge and understanding of:

1. Physical and chemical properties of soil in relation to plant growth and yield.

2. Soil conditions and soil nutrients and their effects on plants.

3. Relationship of water and plant nutrients to plant growth.

4. Functions of roots, stems and leaves.

5. Plant growth as related to particular plants.

6. Outstanding characteristics of plants

7. Soil pH and how to maintain it at its most productive level for specific crops.

8. Fertility needs for various levels of production.

9. Production methods of major economic crops of the country.

10. Seed improvement methods and principles of hybridization.

11. Methods of vegetable and fruit production.

12. Principles and methods of plant insects, pests and disease control.

13. Principles of livestock (beef cattle, pigs, sheep and goats) and poultry production.

14. Livestock and poultry selection and breeding methods.

15. Principles of livestock and poultry sanitation.

16. Livestock and crop production cost per unit.

17. Basic principles of surveying and calculation of areas.

18. Basic functions of farm machines and implements.

19. Important economic principles.

20. Efficiency of agricultural inputs and outputs.

21. Relationship of lubricants to working parts of machines.

22. Wearability of machine parts.

23. Care, handling and storage of machines on farm.

24. Basic principles of planning and constructing farm buildings for efficiency, economy and satisfaction.

25. Technical services available to aid farmers in building farm structures.

26. Power development and transmission.

27. Farm and home equipment, clothing, and household furnishing.

28. Methods of management of farm income, savings and credit in relation to home and family needs.

29. Principles of farm and home financial planning, and purchasing.

30. Selection and proper use of farm and household supplies.

31. Rural home sanitation, nutrition, protective clothing, and protective health measures.

32. Basic facts concerning rural health conditions.

33. Improving rural health conditions and services through group action.

34. Relationship between agriculture and other industries.

35. Governmental agricultural policies and their influence on farm communities.

36. Storage and marketing of farm products.

37. Livestock and poultry nutrition.

B. Skills and ability to:

1. Carry out soil conservational practices.

2. Determine and correct nutrient deficiencies in plants.

3. Apply fertilizers of correct analysis in recommended manner.

4. Plan crop rotations for the most efficient use.

5. Make recommendations regarding amounts of fertilizer in absence of a soil test report.

6. Advise farmers on adoption of new crop varieties and production practices.

7. Advise farmers on livestock and poultry selection, management, feeding and sanitation.

8. Assist farmers in developing profitable production programs.

9. Identify plant insect pests, diseases, and to use pest and disease control chemicals and measures.

10. Estimate the production of a farming operation.

11. Demonstrate farm machinery use.

12. Locate failures and make minor repairs quickly and efficiently.

13. Determine when parts need replacing.

14. Associate machine parts with machine.

15. Conduct training sessions for farmers.

16. Advise farm people on proper construction, repair and maintenance of farm buildings.

17. Apply the principles of proper home financial planning and purchasing.

18. Plan home operations for economy of effort.

19. Advise rural families to plan farm and home.

20. Administer home nursing and first aid.

21. Apply group action processes to achieve improvement in rural health conditions.

22. Produce and utilize home grown foods to meet the dietary needs of rural families.

C. Attitudes - Appreciate and Demonstrate,

   1. A deep concern for improvement in rural community life.

   2. Significance of rural health problems as they affect the welfare of rural family living and success of Extension work.

II. Concept: "The Agricultural Extension Service"

Curriculum Content: Historical background, philosophy, objectives, policies, and organization.

Desired Behavior Changes

A. Knowledge and Understanding of:

   1. Historical facts and programs of national Extension work.

   2. Extension work in other countries.

   3. The Cooperative Extension Service in the U. S.

   4. Extension philosophy.

   5. An awareness of the objectives and policies of the Extension work.

   6. The organization of the District, Regional and National Extension work.

B. Skill and Ability to:

   1. Employ extension philosophy and principles to work in rural communities.

   2. Develop objectives for district Extension programs.

   3. Fit local programs into national development programs and goals.

C. Attitude - appreciate and demonstrate:

1. Belief in the democratic process.

2. Loyalty to the Extension division and the Ministry of Agriculture as a whole.

3. Cooperation with co-workers, senior officers of the Ministry of Agriculture.

4. Enduring desire to render maximum service to the clientele.

III. Concept: "Human Development"

Curriculum Content: (1) Developmental processes of people, (2) Behavior Patterns, (3) Group Dynamics or Group Interactions, (4) Human Relations, (5) Cultural Change.

