

CURRICULUM GUIDE FOR THE KWADASO AGRICULTURAL  
COLLEGE, GHANA, BASED ON OPINION-SURVEY OF  
SPECIFIED ASPECTS OF THE CURRICULUM

by 6408

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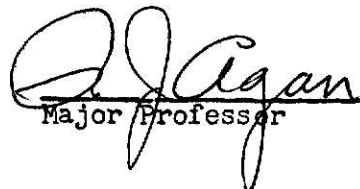
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## SECTION I

### INTRODUCTION

At the time of this study, this investigator had previously worked for twelve years in both junior and senior positions with the Ghana Ministry of Agriculture. Seven of the twelve years had been spent in technical-supervisory capacities, and the rest in teaching at the Kwadaso Agricultural College. The information contained in the introduction, except otherwise indicated, was based upon the observations made during the twelve years preceding the study (1957-1969).

Various reports on African development, such as the Phelps-Stokes Reports on Education in Africa (1920-1; 1924) or the F.A.O. annual and special reports on African development, had recognized the importance to Ghana, or any other African nation, of education and training as the servant of almost all aspects of development. Technical and vocational education had been observed to be intimately linked to the general system of education and fundamentally dependent upon the school system.

Fergus B. Wilson of the Office of African Agricultural Education and Training, Rural Institutions and Services Division, F.A.O., Rome, speaking at a seminar held at the Ahmadu Bello University, Zaria, Nigeria on June 28, 1965, observed that agricultural education was dependent upon good foundations in the sciences and other subjects in the general school system. Likewise, the school system in countries with a predominantly rural economy, such as Ghana, could derive much of its inspiration and practical examples from agriculture and the life and occupations of the countryside. For that reason -- that dependence one upon the other -- it

had been observed that the principles underlying agricultural education and training co-incide with those of the general school system.

### Background Information

It was commonplace to hear agriculture described by African economic planners as the pivot around which the social and economic development revolved. In Ghana it was the principal occupation, and the backbone of the economy. Together with fishing, forestry, and herding, agriculture occupied over 70 per cent of the male labour force, about 15 per cent in cocoa growing alone.<sup>1</sup> Apart from the large number of people engaged in it, agriculture provided a major portion of Ghana's foreign exchange as well as funds for recurrent and capital expenditure. For example, in 1967, the share of agriculture in value of total exports was 89 per cent.<sup>2</sup>

Before the introduction of such commercial agricultural crops as cocoa, rubber, and coffee, virtually every one grew enough to feed himself and his family. However, with a significant and growing proportion of the population occupied in raising cocoa and other commercial crops, in fishing and forestry, in mining and industry, in trade or other non-farming activities, fewer and fewer farmers grew enough to feed themselves or were isolated from the market economy. Cocoa farmers raised a portion of their food requirements, and some fishermen raised some food, but Ghanaians were fast moving towards reliance on the market for at least part of their food requirements.

A greater part of the country was suitable for agriculture, but because

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<sup>1</sup>See 1960 Ghana Census Report (Government Printer, Accra)

<sup>2</sup>F.A.O.; The State of Food and Agriculture, 1970 p. 256



large areas were unpopulated, or relatively dry, or infested with the tsetse fly, 32 per cent of the land area has been used for agriculture. Ghana was self-sufficient in staple foods, but such foodstuffs as flour, sugar, canned fish and slaughter animals were imported.

Small family farm was the common unit of production, and averaged five acres. Hiring labour for farm work was practised on cocoa and other cash-crop farms which were larger than five acres. Farm families had cultivation rights in land communally owned by kin groups. Large-scale farms were limited to the Ghana State Farm Corporation, a statutory corporation which operated oil-palm plantations and poultry farms, and Firestone and Holand Plantations Ltd., which had interests in rubber plantations.

The farmers used the traditional hoe and cutlass as their main farm tools. However, there was a trend towards the use of modern implements and towards surplus production, but since most farmers had no access to credit and urban markets, a significant advance in this direction was to wait upon further development of credit system and transportation. The terrain of the agricultural land was adaptable to machine and draft animal cultivation, but fragmentation of holdings and the presence of the tsetse fly, as well as the lack of capital with which to buy machinery made such development slow.

Fishing supplied about three-fourths of domestic needs, although production was nowhere near optimum. Altogether, some 58,000 people were engaged in the industry. Animal industry (goats, pigs, sheep, cattle, and fowls) provided a very small part of the meat marketed, and the production

and marketing of domestic dairy products was similarly undeveloped.<sup>3</sup>

Government played a major role in agriculture -- education, extension, experimentation and marketing. The Ministry of Agriculture had been largely responsible for bringing cocoa disease and insects under control, and had helped agriculture and animal husbandry through a network of agricultural stations and through a spraying programme.

#### Ministry of Agriculture

In 1961, following the recommendations of a special committee on Agricultural Organization, the Ministry of Agriculture was organized into four divisions: the Cocoa Division; the Division of General Agriculture, which was responsible for all annual and perennial crops (other than cocoa) and for mixed farming; the Scientific Services Division, which was responsible for applied research; and the Division of Agricultural Economics, which was responsible for matters relating to marketing, crop distribution and production forecast.<sup>4</sup>

Further reorganizations followed, until at the time of this report, there were ten divisions. The Scientific Services Division -- no more under the Ministry of Agriculture -- became a branch of an autonomous research institution, the Council for Industrial and Agricultural Research. The General Agricultural Division was broken down into: the Division of Crop Production, Animal Production, Agricultural Settlement, Training and Manpower, Information and Publications, Plant Quarantine, Irrigation and

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<sup>3</sup>E. A. Boateng, A Geography of Ghana. (Cambridge University Press, 1966) p.80.

<sup>4</sup>Ministry of Agriculture, Miscellaneous Information, (Accra, 1961) p.1.

Reclamation, and Mechanization and Transport. Each had its own Chief Divisional Officer and complementary staff.

#### The Kwadaso Agricultural College

The Kwadaso Agricultural College, which was the oldest unit of the Training and Manpower Division of the Ministry of Agriculture, was responsible for training junior technical officers for all the Divisions of the Ministry of Agriculture, as well as scientific assistants for the research institutes engaged in agricultural and related research. During vacation periods the College conducted other phases of training, such as refresher and promotion courses for junior field staff.

The output of the Kwadaso Agricultural College had averaged 40 trained students per year, but facilities were expanded in 1959-60, and after that, recruitment was stepped up, resulting in an average yearly output of 120 graduates.

The course of training was three years long, and successful students were appointed Agricultural Assistants in any of the Divisions of the Ministry of Agriculture or Scientific Assistants in the Crop and Soil Research Institutes of the Council for Industrial and Agricultural Research. The first two of the three years were devoted to classroom and laboratory study of the basic and applied sciences relating to agriculture: Crop Production, Animal Production, Crop Protection, Economics, Extension Education, Farm Management, Farm Mechanization, Field Experimentation, Home Economics (for the girls), Meteorology, Report Writing, Soils, and Surveying. In the third and final year, the students were sent to the various agricultural regions of the country to field-train-on-the-job under the supervision of Senior Officers in the Divisions to which the

students were subsequently posted. To qualify for admission into the College, candidates were to have completed secondary school, and be less than 25 years of age.

#### Statement of Purpose

The purpose of this study was (1) to survey by questionnaire the opinions of the Kwadaso Agricultural College graduates and their supervising senior officers regarding the relevance of the subjects, taught at the Kwadaso Agricultural College, to the work which the graduates were assigned; (2) to apply the findings of the study to a suggested curriculum guide which would be presented to the Chief Agricultural Training Officer for his consideration and adaptation for the Kwadaso Agricultural College.

#### Importance of the Study

The graduates from the Kwadaso Agricultural College, who were appointed Agricultural Assistants in the several divisions of the Ministry of Agriculture, were members of a middle-level manpower in the total education and training efforts to acquire the needed manpower, in quality as well as quantity, for agricultural development. They were regarded as the link between university trained agriculturists (so-called agricultural graduates) and the farmers, acting as practical-technical assistants to the graduates, helpers and demonstrators to farmers.

The Agricultural Assistants were called upon to perform a great variety of activities in several jobs with agricultural services. They included activities in agricultural research, vocational teaching and extension; in major production branches and for individual crops; in special service institutions; in irrigation and settlement projects; for production

statistics and other surveys; in co-operatives and farm machinery stations; in marketing and storage organizations. In each of these sectors, jobs could range from practical-technical fieldwork to advisory-supervisory activities, and from administrative-technical to technical-operational and educational functions.

The great number of different activities the Agricultural Assistant was called upon to perform underscored his role in the organizational structure of the Ministry of Agriculture, and the importance of the content of his training. The general objective of his training was to equip him with the knowledge and skills that would enable him to carry out efficiently and effectively the duties and responsibilities of his post.

Against this backdrop, it was clear that there was an outstanding need -- alongside the planning and execution of the training programme -- to re-examine the curriculum at the Kwadaso Agricultural College, and to evaluate the performance of the Agricultural Assistant to determine if the general objectives were being realized. The greatest need for re-examination of the curriculum arose from the constant changes in his duties; from the demands of the expanding agricultural industry on intelligent manpower; and, in the words of the Rockefeller Report, "the constant pressure of an ever more complex society against the total creative capacity of its people."<sup>5</sup>

#### Limitations of the Study

The general objective of the Kwadaso Agricultural College (stated

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<sup>5</sup>Rockerfeller Brothers Fund, Inc., The Pursuit of Excellence, (Doubleday, 1958) p.10.

earlier) was to equip the students with the knowledge and skills that would enable them to carry out efficiently and effectively the duties and responsibilities of their posts, and the technical duties to which they were assigned. These objectives meant changes in the behaviour of the students.

While these changes included a mastery of course content, they also included the reactions of the students to this content, such as the "ways of thinking, or the skills in knowing how."<sup>6</sup>

Sabrosky and others, in Evaluation in Extension, observed that evaluation is the process of determining the changes in behaviour and appraising them against objectives to find out how far the objectives were being met. The process involved essentially three steps. First, some observations were made or some information collected. Then some standards or criteria were applied to the observation. Finally, some judgment was formed, some conclusion was drawn, or some decision was made. These three elements were involved in all evaluation, and could be done so casually as to be hardly noticeable, such as looking out of the window to decide whether or not to carry an umbrella. At the other end was scientific research in complicated problems to get information which people could use.<sup>7</sup>

Somewhere in between the two was placed this study which was limited to the reactions of some graduates of the Kwadaso Agricultural College (now Agricultural Assistants) about the subjects they were taught at the

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<sup>6</sup>Ryle, G., The Concept of Mind, (Barnes & Noble, 1960) Ch. 2.

<sup>7</sup>Laurel K. Sabrosky, et al., Evaluation in Extension. (H. M. Ives & Sons, Inc., Topeka, Kansas:1954), p.2. (Out of Print)

College, vis-a-vis the jobs they were doing at the time of the study, and the opinions of 18 Senior Officers in the Ministry of Agriculture regarding the performance of those Agricultural Assistants.

Two limitations inherent in this study were recognized. The first limitation was the nature of the method used to gather the data, namely, a questionnaire in which the respondents registered their own feelings and opinions. The reliability of the information given by the respondents could not be objectively verified. The second limitation was the opinions which were considered in the study. The opinions were limited to five areas: the importance of courses; adequacy of material covered in courses; difficulty of courses; interest generated for courses, and their over-all rating of the Kwadaso training programme.

The results of this study were generalizable to only the population polled because physical difficulties prevented the sampling procedure to be controlled by this investigator. (See section on design and procedure, Section III) However, it was thought to be highly probable that the results had implications for a broader population of similar characteristics.

#### Definition of Terms Used

Throughout the study the following terminology were used:

Adequate. The term "adequate," as used in the questionnaire, meant as much as was needed for application.

Difficulty. "Difficulty" as used in Questionnaire A, referred to subjects in the Kwadaso Agricultural College Curriculum, and meant hard to understand or learn.

Important. The term "important," and "valuable," were both used in the questionnaires, and meant useful for the work at hand. The two terms

were used interchangeably.

Interest. "Interest" as used in Questionnaire A, described the feeling of wanting to know or take part usually due to concern or curiosity.



## SECTION II

### REVIEW OF SELECTED LITERATURE

Schwab, in examining the structure of the curriculum, recognized three different sets of problems:

First there is the problem of organization of the disciplines: how many there are; what they are; and how they relate to one another. Second, there is the problem of the substantive conceptual structure of the disciplines examined. Third, there is the problem of the syntax of each discipline: what canons of evidence and proof are and how well they can be applied.<sup>1</sup>

These three different sets of problems were thought to be applicable to the purpose at hand, namely, studying the opinions of some of the Kwadaso Agricultural College graduates and applying the findings to a suggested curriculum guide for the College. As a background for this dual exercise, this investigator found it necessary to review literature selected to concern five aspects of curriculum development: 1) what the curriculum is; 2) confusion in curriculum development; 3) the evolution of the curriculum idea; 4) some curriculum theorists and their theories; and 5) patterns of curriculum organization.

#### What is the Curriculum

The curriculum movement was considered comparatively new by several educationists, including Goodlad who wrote:

It is only about two or three decades ago that the word curriculum was rather abruptly added to the teacher's vocabulary, and for a

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<sup>1</sup>Joseph J. Schwab, "Structure of the Disciplines: Meanings and Significances," in G. W. Ford and Lawrence Pugno, eds., The Structure of Knowledge and the Curriculum (Chicago: Rand McNally and Company, 1964), p.14.

long time it seemed to have little if any practical meaning for the average teacher. Even the definition in the standard dictionary was confusion -- and still is.<sup>2</sup>

Reference to standard dictionaries as an authoritative source of generally accepted meaning and usage confirmed Goodlad's observation. Barclay's Universal Dictionary did not list "curriculum" in the 1822 edition, nor did Webster in his early editions. By 1856 the word had made its dictionary debut with two definitions: "1. a race course; a place for running; a chariot. 2. a course, in general; applied particularly to the course of study in a university."<sup>3</sup> Seventy-two years later, in the 1928 edition, slight changes had occurred: the omission of "chariot" from the first edition, and the addition to the second of "specified, fixed course of study as in a university." In 1955, these two meanings were given: "a. A course; esp., a specified fixed course of study, as in a school or college, as one leading to a degree. b. The whole body of course offered in an educational institution, or by a department thereof; -- the usual sense."

It appeared then that "curriculum" had been a technical work in generally recognized use for only about a century. Its meaning had undergone slight change. In 1928, Walter D. Cocking wrote:

A few years ago the term curriculum was generally used as meaning a group of subjects leading toward a particular end ..... During the past few years, however, there has come a new conception of the term curriculum as it is ordinarily used in modern educational parlance. It seems to be a much more inclusive term, as well as a much more general term.<sup>4</sup>

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<sup>2</sup>John I. Goodlad, "Ungrading the Elementary Grades." NEA Journal, 44:5, March, 1955.

<sup>3</sup>Noah Webster, An American Dictionary of the English Language, (Springfield, Mass., G. & C. Merriam, 1856).

<sup>4</sup>Fred P. Barnes, (ed) School Begins With Kindergarten. (Springfield, Ill., State Superintendent of Public Instruction, Sept. 1957). p.41.

After Cocking, educationists attempted to define, clarify, or express the concept of curriculum. Some definitions, the educators observed, seemed too encompassing and vague to help precision in thinking. When curriculum was defined as "..... really the entire program of the school's work. It is the essential means of education. It is everything the students and their teachers do,"<sup>5</sup> or "the total effort of the school to bring about desired outcomes in school and out-of-school situations,"<sup>6</sup> or "a sequence of potential experiences set up in school for the purpose of disciplining children and youth in group ways of thinking and acting,"<sup>7</sup> Hilda Taba observed that the very breadth might make the definition nonfunctional.<sup>8</sup>

In the literature, three basically different definitions were identified: the first in terms of the experiences of children under the tutelage of the school; the second in terms of social needs and design for institutionalized education, and the third in terms of the psychological changes in children brought about by their school activities.<sup>9</sup> The three basics were encompassed in the definition of "curriculum" which appeared in the Evaluative Criteria:

The curriculum may be defined as all the experiences which pupils have while under the direction of the school; thus defined it

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<sup>5</sup>William H. Emanuel, "College-Entrance Requirements Ten Years After the Eight-Year Study," School Review, 61:18, December, 1953.

<sup>6</sup>J. G. Saylor, and W. M. Alexander, Curriculum Planning for Better Teaching and Learning. (Rinehart, 1954) p.3.

<sup>7</sup>B. O. Smith; W. O. Stanley and H. J. Shores, Fundamentals of Curriculum Development. (World Book, 1957) p.3.

<sup>8</sup>Hilda Taba, Curriculum Development, Theory and Practice. (Harcourt, Brace and World, Inc., 1962) p.9.

<sup>9</sup>Wilford M. Aikin, "The Eight-Year Study. If We Were to Do it Again.", Progressive Education, 31:11-24, October, 1953.

includes both classroom and extra-classroom activities ..... Courses of study may be defined as that part of the curriculum which is organized for classroom use. They suggest content, procedures, aids and materials for the use and guidance of teachers, pupils, and administrators. Thus considered they contain only part of the individual pupil's curriculum. The curriculum and courses of study should be chiefly concerned with the orientation, guidance, instruction, and participation of youth in those significant areas of living for which education should supplement the work of other social institutions.

The result of learning process should include (1) factual information or knowledge; (2) meaning and understanding; (3) abilities to do -- knowledge and understanding combined with skill; (4) desirable attitudes -- scientific, social, moral, and others; (5) worthy ideals, purposes, appreciations, and interests; and (6) resultant intelligent participation in general life activities.<sup>10</sup>

Hilda Taba preferred to describe "curriculum" rather than define it. All curriculum, she indicated, no matter what their particular design, was composed of certain elements: usually a statement of aims and a specific objectives; it indicated some selection and organization of content; it either implied or manifested certain patterns of learning and teaching, whether because the objectives demanded them or because the content organization required them; and finally, it included a programme of evaluation and outcomes.<sup>11</sup>

#### Confusion in Curriculum Planning

The Review of Educational Research (June, 1957) identified the significant changes in the curriculum that had taken place through the years. The first significant change was from emphasis on memorization and mental discipline to emphasis on purpose, meaning, and goal seeking in the learning

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<sup>10</sup>Cooperative Study of Secondary School Standards, Evaluative Criteria (Washington, D.C.: American Council of Education, 1940), p.31.

<sup>11</sup>Taba, op. cit., p.10.

process. The second change was from reliance on tradition and subjective judgment to the use of scientific methods and findings as the basis for educational procedures. The third change was the idea that how people learned was important as what they learned. The change was from stress on subject matter alone to a realization of the importance of motivation and of teaching method. The fourth change was in the pattern of curriculum building from selection of materials by experts who organized them according to the logic of a field, to the participation of teachers, pupils, and the community in identifying goals to be achieved and ways to reach them.<sup>12</sup>

In the literature about curriculum development, planning was treated eclectically. Various approaches to curriculum planning were treated descriptively, with statements of pro's and con's for each which set the patterns into sharp contrast. Student-centred, society-centred, and subject-centred curricula vied with each other as the exclusive basis to the entire curriculum. Virgil Herrick observed:

There are only three basic referents or orientations possible to consider in the development of distinctive curriculum patterns and in making pivotal curriculum decisions. These three referents are (1) man's categorized and preserved knowledge -- the subject fields; (2) our society, its institutions and social processes; and (3) the individual to be educated, his nature, needs, and developmental patterns. These three referents are the sources from which curriculum development and theorizing spring. They are also the source for the ancient controversies over the subject-centred, social-centred, and individual-centred curriculums.<sup>13</sup>

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<sup>12</sup>American Education Research Association. "Curriculum Planning and Development," Review of Educational Research, 27:237-304, June, 1957.

<sup>13</sup>James B. Macdonald, Dan W. Anderson, and Frank B. May, eds. Strategies of Curriculum Development. (Columbus, Ohio: Charles E. Merrill Books, Inc., 1965), p.4.

Under various commissions of the Progressive Education Association (1930's), including the Eight Year Study, foundations were laid for a theory of curriculum planning. The studies of these commissions indicated the necessity for studying students as growing individuals, for examining the needs and developmental sequences surrounding learning in school. They emphasized the necessity for analysing the nature of society and its demands on individuals as a basis for curriculum development. As a result of these studies, there emerged the concept of behavioural objectives of education -- a concept which went beyond acquiring knowledge and academic skills -- and differentiated the learning process appropriate to each objective.<sup>14</sup>

Curriculum development after the war was confined largely to the refinement or reiteration of earlier ideas, and writing about the curricula was confined to choosing sides, criticizing and approving this or that pattern, but proposing very little new.<sup>15</sup>

The Key Reporter (The Phi Beta Kappa news magazine) in its February, 1954 issue, carried opposing discussions of the curriculum under the banner headline "Liberal Arts or Specialized Education?"

Sayers and Madden wrote:

The more one reads in educational philosophy, the more one is persuaded that fundamentally, no such thing exists. There is no philosophy of education, there is only one philosophy. Each man's views of a proper schooling turn out to be an extension of his view on a proper existence ..... Philosophies of education are statements of the implications of philosophies of life for the upbringing of the individual.<sup>16</sup>

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<sup>14</sup>Adventures in American Education Series, (Harper, 1942-43)

<sup>15</sup>Taba, op. cit., p.4.

<sup>16</sup>E. V. Sayers and W. Madden, Education and the Democratic Faith. (New York: Appleton-Century-Crofts, Inc., 1959) p.3.

A year later -- the 1960 edition of Evaluative Criteria stated, "Every school needs a carefully formulated, comprehensive philosophy of education."

Pronouncements of policy and philosophy were filled with pietistic iteration of beliefs in child needs, such as expressed by a Philosophy Committee for the St. Paul (Minnesota) Public Schools: "We recognize the intrinsic worth of the individual child, his inherent and inalienable rights, and his consequent responsibilities to himself and to society. So far as it is possible, he must be provided with the basic knowledges, skills, habits, understandings, methods of attack on problems, action patterns, and appreciations that are necessary for his individual welfare and his service as a citizen.";<sup>17</sup> in societal needs, such as observed by Kamarck, "Certainly, if the African economy is to develop, it will be necessary to train children in rational modes of thought and in an objective, empirical attitude toward nature and society.";<sup>18</sup> in content of subjects, such as "the study in a subject area should, result, first, in the acquisition of skills, attitudes, and disciplined habits necessary for the discovery of new knowledge in the field and, second, in the acquisition of the most useful fund of information possible of mastery within the limits of the time available for the subject."<sup>19</sup>

Hilda Taba diagnosed the sources of the confusion in curriculum planning as being from the conflicts in the philosophical and psychological theories regarding the nature of the individual, the nature of learning, the

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<sup>17</sup>Albert I. Oliver, Curriculum Improvement. (New York: Dodd, Mead and Company, 1968) p.108.

<sup>18</sup>Andrew M. Kamarck, The Economics of African Development, (New York: Frederick A. Praeger, 1967) p.183.

<sup>19</sup>L. W. Downey, "Secondary Education: A Model for Improvement." School Review, 68 (Autumn, 1960) p.254.



goals of the culture, and the pluralism of values.<sup>20</sup>

John Dewey writing about the confusion in curriculum planning, pointed out that a discussion of the curriculum and the subjects that went into it invariably co-incided with a discussion of the specific values of the subjects and the aims of education. He elaborated that some people had the idea that different studies represented separate kinds of values, and therefore the curriculum should be built by gathering together various studies till a sufficient variety of independent values had been cared for. He used the following quotation to make his point:

Memory is trained by most studies, but best by languages and history; taste is trained by the more advanced study of languages, and still better by English literature; imagination by all higher language teaching, but chiefly by Greek and Latin Poetry; observation by science work in the laboratory, though some training is to be got from the earlier stages of Latin and Greek; for expression, Greek and Latin composition comes first and English Composition next; for abstract reasoning, mathematics stands almost alone; for concrete reasoning, science comes first, then geometry; for social reasoning, the Greek and Roman historians and orators come first, and general history next. Hence the narrowest education which can claim to be at all complete includes Latin, one modern language, some history, some English Literature, and one science.

Dewey commented that the phraseology in the quotation betrayed the particular provincial tradition within which the author was writing: there was the unquestioned assumption of "faculties" to be trained, and a dominant interest in the ancient languages; there was comparative disregard of the earth on which men live, and the bodies they carry around with them. Indeed, continued Dewey, such schemes of value were largely but unconscious justification of the curriculum with which one was familiar. One accepted for most part, the studies of the existing course and then assigned values to

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<sup>20</sup>Taba, op. cit., p.9.



them as a sufficient reason for their being taught. Mathematics, for example, was said to have disciplinary value in habituating the pupil to accuracy of statement and closeness of reasoning; it had utilitarian value in giving command of the arts of calculation involved in trade and the mechanical arts; culture value in its enlargement of the imagination in dealing with the most general relations of things; even religious value in its concept of the infinite and allied ideas. But, argued Dewey, "....clearly mathematics does not accomplish such results because it is endowed with miraculous potencies called values; it has these values if and when it accomplishes these results, and not otherwise."<sup>21</sup>

When these conflicting ideas were applied to curriculum making, they ceased to be mere theoretical details: they acquired pragmatic importance.

#### The Evolution of the Curriculum

"The dynamic and changing nature of society requires a continuous examination of instructional objectives. Schools in this society should serve people to whom they belong and, therefore, must be sensitive to the desires of the people and must meet their needs."<sup>22</sup> The literature on the evolution of the curriculum seemed to confirm this idea, for the development of the curriculum of the schools in the United States was dominated by five motives which were societal in origin: religious, political, utilitarian, mass education, and excellence. Refusal to recognize the existence of

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<sup>21</sup>John Dewey, Democracy and Education. (Collier-Macmillan, 1966) pp.240-260.

<sup>22</sup>Robert L. Saunders, Ray C. Phillips and Harold T. Johnson, A Theory of Educational Leadership. (Columbus, Ohio: Charles E. Merrill Books, Inc., 1966), p.135.

societal needs inevitably brought catastrophe upon the existing forms of the education structure, as when the Latin Grammar School was replaced by the academy, which in turn was superseded by the high school.<sup>23</sup>

#### The Religious Motive (1635-1770)

According to the literature surveyed, the religious motive dominated the curriculum during the period 1635 to 1770. The early settlers of America brought with them certain cultural ideas. With some, religious heritage was predominant and controlling, such as the puritans who settled the coast of New England. With other groups, economic motive ruled; for example, the pioneers who settled in Maryland and the Southern colonies were looking for gold, although they found wealth in another form -- tobacco and cotton.

Cubberley<sup>24</sup> wrote that the following types of education were transplanted to America, each according to the culture from which the pioneers came: 1) the church-state type, found in New England; 2) the parochial school type, exemplified in Protestant Pennsylvania and Catholic Maryland; and 3) the charity, or philanthropic type (excluding college level) found in Virginia and Carolinas. All three types stemmed from the church, whether the church was Catholic or Protestant, and whether the educational institution was operated by a private individual, by a group of individuals, or by an organization.

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<sup>23</sup>Rudyard K. Bent, and Henry H. Kronenberg, Principles of Secondary Education, (New York: McGraw-Hill Book Company, 1966), p.24.

<sup>24</sup>Elwood P. Cubberley, Public Education in the U.S. (rev. ed) (Boston: Houghton Mifflin Company, 1934), Ch. 2.

Describing the early religion-centred schools, Gwynn<sup>25</sup> observed that in spite of their common interest in religion and education, sharp differences in educational emphasis were evident among the denominational groups that settled in various sections of the new country. Coming from England where they had revolted against the church-state, the Puritans set about constructing and attempting to perpetuate the very influence they had protested and fought against and fled from in England: the state was the church, the ministers were the social and political leaders, and for the most part, were the teachers. To the Puritans, the welfare and progress of the state demanded two things: 1) a ministry that knew the Bible, that could not be deceived, and could continue to indoctrinate and to lead the people in the true faith; and 2) a people well enough educated to read and understand the Bible. With these two aims in view, the New England colonies generally established the writing school (elementary), the Latin Grammar (secondary) school, and the college.

Gwynn indicated that in the middle colonies, there was no church-state, nor was one possible, because both Protestant and Catholic were found there. In those colonies, the people established schools as a part of their religious institutions, with the colonial governments taking no active part. The emphasis in subject matter was on religion and the three R's. The parochial type of school predominated. In the plantation colonies of the South, education was almost wholly a private affair to be provided, if at all, by each family. The only public attention given to education in those colonies was in legislation relating to the education of orphans (mostly

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<sup>25</sup>J. Minor Gwynn, Curriculum Principles and Social Trends, rev. ed. (New York: The Macmillan Company, 1969), Ch. 1.

apprenticeship) and of children of the poor in religion and learning to conform to "their estate." The church gave indifferent attention to education, the state even less, and the individual family gave only as much as its social and financial background allowed. Private tutors, small private schools, and parochial and church "charity" schools predominated, and the state was interested only in higher education.