Desired Behavior Changes

A. Knowledge and Understanding of:

1. Human personality types.

2. Individual behavior.

3. Small group behavior.

4. Intergroup behavior.

5. Total organizational behavior.

6. Internal and external forces affecting human behavior.

7. Principles of innovation and cultural change.

8. Growth and development of children.

9. Role of the family unit in rural community life.

10. The psychology and characteristics of adults.

B. Skill and Ability to:

1. Appraise, interpret and develop desirable cultural values in rural people.

2. Motivate people to carry responsibility for personal, group or inter-organizational decisions.

3. Introduce methods designed to improve morale of rural people through increased involvement and participation in decisions relating to their welfare.

4. Use of professional relationships to increase rural people's range of choices and ability to choose.

5. Locate and maintain compatible relationship among individuals in a rural community.

C. Attitude –

1. Formulate plans in harmony with the abilities, interests and beliefs of a clientele.

2. Recognize that effective behavior change involves some degree of some manipulation and control.

IV. Concept: "Program Development"

Curriculum Content: (1) Situation and Analysis, (2) The Nature of Planning, (3) Organization for Planning, (4) Program Planning Processes.

Desired Behavior Changes

A. Knowledge and Understanding of:

1. The functions of Extension planning.

2. Sources of objective and procedures for determining them.

3. Principles of coordination, supervision in implementing plans for action.

4. Evaluating the Extension program.

B. Skill and Ability to:

    1. Analyze situations for program planning.

    2. Determine priorities and sequences among program units.

    3. Formulate program objectives.

    4. Determine methods of implementing the program.

    5. Successfully evaluate the program.

C. Attitude - Appreciate and Display,

    1. The need for efficient planning.

    2. The need to identify and state objectives to guide action.

    3. Cooperative effort in implementing programs.

    4. The need for evaluating programs.

V. Concept: "The Extension Education Process"

Curriculum Content: (1) Principles of Adult Learning, (2) Teaching-
    Learning Process, (3) Adult Education Programs, (4) How to Motivate
    People (decision making), (5) Use of Devices in Adult Education.

Desired Behavior Changes

A. Knowledge and Understanding of:

    1. Psychological and educational principles involved in adult
        learning.

    2. Factors affecting adult learning.

    3. The role of learning experiences and situations in the teaching
        process.

    4. Sequence of learning experiences.

    5. Views of learning theory.

    6. Various methods of adult learning activities.

7. Methods of studying the adult learner.

8. Steps involved in teaching and their relations to extension methods.

9. Various mechanical instruments, audio-visual aids, physical arrangements, and materials used by adult educators.

10. Measuring educational objectives for evaluating teaching outcome.

B. Skill and Ability to:

1. Apply principles of learning.

2. Organize situations and experiences for effective learning.

3. Formulate educational objectives for teaching.

4. Make and use simple teaching aids and devices such as posters, models, flannel graphs, slide projector and room arrangement effectively.

5. Motivate clientele toward teaching objectives.

6. Assist farmers make decisions through problem-solving and evaluation of alternative choices.

7. Evaluate the total teaching outcome.

C. Attitude - Appreciate and Value,

1. Why adult learners behave the way they do.

2. The need for creating suitable learning situations and experiences in teaching.

3. The need to motivate adult learners for effective performance.

4. The importance of suitable materials in creating and making learning experiences exciting.

VI. Concept: "Social Systems"

Curriculum Content: (1) Basic reference group, (2) Power structure, and control groups, (3) Identification and development of leaders, (4) Involving people in identifying their individual common and related needs in their natural environment, (5) Group processes and social action.

Desired Behavior Changes

A. Knowledge and Understanding of:

1. Rural people.

2. Rural sociology.

3. Different types of leaders and how to use them in planning.

4. The qualities which make for leadership in rural people.

5. Elements and processes of the social action system and their use in mobilizing action.

6. How to analyze rural agriculture and social problems and needs to achieve practical solutions.

7. Procedures for working with rural people to deal with community problems.

8. Principles of organizing and conducting meetings.

B. Skill and Ability to:

1. Select and develop leaders.

2. Train local leaders.

3. Apply principal elements of the social system to analyze the social structure of rural community living.

4. Organize people to plan and implement Extension programs.

5. Work with organized groups of rural youth or adults.

6. Employ local leadership and participation to gain interest and support for Extension programs.

7. Give recognition to deserving leaders.

8. Identify the needs of clientele.

9. Motivate leaders for effective action.

10. Organize and conduct meetings successfully.

C. Attitude -

1. To appreciate and demonstrate a feeling that rural people should participate in decisions affecting their welfare.

2. To appreciate and respect the cultural setting of rural communities.

3. To appreciate and show concern for changes in the social system and their implications for public policy.

4. To demonstrate a willingness to give recognition to deserving volunteer leaders.

5. To appreciate sensitivity to the needs of rural people in developing programs.

VII. Concept: "Communication"

Curriculum Content: (1) Tools of Communication (language, signs), (2) Oral Communication (speaking, counseling, face-to-face contacts), (3) Written Communication (letters, reports, articles), (4) Elements of Communication (communicator, message, channels, receiver, response), (5) Channels of Communication, (6) The Diffusion Process