#### The Political Motive (1770-1860)

A review of the literature, including Hahn, et. al.<sup>26</sup> and Thut<sup>27</sup> indicated that although the curriculum of the schools did not change appreciably during the first century and a half of the nation's life, changes in economy, social life, political beliefs, and educational practice went on steadily -- especially in the last fifty years of the period.

Other writers indicated that trade and commerce came to occupy a prominent place in the new country, yet the existing schools did little to prepare their students for such work. Other factors contributing to educational changes in this period included: 1) the French and Indian Wars which left New England economically prostrate; 2) the beginning of the decline of the religious motive in controlling all life, including education; 3) the development of varying sectional economies; such as the free-labour West, the slave-labour South, and the commercial East; 4) urban growth, with its accompanying problems of labour, poverty, and mass education; 5) the dissatisfaction with the existing types of education; and 6) lack of

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<sup>26</sup>Robert O. Hahn, and David B. Bidna, Secondary Education: Origins and Directions, (New York: The Macmillan Company, 1965), Sec. 3

<sup>27</sup>I. N. Thut, The Story of Education: Philosophical and Historical Foundations, (New York: McGraw-Hill Book Company, 1957) Chaps. 6 and 21.

provision for the education of girls.

The literature showed that until the Revolutionary War, the development of schools in the colonies had continued to parallel, to a great extent, school development in England. With independence came the loss of the mother country's support in educational matters. Textbooks that had been supplied from abroad now had to be produced at home; the Crown's support of colleges ceased; and the financing of parochial and charity schools had to be borne by the colonists without hope of much support, if any, from abroad. In addition, the shattered economy as a result of the Revolutionary War, and the rather uncertain national structure after the ratification of the Federal Constitution in 1789, contributed to the grave situation in which the new nation found itself. This situation was the precursor of the second dominating influence on the curriculum -- the political. Whereas in the colonial period the leaders had emphasized literacy as a means of perpetuating religious freedom, the leaders of the early national era emphasized it for the preservation of liberty and the new democratic form of government. This political motive was reinforced by two movements which early became fundamental in American life: the universal adult suffrage, and the development of "rugged individualism."

#### The Utilitarian Motive (1860-1920)

Historical sources -- confirmed in the literature reviewed -- indicated that from 1860 to 1890, a major struggle was waging for the establishment of free schools at public expense in the United States. Now that the public elementary school had been generally accepted, the battle was waged for the upward extension of the common school to include the high school level. Some of the arguments against the high school were that it was not right to tax a

man to educate his neighbour's children any more than to feed and clothe them; that it was a waste of public funds to give most youths a high school education; that "it is a shame to tax the poor man to pay a man \$1,800 to teach the children to make X's and pothooks and to gabble parley-vous."<sup>28</sup>

It was 1890 before the establishment of public secondary schools was generally stimulated by state legislation or by state aid. The high school, at first designed for a period of instruction beyond the elementary level to fit students more fully for life, soon came to be the only avenue of preparation for the youths who wished to attend college. Thus the stage was set for the controversy about the curriculum between the proponents of the "finishing" (preparation for life) function, and those of the "fitting" (preparation for college) of the high school.

Other historical sources reviewed indicated that early in the nineteenth century demands were made for higher education in agriculture and engineering. The need for engineers became more acute during the last half of the century because of changes in industry brought about by the Industrial Revolution. The need for technically trained agricultural workers to develop agricultural resources was recognized by many leaders in agriculture. This need was met by the passage of the Morrill Land-Grant Act of 1862. This Act provided that public lands should be granted to each state in the amount of 30,000 acres for each senator and each representative a state had in Congress at the time of the passage of the Act; or if later, at the time it was admitted to the Union. The proceeds of the sale of these grants were to provide for the endowment and support of at least one college in each state: "without

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<sup>28</sup>I. K. Kandel, History of Secondary Education, (Boston: Houghton Mifflin Company, 1930), p.435.

excluding other scientific and classical studies and including Military tactics, to teach such branches of learning as are related to agriculture and mechanic arts, in such manner as the legislature of the states may prescribe in order to provide the liberal and practical education of the industrial classes in the several pursuits and professions of life."<sup>29</sup> The land-grant colleges laid emphasis upon new subjects of study that formerly had not been considered socially acceptable or "respectable" for college. The most significant effect that the establishment of these new colleges had upon the public high schools was the opportunity granted them to continue to broaden their curricula. Since many of the secondary schools were as adamant as the traditional colleges regarding any change in the classical curriculum, the solution was the building of separate high schools of specialized types in large communities. For example, the "classical" high schools prepared youth primarily for college, while the "technical" and "commercial" high schools trained youth specifically for a life work.

The literature also indicated that during the nineteenth century American scholars in large numbers went to the colleges and universities of Europe, particularly Germany, to study.\* These students returned home to institute the "scientific" approach to study. Louis Agassiz and Charles W. Eliot of Harvard University were two examples from this group who established in American colleges the teaching of science and the use of the scientific methods in all studies. The curriculum of the high school

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<sup>29</sup>Alfred C. True, A History of Agricultural Education in the United States, Miscellaneous Publication 36, U.S.D.A., Washington, D.C., 1929, p.100.

\*In the observation of this investigator, this was not unlike today's students from Africa and Asia flocking to U. S. colleges for education.



reflected this influence by the introduction of laboratory courses in science and in the modern foreign languages. Cubberly gave a list<sup>30</sup> of studies that were introduced into the high school during the latter half of the nineteenth century; he listed them in order in which they were granted credit for admission to college:

#### New High School Subjects Accepted For College

Entrance, 1860-1890

Subject	Date	College First Accepting
Modern (US) History	1869	Michigan
Physical Geography	1870	Michigan and Harvard
English Composition	1870	Princeton
Physical Science	1872	Harvard
English Literature	1874	Harvard
Modern Languages	1875	Harvard

In an address, President Charles W. Eliot<sup>31</sup> of Harvard University presented the following list to the National Education Association after he had made a canvass of all the subjects from which high school programmes were then commonly made up:

#### Subjects of Study in Public High Schools, 1891

1. English, including both literature and composition and the elements of rhetoric.
2. History (ancient, medieval, and modern)
3. Civil Government
4. French
5. German
6. Latin
7. Greek

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<sup>30</sup>Cubberley, adapted from p. 315.

<sup>31</sup>C. W. Eliot, "Undesirable and Desirable Uniformity in Schools," Addresses and Proceedings of the National Education Association (October, 1892), pp. 92-94.



## Continued      Subjects of Study in Public High Schools, 1891

8. Arithmetic
9. Algebra
10. Plane Geometry
11. Solid Geometry
12. Trigonometry
13. Analytic Geometry
14. Physical Geography
15. Geology
16. Botany
17. Zoology
18. Physiology
19. Physics
20. Chemistry
21. Astronomy
22. Psychology
23. Moral Philosophy
24. International Law
25. Political Economy
26. Science of Education
27. Music
28. Drawing
29. Stenography
30. Bookkeeping

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(Eliot, adapted from p. 93)

Eliot's address stimulated the National Education Association to appoint the "Committee of Ten" (Committee on Secondary School Studies). Organized in 1857, the National Education Association was reorganized in 1870 with departments of 1) School Superintendence; 2) Normal Schools; 3) Elementary Schools; and 4) Higher Education.<sup>32</sup> The report of the Committee of Ten (1893) was the beginning of the reformation of the curriculum through national committees. The report established:

1) A quantitative measure of secondary education, based on the equivalence of studies. Any subject taught for an equal length of time, equally intensively, and under equally competent instruction was of as much value as any other subject. One could see how the universal adoption of such

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<sup>32</sup>Gwynn, op. cit., p.20.

an educational idea sounded the death knell of the classics and other traditional subjects in high school.

2) Four different curricula, any of which could lead to graduation from high school. These were: (a) classical; (b) the Latin-Scientific; (c) the Modern Language; and (d) the English.

3) The concept of automatic transfer of knowledge. The Committee stated that mind developed chiefly in three ways: 1) by cultivating the powers of discrimination, for which the study of languages was recommended; 2) by strengthening the logical faculty by reasoning from point to point, which faculty was trained by the study of mathematics; and 3) by ripening the process of judgment, which was promoted by the study of history.<sup>33</sup>

A report of the Committee of Fifteen on Elementary Education (1895) dealt with school organization, the correlation of the elementary school subjects, and the preparation of teachers.<sup>34</sup> From another report, (1899) that of the Committee on College Entrance Requirements, certain uniform standards or principles for the high schools became firmly established, among them the following:<sup>35</sup>

1) That the principle of restricted election on the high school level be recognized, with the following "constants":

<u>Subjects</u>	<u>Units</u>
Foreign Language	4 (No language in less than 2 units)
Mathematics	2

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<sup>33</sup>National Education Association, Report of the Committee of Ten on Secondary School Studies. (Washington, D.C., 1893) p.160-168.

<sup>34</sup>Gwynn, op. cit., p.22.

<sup>35</sup>Gwynn, op. cit., p.23.

<u>Subjects</u>	<u>Units</u>
English	1
History	1
Science	1

2) That a year's work in high school in any subject, four periods a week, be accepted as counting towards college entrance credit. This was the formal beginning of counting high school credits in terms of "units". All the three reports, made in the 1890's, were dominated by subject-matter specialists, who disagreed to a certain extent among themselves as to the "mental discipline" that a student might obtain from the study of a given subject. The recommendations of these reports influenced the curriculum of the secondary school in two ways during the next thirty years. In the first place, more and more subjects of a practical nature were admitted to the secondary school curriculum, with the accompanying feature of much free election. In the second place, the four parallel curricula recommended by the Committee of Ten did not retain their expected degree of respectability, and were merged into:<sup>36</sup>

1. Classical	)	
2. Latin-Scientific	)	
3. Modern Language	)	College Preparatory
4. English		Vocational Curricula

The literature indicated that twenty years after the appointment of the Committee of Ten, the National Education Association appointed the Committee on the Economy of Time in Education (1911). That Committee made the first real effort to employ scientific methods to determine curricular materials,

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<sup>36</sup>Gwynn, op. cit., p.23.

to place the materials properly by school grades, and to eliminate subject matter of little worth. For the first time, tests were used to measure teaching effectiveness, and textbooks and existing curricula were examined extensively. Psychological principles and other criteria were employed in an attempt to discover what knowledge and skills were most worthwhile to society, and a beginning was made to study the problems of contemporary American life. The reports, which covered a period of ten years, laid the foundations for the curriculum studies that were carried on since then.

The outstanding contribution which the Committee on the Economy of Time in Education made towards curriculum study was in the area of educational philosophy -- a change in which education became child-centred. In line with that new concept, there was a concerted effort to introduce subjects of study that would contribute "naturally" to the total development of the child: music, art, handicrafts, and physical education.<sup>37</sup>

The Motive of Mass Education (1920-Date) and The Motive for Excellence in Education (1957-Date).

The mass education motive was the controlling influence in the development of American education since about 1920. Historical sources reviewed indicated that between 1860 and 1890 the population of the U. S. doubled, and nearly doubled again between 1890 and 1920. In view of the abundance of free land needing development, the government encouraged immigration. New settlers from many lands came by their thousands. Their coming gave rise to new problems -- Americanization and literacy, teaching of democracy. These became as important as the predominant mass education.

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<sup>37</sup>Gwynn, op. cit., p.24.

The motive for excellence in education got its impetus after the launching of the first Russian Sputnik into orbit. "Probably the Russian launching of Sputnik had done more than any other single event to upgrade education in the United States."<sup>38</sup> This resulted in a demand that America's educational system produce more scientists, mathematicians, and highly trained personnel for national survival in the nuclear age. The controversy over whether education could be excellent and equal has become intense during the last decade.<sup>39</sup>

### The Curriculum Theorists and Their Contributions

#### The McMurrys As Representative Herbartians

The literature reviewed indicated that the American Herbartians flourished in the nineties. They were a large group of interesting and important men: the artist-teacher, Francis Wayland Parker; William Torrey Harris, leader of American education and one of the Herbartians' most friendly and able critics; Charles DeGarmo, President of Swathmore; Elmer E. Brown, scholar and later U. S. Commissioner of Education; C. C. Van Lieu, student of both the child-study and Herbartian movements, and President of the State Normal School, Chico, California; James Earl Russel, Dean of Teachers College, Columbia University; Edmund Janes, President of the University of Illinois; Herman Lukens of Clark University;<sup>40</sup> the list

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<sup>38</sup>Albert I. Oliver, Curriculum Improvement, (New York: Dodd, Mead and Company, 1968), p.227.

<sup>39</sup>J. W. Gardner, Excellence: Can We Be Equal And Excellent Too? (New York: Harper and Row, 1961)

<sup>40</sup>Mary Louise Seguel, The Curriculum Field: Its Formative Years. (New York: Teachers College Press, Teachers College, Columbia University, 1966), p.7.

rolled on, composed of persons whose influence on American education at the turn of the century was considerable. They appeared to be a company of men of such nearly equal stature that the choice of one outstanding figure was difficult.

Although the McMurrys--Charles and Frank--shared with other Herbartians a concern for the fate of the elementary school curriculum, they were especially successful in calling the attention of the teaching profession to the curriculum in action of the classroom. Commented Charles McMurry, once, "The teacher is working at the very smelting process, the point of difficulty where new, uncomprehended knowledge meets this tumult of the child's mind."<sup>41</sup>

The historical sources reviewed described the condition of the curriculum at the time the Herbart Society was formed in 1895. At that time, American educators felt that the curriculum, or the programme of study and their content, was in great need of attention. In the period following Horace Mann's revitalization of the school in 1837, almost all the attention of school men had been given to school organization. In the process, less attention had been paid to the curriculum and there was a growing feeling by 1880 that something should be done about the curriculum. There was a general sense of dissatisfaction about the curriculum.

One of the problems about the curriculum had been that its content had greatly increased, but in a rather disorderly and unsystematic manner, and there had been a persistent pressure for change. This pressure for change was based in part on the increasing number of scholarly disciplines. Within

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<sup>41</sup>Charles A. McMurry, Conflicting Principles in Teaching and How to Adjust to Them. (Boston: Houghton Mifflin Co., 1914), p.258.

a forty-year period--between 1852 and 1899, the following learned societies were established in the U. S.: American Geographical Society (1852); Mechanical Engineers (1857); Entomologists (1859); Chemical Engineers (1876); American Historical Association (1884); Electrical Engineers (1887); Geologists (1888); Zoologists (1890); American Mathematical Society (1894); American Physical Society (1889), with almost always the coincidental appearance of the corresponding university chairs and departments.<sup>42</sup>

The pressure to include these subjects in the curriculum was also due to a changing cultural attitude toward the usefulness of education in individual and social improvement. The rise of the academics in the middle of the nineteenth century in America testified to the growing conviction that knowledge was useful in preparing youth for the "great aim and real business of learning."

Usually this new knowledge was introduced into the curriculum of the elementary schools by way of a textbook. The books, written mostly by university dons, had been written primarily for the college, then watered down for the high school and finally diluted for the elementary school to such an extent as to reduce them to a virtual outline of knowledge, divested of the very rich and illustrative detail that would have given such an outline meaning.

Teachers tended to rely on these textbooks for both content and method, and they considered memory as a substitute for knowledge. Most texts furnished questions and answers to be employed in the recitation and tended to encourage the teacher to emphasize memorization. A report of a supervisor in 1885 gave some insight into the problem:

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<sup>42</sup>Encyclopedia Britanica (14th ed.) XVIII, pp.309-19.

(The teacher) repeated the questions in Geography in the exact order found in the book, and as the children could answer but few of them, he would look at the map, or the text, and read the answer from the book; when a pupil or pupils could give the expected answer, he or they answered abruptly, or in concert.<sup>43</sup>

In addition, the general enthusiasm for the subject matter that, it was thought, exercised the mental faculties led educators to applaud these compendiums of content as especially useful in developing the memory and reasoning powers. Frank McMurry was later to comment:

There was no uneasiness about the curriculum in those days. Anything that was a fact might well be included, because it at least "trained the mind."<sup>44</sup>

As each new variety of text was added to the school offering, the curriculum began gradually to enlarge. It became an unsystematic assembly of parts, each one of which was included in response to the demand of the next content to be taught. The curriculum of the late eighties was summarized in the literature as disjointed, abstract, wordy and crowded.

#### The Herbartian Theory

Johann Herbart, German philosopher, psychologist, and pedagogue, formulated a new educational psychology. Rousseau had contributed the idea that education was an individual development based on the growth of natural capacities. Pestalozzi accepted Rousseau's theory but he added to it the "faculty" psychology of education. This faculty theory of education assumed that each individual possessed various faculties of mind, such as reasoning, memory, and music. In line with this theory, Pestalozzi and the faculty

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<sup>43</sup>John Trainer, How to Grade and Teach A Country School. (Decatur, Illinois: Burgess, Trainer and Co., 1885), p.17.

<sup>44</sup>Frank M. McMurry, "Some Recollections of the Past Forty Years of Education." Peabody Journal of Education, IV, (May, 1927), p.325.



psychologists believed that education was to strive for the equitable development of these faculties of the mind.

Herbart accepted all of the methods and subjects of instruction developed by Rousseau and Pestalozzi, but he rejected their concepts of the aims of education. He believed that the aim of education should be the preparation of people to live a good moral life in organized society. He believed that man's main interests were of two kinds: (1) his touch with things in his environment, and (2) his contact with human beings--social interaction.

To achieve these educational aims, Herbart contended that interest on the part of the pupil was a prerequisite of good teaching. He formulated the doctrine of "apperception," that is, the grasping and mastering of new knowledge in terms of the knowledge already acquired. The five Herbartian steps were developed as a system of methodology for attaining this "building up of concepts" in the minds of pupils.<sup>45</sup>

These steps were:

1. Preparation: stating the aim of the lesson, and taking other precautions to put the children in the right frame of mind for the new material.
2. Presentation: securing new data or experiences from reading, lecturing, conversing, experimenting, questioning, etc.
3. Association, comparison, and abstraction: discussing and interpreting new material, relating it to previous experiences, comparing, classifying, arranging, noting common characteristics, perhaps reaching a vague feeling of general principles involved.
4. Generalization: formulating a statement of the general principles

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<sup>45</sup>Seguel, op. cit., pp.14-16.

which have been worked up to in step three.

5. Application: interpreting other situations or experiences (old or new) in terms of the generalization reached, working particular problems, judging special cases of all sorts.<sup>46</sup>

One of the main influences upon the curriculum of these five Herbartian steps was the development of the new idea of correlation of subject matter and the unity of the learning process. These were the beginnings of the "core curriculum." Johann Herbart died in 1841.

#### The McMurry's German Experience

According to the literature reviewed, the two brothers, Frank and Charles McMurry, after attending Illinois State University in the early eighties, taught for several years in the elementary school, and were familiar with the curriculum of the late eighties--disjointed, abstract, wordy and crowded. They decided to go abroad for further studies in Germany, a country noted for the excellence of its education system.<sup>47</sup>

The McMurry's first introduction to Herbartian theory was through two books: Karl Lange's Apperception, and Christian Ufer's Formale Stufen. These two books were to have a profound influence on their thinking, particularly that of Frank who was to comment years later:

I know I experienced an education conversion, and the time of it was in the winter of 1887-8. It was those two books that did it.

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<sup>46</sup>Seguel, op. cit., p.19.

<sup>47</sup>Ten thousand American students are estimated to have matriculated in German Universities in the 19th century. They studies philosophy, medicine, theology, and law. In 1880 there were more than 2000 abroad. (Bulletins of the U. S. Bureau of Education 1880-1900).

The theme of Lange's book was apperception, and that of Ufer's discussed the steps of the recitation. These opened their eyes to the possibility that methodology might have a philosophical and psychological rationale of real breadth and depth.

In connection with the study of methodology at the University of Jena, the McMurry's attended training classes in the practice school as well. For forty years there had been at this university a teacher training programme intimately connected with the activities of the practice school. This was not novel in Germany. Ever since Herbart had first established the pattern at Koeingsberg in 1809, a practice school run in connection with a pedagogical school under the wings of a great university had been part of the German tradition in education. However, the peculiar vitality of the programme at the University of Jena was due to the vigorous work of its director, Wilhelm Rein, a disciple of Ziller, who had been a disciple of Johann Herbart. Under Rein, the teachers in training observed and analyzed the teaching done in the practice school, using Herbartian ideas as their criteria.

The McMurry's were no strangers with practice schools; but the scope, depth, and pace of this one astounded them, as did the fact that the methods of selecting content and organizing the curriculum were so consistently Herbartian. The class in pedagogy consisted of three sessions. The first one, called the Practikum, was held usually on Wednesday and consisted of a model recitation conducted by a student teacher about which the rest of the class were to make full notes. The second session, called the Theoretikum, was usually held from seven to eight Friday evening. Here the critiques were read. For the third session, called the Conference, the members adjourned to a nearby hotel. The tables having been arranged in the form of a "T" with the Professor on a sofa at the head, the discussion was thrown wide open.

Dr. Rein summarized the whole. The impression made on the students was lasting. Frank reported years later:

That evening was a revelation to me. Even though I suspected that it was only by accident that so much theory related itself to that particular thirty-minute recitation.....it carried me a long way toward the conviction that I would get in Germany what I had gone there for.<sup>48</sup>

This work with Dr. Rein convinced Frank that pedagogy had a rationale of a very respectable breadth and depth. He also recognized in the Herbartian theory something which the American schools so far had lacked. At the centre of the Herbartian pedagogy was a systematic method of selecting, arranging, and organizing the curriculum, that put the child and knowledge in a pedagogical relationship.

#### Charles McMurry's Writings

On his return from Jena, Charles set down in a book form some of his thoughts on the application of Herbartian doctrines to the American curriculum problem. Rather than work his ideas out at length, one by one, he arranged for the private printing of three small volumes, and began to collect data for the fourth.

The first was called a book on method. (Charles McMurry, How to Conduct the Recitation and the Principles Underlying Methods of Teaching in Classes, Chicago: A Flanagan Co., 1890). Unlike the usual books on methods of teaching, it gave a short outline of the method of selecting and organizing content which he had observed in use in Jena. Based on the Herbartian doctrines of apperception and correlation, the book showed how to control the child's active assimilation of knowledge by developing the recitation in the proper

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<sup>48</sup>Frank McMurry, op. cit., p.329.

order. He described how the teacher must select and arrange the ideas in the lesson, tailoring them to fit the active mind process observed in the child.

In the second book, he applied this general method to the subject of geography. (Charles McMurry, A Geography Plan for the Grades of the Common School, Winona; Minn.: Jones and Kroeger, 1891). He suggested that the teacher might foster apperception by beginning with geographical objects and activities within the children's direct experience, such as the food products of their own gardens, or a visit to a sawmill, etc.

His third work was for children, a collection of narrative and biographical materials on the pioneer history of the Middle West, selected from first-hand sources and suitably arranged. (Charles McMurry, Pioneer History Stories for Third and Fourth Grades, First Series; Winona, Minn.: Jones and Kroeger, 1891).

Fourth, Charles began to work out by experimentation in the practice schools of both the normal schools in which he was a professor, an American version of the course of study of Rein. (Charles McMurry, A Course of Study for the Eight Grades of the Common Schools, Including a Handbook of Practical Suggestions to Teachers, Bloomington, Illinois: Public-school Publishing Co., 1895). When the volume appeared in 1895 it was sent especially to superintendents of schools, accompanied by the request that they use it, comment on it, and send him theirs for comparison.

Remembering the impact on their own thinking made by the books of Ufer and Lange, both Charles and Frank encouraged a small group of enthusiasts in Illinois to translate or arrange for the translation of a number of fundamental books on Herbartian doctrine.

Frank McMurry and the Herbart Society

According to the records of the Herbart Society, in 1892, at the Saratoga meeting of the Department of Superintendence, a small group of interested men and women formed what they simply called a Herbart Club. In 1895, the group acquired an official name, The National Herbart Society for the Scientific Study of Teaching, a distinguished executive council, a membership, and funds for a yearbook.

The organization planned a wide, scholarly approach to current educational issues by soliciting papers and reports for the meetings from members seriously at work upon the study of some problem of education.

One of the principal problems to which the meetings of the Herbart Society were devoted in the first few years was that of correlation. Discussion of this subject began with a keynote speech in 1895 by Mr. DeGarmo, in which he briefly outlined what he considered to be the school's chief problem. He referred to the impetus to extend universal schooling in America, and to the success of establishing the basic machinery of the school at the expense of systematic attention to the curriculum. He disagreed with the many and various schemes which had been recommended by the various adhoc committees under the auspices of the National Education Association. He scorned what he termed the "surgical pedagogy--omitting old studies so that new might be added. To reduce weight it amputates limbs."<sup>49</sup>

After indicating his agreement with DeGarmo, Frank McMurry suggested that the way to solve the problem was to provide for a proper correlation of subjects. Frank first described the doctrine of apperception in such a

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<sup>49</sup>Seguel, op. cit., p.32.

way as to connect it closely with the stages of child growth. He contended:

That what one can know and feel and will depends on what he has already known and felt and willed, or that past experiences are the sole basis for intellectual, emotional, and ethical growth.....<sup>50</sup>

Frank insisted that the relevance of the doctrine of apperception to the crowded curriculum lay in its suggestion that content would be most economically taught if it were selected to fit the stages of child growth.

Among those who had viewed correlation with suspicion was William T. Harris, who defended the basic divisions of the structure of knowledge. He had categorized knowledge into five coordinate groups: 1) mathematics and physics; 2) biology; 3) literature and art; 4) grammar; and 5) history. Agreeing with Harris was a group who had contended that correlation was a function of the child's mind itself and was not hindered but furthered by clear, logical instruction in each branch of study. They feared that a forced unification, attempted too early, would disturb and perhaps destroy the natural unifying process going on in the child's mind.

Charles McMurtry countered with the argument that the natural movement of the child's mind was toward a unity. Charles agreed that every subject of instruction had some essential function in fitting the child for life but he stressed that the ideas of history were related to the ideas of geography in dealing with the problems of nature and man. But, for the child, he contended, these historical and geographical ideas were mixed up in a welter called, for example, the Mississippi Valley. He insisted that teachers should help children organize their thoughts by grouping the studies around topics--

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<sup>50</sup>Frank McMurtry, "Concentration." First Yearbook of the National Herbart Society for Scientific Study of Teaching. (Bloomington, Illinois: Pentagraph Printing and Stationery Co., 1895), p.28.



at the same time distinguishing carefully for the child the characteristic contribution of each study to the topic. Charles regretted that teachers did not do this. For example, teachers customarily presented in one morning the history of the Mississippi Valley, the geography of South America, the science of the parts of the flower, and the literature of Greece. He quoted Herbart himself to show the confusion that necessarily resulted from such a practice:

...I cannot refrain from wondering what sort of a process is being worked out in the heads of school boys, who in a single forenoon are driven through a series of heterogeneous lessons, each one of which, on the following day, at the regular tap of the bell, is repeated and continued.<sup>51</sup>

There was danger that doctrine of correlation would be misunderstood.

"We could, of course, associate butter with butter-flies and cows with cowslips."<sup>52</sup> Later someone else was to caricature this same kind of misunderstanding of the theory. He was to describe a lesson in the early grades in which the teacher had the children read about apples, divide apples, sing about apples, examine apples, and make pictures of apples, until one boy (probably out of desperation) drew a horse to eat all the apples up.<sup>53</sup>

#### The McMurry's Contributions

The Herbartians succeeded in creating an awareness in the minds of educators of the time of the need to promote unity in the child's mind. They alerted the teacher to the value of watching closely the process by which the child assimilated knowledge and of arranging the presentation of content so

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<sup>51</sup>Charles McMurry, "A Reply to Dr. White's Paper," Second Yearbook of the National Herbart Society for the Scientific Study of Teaching (Bloomington, Ill.: Pantagraph Printing, 1896), p.46.

<sup>52</sup>Charles DeGarmo, "The Principles Upon Which the Coordination of Studies Should Proceed," Journal of Proceedings and Addresses of the National Education Association (1895).

<sup>53</sup>Seguel, op. cit., p.35.



that logical, intellectual interrelationship would stand out. They preached a gospel of moral aim of education to mean that the content of the curriculum should be chosen so that the child would learn to act morally.

In calling professional attention to the "smelting process.....where new uncomprehended knowledge meets this tumult of the child's mind"<sup>54</sup> they helped to bring the child and the teacher out into the centre of the educational stage, as *dramatis personae* of the play.

Finally, the Herbartians promoted pedagogy as a university discipline. They were inspired by the intellectual solidity of the German tradition, in which the pedagogy taught was well articulated with philosophy and psychology, and in which the theorist himself tested his ideas in the university's own practice school.

Summarily, the McMurry's, as representative Herbartians, earned the honour of being the pioneers in the curriculum field, the initiators, and compelled the profession to consider both the curriculum and how it was made.

#### John Dewey

The literature surveyed indicated that one of the most friendly and searching analysts of the Herbartian movement was a young philosopher, John Dewey. In the early nineties, his interests moved steadily toward the formulation of a philosophical and psychological base for educational theory. He perceived that he shared an interest with the Herbartians in the relationship of education to philosophy and psychology. As a result, he presented two important papers before the Harbart Society during their first years of existence, one in 1895 and the other in 1897. These papers provided the Society with just that nice combination of judicious approval and

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<sup>54</sup>Ibid., p.43.

searching criticism which invigorates without destroying.