Desired Behavior Changes

A. Knowledge and Understanding of:

1. The role of communication.

2. The communication process.

3. The essential elements of preparing and making speeches.

4. How to write a good newspaper article.

5. How to write good reports for action.

6. How to write a good radio script.

7. How to participate in programs of various organizations.

8. Principles and methods of counseling adults.

9. Various communication channels used in Extension education.

10. Barriers to communication within the social system.

11. Analyzing and interpreting technical data to rural people.

12. Relationship of thinking to communication.

13. Responsibility for accuracy in communication.

B. Skill and Ability to:

1. Use elements of communication and factors affecting them to achieve program objectives.

2. Deliver a good public speech.

3. Present information by radio.

4. Write good newspaper articles, newsletters, etc.

5. Enlist the support and interest of various organizations.

6. Participate in controversial discussions effectively.

7. Use communication channels effectively.

8. Prepare and use simple communications materials and equipment.

9. Think logically.

10. Analyze and interpret technical data and government policies accurately.

11. Evaluate the efficiency of communication methods and techniques.

C. Attitude –

1. To appreciate and value the need for reliable accuracy in communication.

2. To appreciate the responsibility of effect of communication on clientele.

3. To appreciate the importance of keeping content and method of communication within the social and cultural code of the clientele.

4. To appreciate the role and respect for the opinion of audience and program participants.

VIII. Concept: "Rural Sociology and Values"

Curriculum Content: (1) Review of Studies of Selected Communities in Ghana, (2) Social Organization and Social Stratification, (3) Traditional Roles in the Farm Family, (4) Factors Affecting Change and Adoption Process.

Desired Behavior Changes

A. Knowledge and Understanding of:

1. Value orientations between urban and rural people.

2. Cultural and social organization of rural communities.

3. Social principles of cultural development and change.

4. Kinship affiliations and traditional roles in the family.

5. The role of the family unit in rural communities.

6. Land tenure systems.

7. Traditional customs affecting labor input in farming (such as funerals, religious celebrations, etc.).

8. Clientele systems and the role of change agents in the social system.

9. Sources of innovation useful to farmers.

10. The adoption process of individuals.

11. The diffusion of innovation in the social system.

B. Skill and Ability to:

1. Appraise, interpret and develop desirable cultural values in rural people.

2. Cooperate with government agencies and groups of rural people in initiating and supervising action programs for change.

3. Secure interest and cooperation of change agents (commercial organizations, missionaries, local councils, government services, special groups, and private individuals) in the social system in Extension programs.

4. Develop skills in democratic processes and procedures among rural people.

C. Attitude -

1. To appreciate the values and social set up of rural people.

2. To show a conviction that rural people can solve many of their problems by cooperative effort with technical help.

IX. Concept: "Evaluation"

Curriculum Content: (1) The Nature of Evaluation, (2) Evaluation in Extension Education, (3) The Evaluation Process, (4) The Uses of Evaluation Results

Desired Behavior Changes

A. Knowledge and Understanding of:

   1. The degrees of evaluation.

   2. Measurement technique and expectation of performance in a
      program.

   3. The scientific approach and Extension evaluation.

   4. Sources of data.

   5. Sampling and methods of collecting data.

   6. Analysis and interpretation of evaluation results.

   7. Relationship between judging learning experiences and
      educational evaluation.

   8. The publication and use of evaluation results.

   9. The criteria for judging Extension educational objectives.

B. Skill and Ability to:

   1. State educational goals and objectives in measurable terms.

   2. Apply the scientific approach to follow through on the Extension
      education program.

   3. Objectively collect information for evaluation.

   4. Select or construct evaluation devices.

   5. Analyze and tabulate data for use.

   6. Determine program progress and accomplishments.

   7. Interpret, report and apply the findings.

C. Attitude - To Appreciate and Value:

   1. The place of evaluation in Extension.

   2. The need for scientific inquiry.

   3. The importance of objectivity in evaluation of programs.

4. The need for publishing the results of evaluated programs and making use of them.

Section IV

SUMMARY AND IMPLICATIONS

SUMMARY

The purpose of this study was to establish a rational basis for understanding the development of a curriculum for training extension workers in the agricultural colleges of the Ministry of Agriculture in Ghana. The data for the study were collected from the recommendations of the National Task Force on Extension Training, the Subcommittee on Scope and Responsibility of the Cooperative Extension Service, and reports of extension research efforts and other studies in the area of education and training. The information was used as a basis to propose a curriculum for training agricultural assistants who provided the major contact between the Ministry of Agriculture and the farmers in the rural communities. The curriculum was offered as a two-year program in the agricultural colleges.