In two papers, Dewey tried to show how Herbartian doctrine of interest overestimated the importance of ideas.<sup>55</sup> He suggested that Herbart, in trying too vigorously to get rid of faculty psychology, had relied over-heavily on the ideas themselves as motives for the will. Granting that ideas are a basic guide to conduct, Dewey pointed out that since ideas do not in themselves motivate conduct, Herbart had had to find which would, and had resorted to the feelings that result from the interaction of the ideas themselves, that is, interest. This theory, Dewey continued, was logical enough, but it did not explain how to prevent this purely interactive pleasure from attaching itself to wrong ideas as well as right. As a means of avoiding this dilemma, Dewey recommended that the individual human agent be restored as the link between knowledge and conduct.

Dewey concluded with an indication of the meaning for the curriculum of his view of the moral aim. The content of the curriculum, he stated, should consist of the conscious experience of man, as classified according to some "one dominant typical aim or process of social life." For example, the study of geography should comprise that content and those motives which are relevant to the interaction of the social life of man with nature. The study of history should include that content and those motives that are relevant to the past as a projected present, revealing methods of historical progress. He felt that three varieties of activities constituted the resources of the curriculum: 1) the life of the school as a social

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<sup>55</sup> John Dewey, "Interest as Related to Will," First Yearbook of the National Herbart Society for the Scientific Study of Teaching, Supplement II (Bloomington, Ill.: Pantagraph Printing and Stationery Co., 1895), pp.209-246.

institution, that is the school as an embryonic community; 2) the methods of learning and doing work, that is, construction, production, creating, sharing, judging, and expression; and 3) the school studies, that is, the modes of personal experiences by the child of history, geography, mathematics, or science.

Dewey proposed that the organization of the curriculum be such that the child's personal experience would reveal to him the basic and typical aspects of social life. For example, type phases of history studied, such as Rome, should show the child the working of the forces of political life.

#### John Dewey's Contribution

There were a number of common concerns on the part of Dewey and the McMurrys. All of them helped to focus attention on the curriculum, and they agreed on the need for system and order in selecting content and method. They all based their particular system on a psychology and a philosophy. Attention to the process by which the child acquires knowledge was common to all, and all worked for a greater unity in this process, although a unity of a different kind. All cast the teacher in an active role in relation to the curriculum and tried to make teachers sensitive to the need for change. All wished to free the child from dull, mechanical, rote learning, and to capitalize on his vitality, activity, and drive, although they had different rationales for his recommendation.

Many years later, Kilpatrick, who knew both John Dewey and the Herbartians, was to make two assessments:

In the end it appears clear that the service rendered by the Herbartian movement was not to contribute a permanent deposit of educational theory--no single item of their doctrines remains as they taught it--but rather to stimulate thought.....To settle the disputes thus raised resort was had to new materials.....In the utilization of new materials, as is later indicated,

education here made significant advance.<sup>56</sup>

On another occasion he commented:

It would of course be foolish to credit John Dewey with all the change, but it is not foolish, nay it is the solid truth, to say that he more than any other one person is responsible for changing the tone and temper of American education within the past three decades...<sup>57</sup>

#### A Decade After the Herbartians

Seguel<sup>58</sup> reported that it was ten years after the impact of Herbartian ideas that the curriculum took any new and significant turn. However, the intervening time was a busy one. In the culture (American) at large, the decade was one of vigorous national economic growth, accompanied by significant developments in industrial technology and management. Educational leaders sought an appropriate orientation for the newly conscious educational profession within this expanding society, and the rallying cry for those in the profession who tried to deal with a crowded and disjointed curriculum was "efficiency in education."

The emphasis on efficiency during that period stimulated students of the curriculum to reexamine old content and methods and to evaluate the new. These efforts to improve the curriculum Seguel classified into the categories of: 1) Content, 2) Outcomes, 3) Expectations, 4) Methods, and 5) Supervision.

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<sup>56</sup>William H. Kilpatrick, "Tendencies in Educational Philosophy." Twenty-Five Years of American Education, (edited by Isaac L. Kandel) (New York: The Macmillan Co., 1924) pp.60-61.

<sup>57</sup>William H. Kilpatrick, "The Contribution of John Dewey to Education," The Philosophy of John Dewey, edited by Paul A. Schilpp (Evanston: Northwestern University, 1939), pp.464-65.

<sup>58</sup>Seguel, op. cit., p.68.

First, the search for the most desirable and useful content had been going on for some time. Herbert Spencer had posed the question much earlier "What Knowledge is of Most Worth?",<sup>59</sup> and the Herbartians continued to raise it during the nineties.

Second, both the Herbartians and Dewey had given attention to the educational outcomes, or the content actually learned by the child, despite the differences over what the nature of these outcomes should be. The doctrine of apperception, so basic to Herbartian theory, demanded such attention. Third, members of the child study movement had emphasized the differences in the rate of growth in children and had urged teachers to adjust accordingly.

Fourth, the Herbartians had made teachers conscious of instructional improvement by their emphasis on general and special methods of selecting, organizing, and presenting content.

Fifth, since the days of the early school committees, the community had supervised the schools by keeping a regular eye on the quality of instruction, as part of a generally developing social concern.

#### The "Scientific" Educators - Franklin Bobbitt

According to the literature reviewed, the group of educators identified by the profession as "scientific" was as large as the Herbartians. It contained many important figures, making it difficult to select representatives from their number who particularly influenced thought on the curriculum. For example, there was Edward L. Thorndike, formulator of psychological base for measurement, and Charles H. Judd, who made the

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<sup>59</sup>Herbert Spencer, Education (New York: D Appleton & Co., 1861).

department of Education at the University of Chicago a major centre for the quantitative study of education. There was also William C. Bagley, Professor of Education at Teachers College, Columbia University, a trenchant critic in polished prose, and many others. All those leaders had in common a real intent to modernize and streamline the educational enterprise. But their contemporaries, Franklin Bobbit and Werret W. Charters, did more than share their concern. Both men succeeded in enabling the profession to think about the curriculum and in particular, about methods of making it in a fresh way. They were, therefore, regarded as fair representatives of the scientific educators.

Franklin Bobbitt's later ideas about the curriculum were influenced by his experience as an instructor to the Philippine Normal School in Manila, in response to a call for teachers there, after he graduated A.B. from Indiana University in 1901, and by his graduate work at Clark University where he adapted the course of study to the stages of normal growth in Philippine children.<sup>60</sup>

Bobbitts thinking received fresh impetus in 1911 from the publication of a book by Frederick Winslow Taylor on scientific management in industry.<sup>61</sup> Taylor's theory was that the standards set for the finished product would provide quality control of the whole processing function. His theory suggested to Bobbitt that the fundamental tasks of management were about the same whether carried on in schools or in factories.

Using industry as his controlling metaphor, Bobbitt theorized that if

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<sup>60</sup>Seguel, op. cit., p.75.

<sup>61</sup>Frederick W. Taylor, The Principles of Scientific Management.  
(New York: Harper Bros., 1911).

the school were a factory, the child the raw material, the ideal adult the finished product, the teacher an operator, the supervisor a foreman, and the superintendent a manager, then the curriculum could be thought of as the processing the raw material (the child) needed to change him into the finished product (the desired adult). The nature of this processing would be as discoverable as truth, just as whatever would properly temper a steel rail was true and whatever had traditionally been done to temper it might or might not be. The determination of such a process (curriculum) could best be done by using the most thorough experimental and quantitative means at hand. Variations in the process or curriculum would be done only as processes were discovered to be more nearly in accord with truth. They would also vary with the changes in standards set for the finished product by the consumer.

This analogy led Bobbitt to select society as the consumer and the highest type of adult as the finished product. If adult living was to be the measure of the process, then child life should be heeded only to the extent that attention to child nature was effective in improving the product. Therefore the whole process of the curriculum was to be controlled, not by human will, but by the truth or science which would produce the desired end product.

Bobbitt explained his analogy in the Twelfth Yearbook of The National Society for the Study of Education.<sup>62</sup> In his summary statement of the process by which the standard product is produced, he wrote:

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<sup>62</sup>Franklin Bobbitt, "The Supervision of City Schools." Twelfth Yearbook of the National Society for the Study of Education, Part I, (Chicago: University of Chicago Press, 1913), p.11.



To summarize these matters: (1) As a foundation for all scientific direction and supervision of labour in the field of education, we need first to draw up in detail for each social or vocation class of students in our charge a list of all of the abilities and aspects of personality for the training of which the school is responsible. (2) Next we need to determine scales of measurement in terms of which these many different aspects of the personality can be measured. (3) We must determine the amount of training that is socially desirable for each of these different abilities and state these amounts in terms of scales of measurement. (4) We must have progressive standards of attainment for each stage of advance in the normal development of each ability in question. When these four sets of things are at hand for each differentiated social or vocational class, then we shall have for the first time a scientific curriculum for education worthy of our present age of science.<sup>63</sup>

Judged in relation to the whole of Bobbitt's future work, this first essay served mainly as an exercise enabling him to grasp the problem of the content of the curriculum by focusing on the end product, or the ideal adult, and on the process by which this end product was elaborated.

In his next book, The Curriculum,<sup>64</sup> written in 1918, Bobbitt showed the result of his study of contemporary America. As America had come of age both industrially and internationally, simple social conditions had been growing complex. Small institutions had been growing large. Increased specialization had been multiplying human interdependence and the consequent need of coordinating effort. In response to this social need, Bobbitt contended, education should develop in the adult the powers and abilities which would enable him to work for social cooperation. As Bobbitt put it:

Education is.....to develop the goodwill, the spirit of service, the social valuations, sympathies, and attitudes of mind necessary for effective group-action where specialization has created endless interdependency. It has the function of

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<sup>63</sup>Bobbitt, op. cit., p.40.

<sup>64</sup>Franklin Bobbitt, The Curriculum. (Boston: Houghton Mifflin Co., 1918).



training.....not for knowledge about citizenship, but for proficiency in citizenship, not for knowledge about hygiene, but for proficiency in maintaining robust health; not for a mere knowledge of abstract science, but for proficiency in the use of ideas in the control of practical situations.....We have been developing knowledge, not function; the power to reproduce facts, rather than the powers to think and feel and will and act in vital relation to the world's life. Now we must look to these latter things as well.<sup>65</sup>

Seguel contended that Bobbitt's prescription for social action was not new. It was the old Herbartian emphasis on moral behaviour phrased in terms of the contemporary social setting, as Dewey had urged the educational theorists to do. In the past, the theorist had said, in effect: "Let us teach that specific content in the social studies which will develop civic participation." Bobbitt had no quarrel with the teaching of civic participation by means of the social studies. What he did want to change was the starting point of the proposition. Instead of starting with an analysis of the subjects, or with the knowledge that would best prepare man for his life activities, Bobbitt suggested starting with an analysis of the life activities themselves. He was guided by the analogy he had drawn between educative process and the process by which a steel rail is made. Further he saw the need to clothe the life activities of the ideal man in the specific details of his particular society at his particular moment. For example, he contended that a study of the activities of the ideal man would disclose the particulars of his civic participation: if he voted, took part in civil affairs, knew the facts about his city, protected himself against political fallacies, and understood statistical tables "persistently, honourably, generously." From these particulars of his activities could be deduced the "abilities, habits, appreciations and forms

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<sup>65</sup>Bobbitt, The Curriculum, *ibid.*, p. iv.

of knowledge" he had needed in order to carry out these civic activities. The abilities, later analyzed so that they were "numerous, definite and particularized," would then become the objectives of the curriculum. The curriculum thus was "that series of things which children and youth must do and experience by way of developing abilities to do the things well that make up the affairs of adult life; and to be in all respects what adult should be."<sup>66</sup>

Bobbitt's thinking led him to define curriculum in two ways:

1) It is the entire range of experiences, both undirected and directed, concerned in unfolding the abilities of the individual; or (2) it is the series of consciously directed training experiences that the schools use for completing and perfecting the unfoldment. Our profession uses the term usually in the latter sense. But as education is coming more and more to be seen as a thing of experiences, and as the work-and-play-experiences of the general community life are being more and more utilized, the line of demarcation between directed and undirected experience is rapidly disappearing. Education must be concerned with both, even though it does not direct both.<sup>67</sup>

Bobbitt then suggested a division of labour on the curriculum objectives. "The curriculum of the schools will aim at those objectives that are not sufficiently attained as a result of the general undirected experience," he asserted. These objectives were to be discovered as the shortcomings of individuals after they have had all that can be given by the undirected training," he concluded.<sup>68</sup>

#### Werrett W. Charters

The literature reviewed indicated that in 1898, just out of college,

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<sup>66</sup>Ibid., p.42.

<sup>67</sup>Ibid., p.43.

<sup>68</sup>Ibid., p.45.

Werrett W. Charters became a principal of the Hamilton Model School in connection with McMasters in Toronto. He moved on to a Ph.D. in Methods of History Teaching at the University of Chicago, studying under Dewey, whom he acknowledged to have influenced him deeply. In 1907, he became a Professor of Theory of Teaching at the University of Missouri where he came into contact with what he himself later called a "significant laboratory school." Called the University Elementary School, it had been established there in 1904 by Junius L. Meriam, a former student of Dewey's at the Columbia University Teachers College.

Charters wrote his first book, Methods of Teaching<sup>69</sup> in 1909 shortly after his acquaintance with Meriam's school. The book was a blend of ideas gleaned from both Dewey and the Herbartians and included a section on correlation and apperception.

In 1919, Charters was appointed the Director of a Research Bureau for Retail Training at the Carnegie Institute of Technology in Pittsburg, and he began at that time a project on which he would spend the major portion of his professional life--the job of analyzing a host of adult occupations and the construction of curricula and teaching methods in them. Among those occupations were pharmaceuticals, radio education, veterinary medicine, recreation leadership, secretarial duties, leadership in industry, and women's activities. Shortly after he enunciated a method of curriculum formulation in a book called Curriculum Construction.<sup>70</sup>

True to the temper of his educational era, Charters wanted knowledge to

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<sup>69</sup>Methods of Teaching: Developed From a Functional Standpoint, (Chicago: Row, Peterson and Co. 1909)

<sup>70</sup>Curriculum Construction, (New York: The Macmillan Co., 1923).

be useful for a living. He wanted the learner to be stimulated to acquire knowledge because he had perceived its usefulness. As a result, Charters analyzed the life activities for their knowledge content, not for needed human abilities as did Bobbitt. He was seeking some way by which the new method could deal with knowledge.

He found it in an idea he got from Dewey--that knowledge is really method, and that method is really knowledge.

All the content of the curriculum is methodic. Everything taught or discovered, recorded or achieved, has been a method.....Loyalty, for instance, originally was, and still being developed as a means of attaining group solidarity... In like manner facts are methods of control. In spelling, for instance, it is a fact that pencil is spelled p-e-n-c-i-l, but this combination of letters is meaningless except as it is a means of putting on paper some characters which will describe, or bring to the writer's mind, or help the reader to understand, the object of value for which it stands...Even the fact Bombay is in India is a statement by which to locate a city.<sup>71</sup>

Having established a connection between activity and knowledge, Charters went on to point out that: "The problem of the schools is theoretically quite simple. The best method of realizing ideals and performing activities must be collected."<sup>72</sup> He then laid down the procedure of curriculum making.

First, determine the major objectives of education by a study of the life of man in its social setting.

Second, analyze these objectives into ideals and activities and continue the analysis to the level of working units.

Third, arrange these in the order of importance.

Fourth, raise to positions of higher order in this list those ideals and activities which are high in value for children but low in value for adults.

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<sup>71</sup>Ibid., pp.74-75.

<sup>72</sup>Ibid., p.79.

Fifth, determine the number of the most important items of the resulting list which can be handled in the time allotted to school education, after deducting those which are better learned outside of school.

Sixth, collect the best practices of the race in handling these ideals and activities.

Seventh, arrange the material so obtained in proper instructional order, according to psychological nature in children.<sup>73</sup>

#### Bobbitt and Charters - Their Contributions

The writings of educational theorists reviewed indicated that of Dewey's four basic challenges to the profession--a reworking of knowledge, curriculum organization, school organization, and institutional organization--Bobbitt and Charters made their major contributions to two.

First, they expressed a need for a basic reorganization of knowledge around social activities. Second, they jarred the institutional organization of the schools to some extent, and brought professional awareness a new specialization--curriculum making. Derived from an analogy with the process of industrial manufacture, the new method began, not with traditional subject matter, but with the life activities of the adult. Proceeding by gradual and precise steps, the curriculum maker who followed the process could formulate a curriculum.

#### Harold Rugg - The Education Situation During His Time

Historical sources reviewed showed that the next decade after Bobbitt and Charters was one of attention to the measurement of the socially useful, of growing attention to the child typified by the wave of progressive schools, and of trial for the new method of curriculum making. It was a

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<sup>73</sup>Ibid., p.60.

period of testing and exploring alternatives. Harold Rugg's work was in this period. In order to understand this period, it was necessary to review briefly a number of developing trends which were to provide a significant background for Rugg's contribution.

One such trend was the fresh wave of course of study making that resulted from the trial of the new method of curriculum formulation. For example, in St. Louis, under the direction of Walter Cocking, the principals selected the objectives according to social needs, and the teachers, working in committees with full-time chairmen, listed suitable activities and later tried them out in practice.<sup>74</sup> Another interesting trend was the determined defense of the cultural subjects by their own specialists.

The new curriculum approach brought demands on the colleges for the preparation of curriculum specialist. As early as 1916, the interest in minimum essentials in the curriculum had brought about an explosion of specialized course offerings at Teachers College, Columbia University. Among the offerings were two courses: one emphasizing backgrounds for curriculum making.<sup>75</sup>

#### Harold Rugg - His Background

The literature reviewed indicated that Rugg graduated in 1908 from Dartmouth in civil engineering. His success as an engineer did not lead him into industry but rather served to send him back to school to teach engineering. He went on to study education itself, as well as psychology

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<sup>74</sup>National Society For the Study of Education, "The Foundations and Technique of Curriculum-Construction." Twenty-Sixth Yearbook, Part I. (Bloomington, Illinois: Public School Publishing Co., 1926) p.248.

<sup>75</sup>Teachers College, Columbia University, Announcements, 1926, p.42.

and sociology, in graduate school at the University of Illinois, where he met William Bagley, Lotus Coffman and Guy Whipple, all important figures in the measurement movement.

In 1916, Rugg was appointed a professor of education at the University of Chicago, and Bobbitt became his colleague. In a short time, he published Statistical Methods Applied to Education for "teachers of education..... educational investigators generally and school officials interested in making the best use of statistical data and displaying the results to their supporting public in the most effective graphic form."<sup>76</sup>

In 1917, Teachers College, Columbia University, assisted financially by the General Education Board, established Lincoln School, intended to be a sort of laboratory in which the current search by educational scientists for real-life content might be concentrated. Rugg, as its first Director of Research in 1919, "measured and charted the abilities of every child in the school,.....built up the Lincoln School's first system of records and worked with the teachers at bringing up the achievement of a 'child-centered' school not sufficiently concerned with 'social needs'."<sup>77</sup>

During this time he became exposed to the contemporary movements of scholarly social criticism in the voice of the New School for Social Research formed in 1917 by such liberals as Charles A. Beard, James Harvey Robinson, and James McKeen Cattell.<sup>78</sup> In response to these

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<sup>76</sup>Harold Rugg, Statistical Methods Applied to Education, (Boston: Houghton Mifflin Co., 1917), pp. 5-6.

<sup>77</sup>Rugg, That Men May Understand: An American In the Long Armistice, (New York: Doubleday, Doran and Co., 1941), p.188.

<sup>78</sup>Cattel and Henry Dana had been dismissed from Columbia University, presumably because of "critical" scholarship. Robinson and Beard had resigned at the same time. (Seguel, p.116).



experiences, Rugg asked for and obtained a release from conventional research on mental abilities in order to select for himself that part of the school's task on which he wanted to concentrate, namely, man and society. He began to wade into a mass of scholarly material documenting a variety of emerging viewpoints on man and society, and to gain a panoramic view of the conditions and problems of modern civilization, as was being lived in America and the world.

Slowly, Rugg realized that a knowledge of culture was necessary for intellectual stability, and that the young people of the nation were the ones who most needed such a broad ground.

#### Harold Rugg - 26th Yearbook

According to the literature, by 1924, Rugg felt that he had begun intellectually to conceptualize education as a field, trying to penetrate to its scholarly roots, both sociological and psychological. He knew that the curriculum developers had tried to conceptualize it also, although theirs had been confined to the use of method in the analysis and synthesis of the educational task. Was it possible that they could be brought to see the limits of method--the need for scholarly content to give vitality and direction to their analysis of social activities and their selection of educational experiences?

Rugg broached the idea to the Executive Board of the National Society for the Study of Education, a group whose major attention was given to the curriculum from the days of their founding as the Herbart Society. He suggested that, in view of the current widespread interest in the problem of the curriculum, the Society should try a yearbook on it with a fundamental approach. He suggested that a committee be appointed to study the method



by which the content of the curriculum should be selected and assembled, rather than the teaching of any particular content. He pointed out that there were then two current ways of using the method of curriculum formulation. If the curriculum maker was committed to a child-centred approach, he began with an analysis of the activities of the child. If he was committed to a society-centred approach, he began with an analysis of the activities of the adult. Was it possible that this dichotomy was more seeming than real and that by following an old tradition in the Herbart Society of educational open forums they might substitute study for controversy? It was a persuasive proposal.

Rugg was well fitted to coordinate a yearbook of this kind. His work in educational measurement had given him a real command on its techniques. He had taught in an outstanding progressive school. He was on the staff of Teachers College, Columbia University, which was among the leading schools in the preparation of curriculum specialists, and he was in touch with scholarly developments in the social sciences.

The Executive Board acceded to Rugg's proposal and plans were made for a yearbook. Everyone agreed that a good first step would be an inventory of current practice. Rugg offered to summarize the new ideas on curriculum construction and write an historical account of how curriculum making had begun and grown.

The Committee, as chosen, were all professors of education, and the twenty associated contributors were administrators and teachers.

The Yearbook disclosed that by 1926, curriculum making was a widespread educational phenomenon. Curriculum construction and the related problems had been so recently undertaken by most schools that the practice was highly individualized. The initiative toward curriculum revision seemed to have

been taken almost wholly by schoolmen themselves. The conventional machinery for revision had become a committee of teachers under the direction of administrative or supervisory officers. Curriculum revision was usually done in subject matter areas and rarely, if ever, around any other focus.<sup>79</sup>

The lore that had already accumulated around administrative procedures for curriculum making, as revealed by the committee's survey, was summarized by Rugg. Practice, he wrote, had shown that good administrative procedures required at least five conditions:

- 1) The development of a research attitude toward the problem on the part of those in responsible charge.
- 2) The establishment of a "separate and autonomous Department of Curriculum-Construction, to coordinate in budget, leadership and authority" with other departments.
- 3) The employment by this department of "trained and experienced specialists in curriculum-making.....under the direction of an executive officer" who should report to the superintendent. This officer should control the function of instruction.
- 4) The appointment of committees of teachers and principals to undertake the endless detail of curriculum-making; assembling and organizing materials, preparing and revising outlines, selecting books, phrasing objectives, illustrating teaching methods. In the absence of funds to hire technically trained people, teachers themselves must function as "specialists, clerks, statisticians, and educational psychologists."
- 5) The use of outside specialists to provide "proper perspective" on curriculum making. Free as they are from "entangling alliances with the existing program" they would avoid regarding topics, subjects, and grade materials as isolated units, and help keep the total curriculum problem in view.<sup>80</sup>

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<sup>79</sup>National Society For the Study of Education, "The Foundations and Techniques of Curriculum-Construction." Twenty-Sixth Yearbook, Part II. (Bloomington, Illinois: Public School Publishing Co., 1926), pp.123-133.

<sup>80</sup>National Society For the Study of Education, Twenty-Sixth Yearbook, Part II. pp.439-42.

Agreement on recommended committee procedure was not so easy. The committee's thinking polarized around the central issue--whether the child or society should be the basis around which to select the curriculum. Rugg's opening statement traced the historical roots of the current "lag" between society, the curriculum, and child growth; his summary called for the elimination of that "lag." Issues and problems were considered from the approaches. In his supplementary report, Stuart Curtis wrote: "It seems to me that the statements of the Committee make it quite clear that the center of emphasis in education is shifting from subject matter to children."<sup>81</sup> Charles Judd countered with the comment that "the mature individual is a product of social control by the group.....and is in need of long, tedious guidance under the most attentive and sympathetic control in order to rescue him from the social incompetency which is characteristic of his infancy."<sup>82</sup> Even the representative quotations from Dewey and the Herbartians were all carefully selected to highlight the issue of a child-centred versus a society-centred curriculum.

Although a new concept of the curriculum was emerging, no definition for it could be found of which all approved. The Committee rejected as out-of-date the statement that the curriculum is "formal subject matter (facts, processes, principles), set-out-to-be-learned without adequate relation to life."<sup>83</sup> Instead, the members agreed to describe it as "a

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<sup>81</sup>National Society For the Study of Education, Twenty-Sixth Yearbook, Part II, p.94.

<sup>82</sup>National Society For the Study of Education, Twenty-Sixth Yearbook, Part II, pp.113-114.

<sup>83</sup>National Society For the Study of Education, Twenty-Sixth Yearbook, Part II, p.17.

succession of experiences and enterprises having a maximum of lifelikeness for the learner.....giving the learner that development most helpful in meeting and controlling life situations." This view of the curriculum was the result of the new emphasis on changed behaviour as the true outcome of education, and the new belief that only "traits learned in a natural, or lifelike setting, give promise of emerging definitely in appropriate conduct."<sup>84</sup>

The Committee finally signed a joint statement, but it was a cautious and limited agreement. The statement succeeded in clothing the agreement in language general enough to justify and stimulate a continued academic discussion of the real issues.

#### Harold Rugg - His Contribution

The twenty-sixth yearbook, under Rugg's editorship, became a tour de force by which he managed subtly to infuse curriculum making with the spirit of social criticism. The yearbook managed to herd under the wing of curriculum making some educational activities that had not been there before, and an unexpected result of the effort was a broader view of curriculum construction. Lastly, Rugg helped the profession see "that attention to the method of curriculum making itself lacked substance since method was neither dependent on nor derived from any particular set of values."<sup>85</sup>

#### Hollis L. Caswell - His Background

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<sup>84</sup>National Society For the Study of Education, Twenty-Sixth Yearbook, Part II, p.18-19.

<sup>85</sup>Seguel, op. cit., p.136.

Hollis Leland Caswell according to the literature reviewed, graduated from the University of Nebraska in 1921. Not unlike a number who graduated during the depression, he turned temporarily to school teaching in Auburn, Nebraska, in 1922. After four years as a teacher, Caswell, advised by Dean Sealock in Nebraska, chose Teachers College, Columbia University, to do graduate work in education.

At Columbia University, Caswell was influenced considerably by his major professor in school administration, George Drayton Strayer, who then at the peak of his professional career, was recognized as one of the principal architects of the new concept of school administration. Strayer undertook field studies of schools in order to develop a theory of good school operation as well as to improve the running of each school surveyed. Caswell, as Strayer's student, took part in this kind of field work in school systems, struggling with problems ranging from pupil accounting to the ventilation of school buildings. Caswell was only well begun on graduate study when the Twenty-sixth Yearbook came out. However, the work of this committee made no particular impression on him then. He had taken the curriculum courses offered at Teachers College and had found them "pretty terrible."<sup>86</sup>

#### Hollis L. Caswell - State Curriculum Revision Programme

Historical sources reviewed indicated that by an interesting coincidence, Caswell was not to be allowed to complete his work for his degree. He had been hired as a professor of education at Peabody College for Teachers in Nashville, to begin to teach summer school courses in

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<sup>86</sup>Seguel, op. cit., p. 141.

July, 1929. At the beginning of the Spring Quarter, Charles McMurry, on the staff since 1915, died suddenly on the job. Bruce Payne, the President, urged Caswell to come immediately to teach McMurry's courses. With considerable trepidation, but encouraged by Strayer, Caswell went. To his chagrin, one of the courses was on the curriculum. Remembering his former feelings with this course material, Caswell began to work with all his energy and imagination to do something better.

Another fortuitous circumstance occurred at Peabody in 1929 which was to influence Caswell's interest in the curriculum. The General Education Board had been making surveys and field studies in the southern states for many years. One of their New York staff members, Frank Beachman, was sent to Peabody as the codirector of a newly established Division of Surveys and Field Studies. Caswell was asked to be his associate on the basis of his substantial field experience. Almost immediately, Caswell received an invitation from the Department of Education of the State of Alabama to serve as a consultant in a curriculum revision programme there.

For a person who had been relatively unimpressed with curriculum formulation during his graduate study, Caswell moved fast. By the following year, Alabama had its new Course of Study for Elementary Schools. In line with the current belief that teachers be involved with the process of curriculum making in order to attain the necessary motive and understanding to carry the new curriculum into practice, the more than five thousand elementary teachers in Alabama had been invited to try out or contribute materials for the new course of study.