Subject matter areas implied in the information gathered from the literature covered nine major competencies. These areas were: (1) Technical Agricultural Background, (2) The Agricultural Extension Service, (3) Human Development, (4) Program Development, (5) The Extension Education Process, (6) Social Systems, (7) Communication, (8) Rural Sociology and Values, and (9) Evaluation. These subject matter areas were further subdivided into smaller units which formed the curriculum content for each area of competency. A total of 107 statements of knowledge and understandings, 75 skills, and 31 attitudes were identified as desirable behavioral changes to be achieved.

Included in the study were discussions of theoretical constructs of the nature and meanings of the terms "need," "training," educational philosophy, objectives, policies, procedures, and "concept." The study was based on the assumption that effective development of the rural farming communities of Ghana depended on the amount and quality of training to which the agricultural assistant was exposed while he was at the agricultural college. And, that this was largely a function of a curriculum, carefully planned and systematically geared to the needs of both the farmer and the student.

The concept approach to curriculum development was preferred in this study because the writer felt it would afford more realistic opportunities for direct student involvement in extension program situations. It was also recognized that a process of staff involvement in formulating philosophy and helping determine objectives, and procedures should be a prerequisite of an improved extension training in the agricultural colleges. A well-developed statement of educational philosophy, objectives, and procedures growing out of this process of involvement would do much to strengthen the agricultural colleges' contribution to the total agricultural development of Ghana.

IMPLICATIONS

This study did not propose an all-inclusive curriculum for training extension workers in Ghana. Rather it did point to the need for clear cut objectives and definite concepts for training both the agricultural assistants and the farmers whose needs the efforts of the Ministry of Agriculture were calculated to meet. The curriculum proposed by this study should be the starting point for more research into the specific needs of these main groups the colleges served — the student and the farmer. It could be applied for the purpose of finding out, in more detail, the areas of curriculum development or improvement which it did not explore. In particular, the climate that influenced the objectives of extension training programs would be quite beneficial. Of equal importance to the training of extension workers were the following implications from this study:

1. Research was needed to find out the specific areas of competencies relevant to the work the students would be expected to perform in the Extension Division as a basis for improving the pre-service training program.

2. Comprehensive studies were needed to determine the effectiveness of different extension educational methods and their contributions under Ghanaian conditions.

3. There should be a carefully planned and supervised field experience in extension methods for students while they were in the college.

4. In view of the multifarious nature of the agricultural assistants' duties, the agricultural colleges would need to establish closer coordination and liaison with the universities and the national research institutions such that the colleges might have access to current research findings on trends and developments in the country.

5. An Advisory Committee consisting of representatives from the various divisions of the Ministry of Agriculture, the national research institutions, prominent farmers, and teaching staff of the agricultural colleges should be formed. This committee would (a) determine the program of study for all agricultural assistants, (b) determine the content of special courses for students destined for the Extension Division, (c) determine the training procedures, (d) determine time and place for conducting in-service training programs for all extension workers.

6. Studies were needed that would identify the felt training needs of all extension workers with the view to organizing continuous in-service training programs.

7. Opportunities should be created for officers of the Extension Division to participate in the Adult Farmer activities of the Farm Institutes on a continuing basis to foster greater understanding of the national extension programs.

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A PROPOSED CURRICULUM FOR
AGRICULTURAL EXTENSION TRAINING IN
GHANA'S AGRICULTURAL COLLEGES

by

HORATIO MENDS

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

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MASTER OF SCIENCE

Department of Adult and Occupational Education

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1971

The purpose of this study was to establish a rational basis for understanding the development of a curriculum for training extension workers in the agricultural colleges of the Ministry of Agriculture in Ghana. The data for the study were collected from the recommendations of the National Task Force on Extension Training, the Subcommittee on Scope and Responsibility of the Cooperative Extension Service, and reports of extension research efforts and other studies in the area of education and training. The information was used as a basis to propose a curriculum for training agricultural assistants who provided the major contact between the Ministry of Agriculture and the farmers in the rural communities. The curriculum was offered as a two-year program in the agricultural colleges.

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The concept approach to curriculum development was preferred in this study because the writer felt it would afford more realistic opportunities for direct student involvement in extension program situations. The study also stressed the value of active participation of all the instructional staff in the agricultural colleges, representatives from the divisions of the Ministry of Agriculture, the national research institutions, the universities, and lay leaders in formulating objectives, and determining curriculum content and procedures for pre-service and in-service training among seven implications indicated for further investigations.