The Alabama programme was an example of statewide curriculum revision in the best current fashion, and everyone was pleased, but Caswell felt that something had been missing. His old desire to see that instruction was

actually improved had somehow been frustrated.

By the time Caswell was again asked to be a consultant in Florida in 1930, he had done some hard thinking. It had occurred to him that an old plan of Jesse Newlon's had been very successful in Denver in the early twenties.<sup>87</sup> Before the Denver teachers had undertaken to plan a curriculum, they had spent time in preparatory study of the most up-to-date thinking on curriculum matters. They had read and discussed issues and problems, and had reviewed experimental studies. The result was heightened morale and enthusiasm on the part of the teachers. Yet, the initial momentum had somehow bogged down. It was true the hoped-for outcome had been a course of study, but why had the teacher's need for study and growth stopped once the course of study had been produced? Perhaps the mere making of a course of study was too limiting a purpose. What if the emphasis of curriculum making were shifted from the production of a course of study to the actual improvement of instruction? Then the need for continuous teacher study and growth would seem more logical. Caswell began to marshall all his intellectual resources towards the study materials which would focus directly on the act of learning.

Striving to incorporate into the state curriculum revision some of his insights, Caswell launched a study programme for Florida teachers, based on the aim of instructional improvement. The result confirmed the value of the new emphasis. The course of study produced by the Florida teachers, unlike the one in Alabama, began boldly with the statement that "the purpose of this course of study is to help the teachers of Florida improve their

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<sup>87</sup>Lawrence A. Cremin, The Transformation of the School, (New York: Alfred A. Knopf, 1961), pp.299-303.



instruction." The organization of the programme was by grades, not by subjects, the reason being:

The child develops as a unit. His growth is a continuous process, advancing through successive stages and involving all his abilities. Each grade should represent a series of unified experiences for the child. All the English, mathematics, science and other subject matter presented in each grade should be so interrelated as to promote the unified development of all the abilities of the child.<sup>88</sup>

Each grade section of the course was prefaced with a statement of the developmental characteristics of the child at that age and a chart showing typical centres of interest from which units might be initiated. For example, it was suggested that third graders might be interested in community protection of health and life, especially the activities of the health department and the police, or that sixth graders might be interested in plagues and their control, such as smallpox. The general aim of education was "to promote and direct the adjustment and growth of the individual so that he may live worthily in an everchanging society."<sup>89</sup>

Caswell felt that the Florida work was a start in the right direction, although it still felt hazy the connection between the child's interests and experiences and his social problems and needs. Attention to the social functions and centres of interest constituted a step ahead, but both seemed to vanish in the process of stating specific subject matter objectives. There was needed some kind of overall curriculum design against which teachers could check the significance of the inevitable initiative of daily practice.

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<sup>88</sup>State Department of Public Instruction, Tallahassee, Florida, Course of Study For Florida Elementary Schools, 1931, pp.5-8.

<sup>89</sup>State Department of Public Instruction, Tallahassee, Florida, Course of Study For Florida Elementary Schools, 1931, p.6.



Although his Florida experience had been a major break-through on procedure, broadening the base of participation, it had also taught him much about study groups mobilized on a large scale. He began to mature an organizational plan for curriculum making, which would effectively set a whole state to work without intimidating any group of teachers.

The previous year, Sidney B. Hall, a professor at Peabody, had gone to Virginia to be the new State Superintendent of Public Instruction. As he left, he had asked Caswell to think about coming to Virginia to help him organize a programme like Alabama's.

Caswell went to Virginia determined to profit by his recent experiences in Florida and Alabama. He was to succeed, and in so doing, to forge a new kind of programme of curriculum making as well as a new basic conception of the nature of curriculum.

As a first step, the sixteen thousand teachers and administrators in Virginia were invited, through their division organization,<sup>90</sup> to take part in a general study and discussion of issues in the curriculum. It was explained to them that the questions to be raised were of vital importance in curriculum making but that there were no final answers to them.

Groups of convenient size, living near each other, met weekly some fourteen times between January and March. Each group selected a leader who assigned topics and helped secure materials, and a secretary reported to the Division Superintendent. The study guide for this massive self-help extension course was a fifteen-page syllabus prepared by Caswell.<sup>91</sup>

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<sup>90</sup>Divisions were the educational unit in Virginia. There were 109, each with a division superintendent who had charge of all the public schools in his division, whether city or county.

<sup>91</sup>Sidney B. Hall, D. W. Peters, and Hollis L. Caswell, "Study Course

Carefully chosen readings were recommended under seven topics:

1) What is the curriculum? 2) Developments which have resulted in a need for curriculum revision; 3) What is the place of subject matter in education? 4) Determining educational objectives; 5) Organizing instruction; 6) Selecting subject matter; and 7) Measuring the outcomes of instruction.

The elaborate and smooth-running administrative machinery necessary to organize study groups and production committees for the course of study was in operation by the fall of 1932. Three state committees had been appointed in March by Superintendent Hall, one each on aims, principles, and definitions. A fourth committee on production was composed of the chairmen of the division production committees. Working in the curriculum laboratory at Peabody during the summer, under Caswell's direction, the State committees on aims, principles, definitions, and production had a handbook ready by July. Caswell strove successfully to infuse their work with his new insights.

Caswell had the sensitivity of the good administrator toward the power of the lay public over schools in a democracy as well as toward its duties in regard to them. He and Superintendent Hall distributed copies of the aims widely to men's and women's clubs, chambers of commerce, and the press--requesting discussion and comments. Hall also called a public meeting in the Chamber of the House of Delegates, inviting representatives of many organizations to attend. He and Caswell explained the aims, urged their further study, and welcomed written suggestions.<sup>92</sup>

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for Virginia State Curriculum Programme," State Board of Education, Bulletin XIV. (Richmond, Virginia: January, 1932).

<sup>92</sup>"Brief Description of Virginia Programme for Improving Instruction," State Board of Education, Bulletin, XXI, No. 4 (Jan. 1939), p.12.

Using the statement of aims as their compass, the production committees began to develop appropriate experience units. By the following summer, enough material had accumulated to make a mimeographed tryout edition of the course of study feasible. Working that summer at a curriculum laboratory at Peabody, the newly-formed Elementary Reviewing and Unifying Committee undertook to arrange this material by grades and by subjects.

Ever since he had been the consultant on the Florida programme, Caswell had been seeking an overall design that would be better than the traditional grade and subject arrangement. He wanted a pattern by which teachers could judge whether a given unit was relating the child to the culture in a meaningful way. He suggested to the Reviewing Committee that an adequate curriculum design should give attention to content as well as social functions and children's interests. He hoped that the objectives which had been worked out by the Committee on Aims would give the teacher a content framework against which to check the child's progressive organization of his concepts in the direction of mastery of the fields of organized knowledge.

The final design adopted by the Committee for the Course of Study had scope and sequence. It was a grid, and vertical items being the scope, and the horizontal ones the sequence by grades.<sup>93</sup> For example, first graders who learned how to cross a street properly were having experiences that fell within the category of the protection and conservation of life. The sequence of experiences was arranged according to the centres of interest,

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<sup>93</sup>Sidney B. Hall, D. W. Peters, Helen Ruth Henderson, and Hollis L. Caswell, Tentative Course of Study for Virginia Elementary School (Richmond, Virginia: State Board of Education, 1933), pp.40-43.

ranging from home and school life in the first grade to the effects of the machine upon our living in the sixth.

Years later, Caswell himself assessed the effects of the programme on the schools in Virginia as threefold: 1) it enlarged the vision of teachers and increased their competence; 2) it greatly increased the quantity of modern instructional materials used in the schools; 3) it increased the amount of supervision and improved its quality.

By 1932, a group of educators had persuaded themselves that there was a real need for a systematic exchange of ideas on curriculum making. They began to call themselves the Society for Curriculum Study, and in 1934 they had 250 members and organized their first full-dress annual meeting, complete with theme and speakers.<sup>94</sup> The Society published a bulletin and Caswell contributed profusely to the bulletin.

In the meantime Caswell had become involved in six more curriculum revision programmes operating out of Peabody. They provided a perfect setting for his ideas which by 1935 had become so matured that he felt the need to put them into a book form--Curriculum Development. In 1936, Caswell became the Chairman of the Executive Committee of the Society for Curriculum Study.

#### Hollis Caswell - His Contribution

The literature on a general assessment of Caswell's contribution to curriculum thought and practice, indicated that he helped lead the trend to give curriculum making departmental status in colleges preparing teachers, supervisors, and curriculum directors. This departmental status served to

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<sup>94</sup>Society for Curriculum Study, News Bulletin, V. (April 9, 1934), pp.1-4, (September 25, 1934), pp.20-25.

enhance the visibility of curriculum as a field of study. In the second place, he developed further the idea of method in curriculum making. In the third place, he focused attention on the process by which the wide variety of individuals interact in order to make the curriculum. Finally, Caswell provided the profession with a valuable and wide-scale tryout of curriculum design.

### Patterns of Curriculum Organization

Writing about curriculum development, Taba<sup>95</sup> observed that the choice of pattern of organization had much to do with what was learned by students and how it was taught; that scope, sequence, continuity, and integration were the central problems of curriculum organization. Each pattern of organization adopted a certain idea of scope because it adopted certain centres of organization, and each also tended to adopt certain special criteria for sequence, continuity, and integration.

A great number of options in ways to organize the curriculum were identified in the literature reviewed, but four major types of organization appeared most often.

### The Subject Curriculum

Historical sources indicated that the subject was the oldest form of curriculum organization. The earliest example of the curriculum was the Seven Liberal Arts which existed in the schools of ancient Greece and Rome, and which were offered in a more advanced stage of development in the monastery and cathedral schools of the Middle Ages. The Seven Liberal Arts consisted of two divisions: the trivium, which was comprised of grammar,

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<sup>95</sup>Taba, op. cit., p.382.

rhetoric, and logic; and the quadrivium, which consisted of arithmetic, geometry, astronomy, and music. These subjects were broad. Grammar, for example, consisted not only of the kind of content found in modern grammar course, but also of literature studied analytically -- that is, from the standpoint of versification, prosody, figures of speech, and vocal expression. Later in history, the trivium was further divided to include literature and history as distinct subjects; and the quadrivium, to include algebra, trigonometry, geography, botany, zoology, physics, and chemistry.

Smith, Stanley and Shores described the subject curriculum as an organization of the content of education into subjects of instruction. In its extreme form the subjects were compartmentalized bodies of knowledge, taught in complete isolation one from another, even from those to which they were related -- as history might be taught completely divorced from geography, economics, and sociology. Its less extreme forms permitted a certain degree of interrelation among the subjects -- where a certain subject was taught with reference to the contribution which the content of other subjects made to the fullest understanding of it.<sup>96</sup>

Other sources in the literature indicated that the first distinctive feature of the subject curriculum was that the "subject matter is classified and organized in accordance with the divisions of labour in research."<sup>97</sup> The subject matter was selected and arranged in such a way as to discipline the student in those classifications and arrangement of ideas that had proved most beneficial to the specialist without necessarily increasing the practical intelligence and wisdom of the learner. In other words, the

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<sup>96</sup>Smith, Stanley and Shores, op. cit., Part III.

<sup>97</sup>Smith, Stanley and Shores, ibid. p.230.

bearing of the subject matter upon questions of social policy and decision was ignored in both its selection and arrangement. Instead, the content was chosen and organized in accordance with the needs of the scientist or research specialist, who often was interested in the subject "for its own sake."

Because the mastery of the subject matter was the central task, exposition tended to be the chief method of instruction and the textbook the chief source. Exposition was a form of instruction in which ideas were stated and elaborated so that they might be understood.<sup>98</sup>

Four kinds of exposition were identified in the literature. The first was that which proceeded from the simple to the complex. Chemistry and Biology courses were frequently organized on this principle. The second kind of exposition was based upon prerequisite learnings. This principle was followed particularly in subjects consisting largely of laws and principles: physics, grammar, and geometry. The third form of exposition was that which proceeded from the whole to the part, such as Geography beginning with the globe, with the idea that the earth is a sphere, because this conception served to interpret many geographical observations -- differences in time or seasons. The fourth kind of exposition was chronological. Facts and ideas were arranged in a time sequence so that presentation of later events was preceded by discussion of earlier ones. This was the organization followed in history courses -- and frequently in literature.

Those who favoured separate subjects as a basis for curriculum design contended that subjects constituted a logical and effective method of

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<sup>98</sup>Taba, op. cit., p.386.

organizing new knowledge and therefore an effective method of learning it. By following organized bodies of subject matter, a student could build his store of knowledge more effectively and economically, and having such a store of knowledge available made it possible for individuals to use it when needed. This argument was based on the assumption that storing up organized knowledge was the way of preparing for its later use. But data from the literature reviewed cast doubt upon this assumption. G. Miller, for example, maintained that the principal problem of human memory was not storage but retrieval.<sup>99</sup>

There were other advantages indicated in the literature. Because it was the design most frequently used at college level, teachers felt at home in it. It allowed for the maximum direct use of their college work and provided the security that came with the feeling of competence. It was a traditional pattern and consequently tended to satisfy the public conception of school's role. Elders felt secure that the area of knowledge which their own schooling impressed upon them as important were not being neglected. Textbooks and reference materials were typically organized in that way. Thus, it was possible to add to the important feeling of security of both teacher and pupils by providing specific and clearly laid out material to be studied.

There were also criticisms against the subject curriculum indicated in the literature. The "logical" order of learning was questioned. It began first as a rebellion against the tight lockstep of knowledge that the subjects represented in the 1920's, but it spread to a rejection of any type of

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<sup>99</sup>G. A. Miller, "The Magical Number Seven, Plus or Minus Two." Psychological Review, 63 (1956), p.81-87.



organized content. This rebellion was based on the concern for individual development, for independent thinking, creativity, freedom, and the right of students to learn actively and to formulate their own thoughts and ideas instead of merely absorbing the social heritage.

The criticism against organized subjects was not confined to people foreign to intellectual disciplines. Such writers as James Harvey Robinson and Alfred North Whitehead spoke out for humanizing knowledge:

Both the textbooks and manuals used in formal teaching and the various popular presentation of scientific facts written for adults tend, almost without exception, to classify knowledge under generally accepted headings. They have a specious logic and orderliness which appeals to the academic mind. They, therefore, suit the teachers fairly well, but unhappily do not inspire the learner.

When one has "gone" through a textbook and safely "passed" it, he rarely has any further use for it. This is not because he has really absorbed it and so need not refer to it again. On the contrary, it is associated with a process alien to his deeper and more permanent interests. And it is usually found by those who embark in adult education that textbooks make almost no appeal to grown-ups, who are free to express their distaste for them.<sup>100</sup>

Three years later, Whitehead wrote:

There is only one subject matter for education and that is Life in all its manifestations. Instead of this single unit, we offer children -- Algebra, from which nothing follows; History, from which nothing follows; a couple of languages, never mastered; and lastly, most dreary of all, Literature, represented by plays of Shakespeare, with philological notes and short analyses of plot and character to be in substance committed to memory. Can such a list be said to represent Life, as it is known in the midst of living of it? The best that can be said of it is that it is a rapid table of contents which a diety might run over in his mind while he was thinking of creating a world, and had not yet determined how to put it together.<sup>101</sup>

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<sup>100</sup>J. H. Robinson, The Humanizing of Knowledge, (New York: Doubleday, Doran & Co., Inc., 1924), p.67.

<sup>101</sup>A. N. Whitehead, The Aims of Education and Other Essays, (New York: The Macmillan Company, 1929), p.10-11.

Taba observed that learning by expository method alone fostered mental passivity, prevented transfer and failed to encourage the active use of what was acquired. There were special psychological sequences to learning, which, if followed, increased its effectiveness. Motivation was one of the chief factors in enhancing learning. Intelligence and intellectual productivity did involve active processing of information and organization of concepts and mental schemata, not just assimilation of organized knowledge.<sup>102</sup> Other writers charged that the detachment from life application and from the experiences and interests of the students of much of what was learned weakened the motivational dynamic. By its overstress of learning of details, the subject curriculum paid little attention to the development of active thought processes, failed to teach for transfer and for active connection between ideas and facts in different fields. Further, by divorcing the content of the curriculum from the concerns of the learners at one point and from life application at the other end, a setting was created which was sterile for acquiring values and loyalties. In that setting, it was difficult to use the facts to develop attitudes and values, let alone to devote direct attention to their development. "Determining the scope of education by accounting the scope of subjects in the program without knowledge of what these subjects contain or what learnings they entail is an extremely dubious enterprise."<sup>103</sup>

#### The Related Subjects Curriculum

The literature reviewed indicated that partly as the result of

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<sup>102</sup>Taba, op. cit., p.388.

<sup>103</sup>Taba, ibid. p.392.

criticisms, partly as the result of the general feeling of the dissatisfaction with the schools on the part of both the teaching profession and the public, and partly as the result of new psychological and educational conceptions, efforts were made to improve the subject curriculum which resulted in its modification. Taba<sup>104</sup> used the term "broad-fields curriculum"; Smith, et al. distinguished between correlated curriculum and broad-fields curriculum.<sup>105</sup> Oliver observed that "in the organizational continuum different authorities use different terms for approximately the same state of affairs. Thus in one text 'fused' is called 'integrated'; in another the label is 'broad fields.' Clearly the term is arbitrary and not as important as the conditions characterizing the extent of the transition toward less subject-defined boundaries."<sup>106</sup>

The literature described the related subjects curriculum as a subject curriculum in which two or more subjects were articulated and relationships between or among them made apart of instruction without destroying the subject boundaries. History, geography and civics became the social studies; reading, writing, spelling, speaking, and listening were combined as the language arts; work in general science encompassed selected facts and concepts from such separate subjects as botany, chemistry, physics, zoology, and geology. The scope of the curriculum was still determined by the traditional subjects, but the organization brought together content of related subjects.

Historical sources reviewed indicated that the idea of correlating

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<sup>104</sup>Taba, op. cit., p.392.

<sup>105</sup>Smith, Stanley, and Shores, op. cit., p.252-253.

<sup>106</sup>Oliver, op. cit., p.316.

courses originated in the last century from the psychological and educational conceptions of Herbart. His views laid stress upon concentration, by which he meant complete absorption in an idea or object of thought, and correlation, by which he meant the reinforcement of the idea by related and supporting conceptions. In the view of the followers of Herbart, concentration was interpreted as the grouping of subjects around a central study, and correlation was interpreted as the topics of this central subject by related studies.

According to the literature reviewed, the earliest beginning of the related subjects curriculum was in England, in a course given as a series of lectures by Thomas Huxley to London children at the Royal Institution in 1869 and later published under the title of Physiography. In the preface, Huxley opposed "an omnium-gatherum of scraps of all sorts and undigested and unconnected information." The course was inductively developed and aimed at unity not only by bringing the facts and principles of related fields into juxtaposition but also by choosing the Thames basin and the activities of its people as the unifying factor.

In 1909 President Lowell of Harvard University called attention in his inaugural address to the need for a comprehensive course in "every considerable field," which would "give to men who do not intend to pursue the subject further a comprehension of its underlying principles or methods of thought."<sup>107</sup> Three years later, in 1912, President Meiklejohn, in his inaugural address at Amherst College proposed the divisions of a broad-fields programme. "A young man," he said, "must take from a college of

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<sup>107</sup>A. Lawrence Lowell, "Inaugural Address, October 6, 1909," Atlantic Monthly, Vol. 104 (November, 1909), p.692.

liberal training, the contributions of philosophy, of humanistic science, of natural science, of history, and of literature."<sup>108</sup>

The main advantage of the related subjects curriculum, according to the literature reviewed, was that it permitted a greater integration of subject matter. It was assumed also that that approach to organization would facilitate a more functional organization of knowledge. Studying the conditions of all living things permitted a clearer emphasis on the common principles of environmental influences than was possible while progressing from amoeba to frogs and from there to the higher vertebrae, studying each in turn as an entity, including its specific environmental conditions. That kind of organization also permitted a broader coverage and allowed the elimination of excessive factual detail which seemed necessary when the units of study were in smaller segments.

Taba,<sup>109</sup> however, observed that the hoped for integration and unification of knowledge did not immediately materialize. In many cases, the areas were broad in name only, because reorganization was only formal and the experimentation with reorganizing the content to make it appropriate for integration quite superficial. Other writers reviewed also indicated that the very attempt at broad coverage had its dangers. It was possible that this treatment of knowledge failed to produce disciplined knowledge because insignificant details were replaced by unintelligible generalizations. Taba again observed that this danger lay not in the organization itself but in the manner of selecting what was put into such courses and

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<sup>108</sup>Alexander Meiklejohn, The Liberal College, (Boston: Marshall Jones; 1920), p.47.

<sup>109</sup>Taba, op. cit., p.393.

in the manner of teaching them.

### Social Processes and Life Functions Curriculum

According to the literature reviewed, the conception of the social role of public education changed as society became more and more fragmented by the forces released by science and technology. It was thought that the educational programme must emphasize the clarification and maintainance of social perspectives. Therefore the educators sought to give imperative social needs the central place in the curriculum.

The curriculum was organized in terms of broad areas that cut across subject fields. In some designs these were areas of living or major social functions, so organized as to include every major aspect of life; in others they were broad preplanned units, some of which related to students' personal needs and some to the world in which they lived. Aspects of life in which the student must function effectively -- communication, development, conservation of human and material resources -- were used to determine scope and organization, while sequence rested upon adjudged optimum placement in terms of maturity of the learners.

The basic idea of the social processes or life functions curriculum went back to Herbert Spencer's theory of curriculum development based upon a sociological analysis of the types of activities which constituted the common features of life in any culture,<sup>110</sup> but the actual approach to the curriculum was originally formulated by Marshall and Goetz who defended that kind of curriculum organization as follows:

1. It was an aid to the development of meaning. A classification of social

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<sup>110</sup>Herbert Spencer, Education: Intellectual, Moral, and Physical, (New York: D. Appleton & Company, 1860), pp.11-14.

processes or areas of living, provided nuclei around which countless complexities and details of society could be organized in a meaningful fashion.

2. It permitted the use of experiential background which facilitated learning. Since every student had had experience in group living, most of the social processes were in the experiential background of every student.
3. It permitted a needed overview "of the data of social living of all times, places, and culture; overview of the analysis of social living supplied by the various specialized study disciplines; overview of the goals and methods of social study curriculum."
4. It provided clear-cut standards for curriculum making, "furnished a continuous check upon the spirit or outlook which should guide the presentation of subject matter. It gives the teacher a touchstone for determining the appropriate relative emphasis upon the maze of facts which make up so much of our current instructional materials."<sup>111</sup>

Several variants in the patterns of life for organizing the curriculum were identified in the literature reviewed. For example, in 1934, the Virginia State Curriculum programme was organized around the processes of life.<sup>112</sup> Morrison used the scheme of the universal social institutions, such as Language, Mathematics, Science, Religion, Art, Health, Government, Commerce and Industry.<sup>113</sup> Stratemeyer, et al. developed a design for scope

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<sup>111</sup>L. C. Marshall and R. M. Goetz, Curriculum-Making in the Social Studies: A Social Process Approach, (New York: Charles Scribner's Sons, 1936), pp.16-21.

<sup>112</sup>Virginia State Board of Education, Tentative Course For Virginia Elementary Schools, (Richmond, Virginia: 1934)

<sup>113</sup>H. C. Morrison, The Curriculum of the Common School, (University of Chicago Press, 1940)



and sequence of the curriculum based on the activities of man.<sup>114</sup>

The literature reviewed also indicated several difficulties in using the social-process approach of curriculum organization. Its general scope, determined by broad trunk lines of social activity, was without reference to individual needs, on the one hand, or to subject boundaries on the other. Hence, the relationship of the content that was actually taught to the life functions it was supposed to elucidate was tenuous. Taba observed, "this difficulty of finding one's way back to adequate content is common to all organizational schemes which depart markedly from the conventional subject organization."<sup>115</sup>

#### The Activity Curriculum

In the literature reviewed, activity curriculum was described as the design in which the choice of subject matter for any pupil group, how it was organized, and how it flowed in sequence, emerged from the needs or problems faced by the group. Neither the scope, organization, nor sequence was specifically outlined and preplanned.

Historical sources reviewed indicated that the fundamental conceptions of the activity curriculum dated as far back as Rousseau. The title "activity curriculum," however, did not come into general use before the 1920's, though Dewey had used the expression "activity program" as early as 1897. Smith, et al. recorded that with the possible exception of the Tuskegee Institute, the first school in America to be set up and operated

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<sup>114</sup>Florence B. Stratemeyer, Hamden L. Forkner; and Margaret G. McKim, et al.; Developing a Curriculum for Modern Living, (New York: Bureau of Publications, Teachers College, Columbia University; 1947).

<sup>115</sup>Taba, op. cit., p.400.



with an activity curriculum was the Laboratory School, established at the University of Chicago in 1896 as a co-operative venture of parents, teachers, and educators under the direction of John and Alice Dewey.<sup>116</sup>

The curriculum of the Dewey Laboratory School was based on four human impulses: the social impulse, which was shown in the child's desire to share his experiences with the people around him; the constructive impulse, which was manifested at first in play, in rhythmic movement, in make-believe, and then in more advanced form in the shaping of raw materials into useful objects; the impulse to investigate and experiment, to find out things, as revealed in the tendency of the child to do things just to see what will happen; and the expressive or artistic impulse, which seemed to be a refinement and further expression of the communicative and constructive interests.<sup>117</sup>

In 1904, J. L. Meriam began the development of a new curriculum in the University Elementary School at the University of Missouri. There was complete absence of conventional subjects in the curriculum. In their place were created four categories of activities -- observation, play, stories, and handwork -- based upon five principles:

1. The curriculum should provide for meeting the immediate needs of the pupils primarily; only secondarily should it provide for the preparation of pupils for later needs.
2. The curriculum should be expressed in terms of concrete everyday activities of pupils and adults rather than in terms of generalization such as found in traditional subjects.
3. The curriculum should provide for great individual

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<sup>116</sup>Smith, et al. op. cit., p.256.

<sup>117</sup>Katherine C. Mayhew & Anna C. Edwards, The Dewey School: The Laboratory School of the University of Chicago, 1896-1903, (New York: D. Appleton-Century Company, Inc.; 1936), pp.40-41.

differences in order to meet varying tastes and abilities of the pupils.

4. The curriculum should be so organized that the various topics may easily be interchanged not only within any grade during the year, but from grade to grade.

5. The curriculum should provide for an acquaintance with both work and leisure.<sup>118</sup>

The Dewey and Meriam schools were the forerunners of the activity curriculum. According to the literature reviewed, several schools experimented with the activity curriculum during the second decade of the present century, partly as a result of the impetus given by William Heard Kilpatrick in his brochure entitled The Project Method, which appeared in 1918.<sup>119</sup>

Ellsworth Collings experimented with a project curriculum in the rural schools of McDonald County, Missouri, in 1917, a year before Kilpatrick's brochure was published. The major divisions of the curriculum of Collings' experimental school -- closely similar to those of the Meriam school -- were: Play, Excursion, Story and Hand. These categories of activities led to the development of an instructional programme believed to be based on child interests and abilities.<sup>120</sup>

Smith, et al. described three distinguishing features of the activity curriculum. The primary principle of the activity curriculum was that the interests and purposes of the children determined the educational programme. What was taught, when it was taught, and the order in which it was learned

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<sup>118</sup>J. L. Meriam, Child Life and the Curriculum, (Yonkers, New York: World Book Company; 1920), p.382.

<sup>119</sup>William H. Kilpatrick, The Project Method. Bulletin 10<sup>th</sup> Series, No. 3. (New York: Teachers College, Columbia University; 1918).

<sup>120</sup>Ellsworth Collings, An Experiment with a Project Curriculum, (New York: The Macmillan Company; 1923), p.23.

went back to what was required for the realization of children's purposes. The second distinctive characteristic of the activity curriculum was that "common learnings" resulted from the "pursuance of common interests." Since child interest was the first delimiting factor in determining what to teach, general education or "commonness of education," was possible only to the extent that children had like interests. The third distinctive feature was that the activity curriculum was not planned in advance. Since child interests provided the starting point for instructional planning, it followed that the activity curriculum could not be preplanned.<sup>121</sup>

Taba elaborated that the rationale of the approach to the activity curriculum was that people learned only what they experienced. Only that learning which was related to active purposes and was rooted in experience translated itself into behaviour changes. Children learned best those things which were attached to solving actual problems.<sup>122</sup>

The literature reviewed indicated that several difficulties appeared when the curriculum was centred exclusively on the interests or activities of children: First, interest categories sacrificed the subject organization of knowledge without replacing it with any organization; thus a risk was run of leaving huge gaps in basic experience. Second, there was an apparent lack of continuity of experience. Third, a curriculum based primarily upon children's interests did not provide adequate preparation for the future. Another difficulty was the determination of sequence. The activity curriculum based on interests meant that sequence could be built only on the continuity of growth as a guide, but neither research on the

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<sup>121</sup>Smith, et al. op. cit., pp.270-275.

<sup>122</sup>Taba, op. cit., p.401.

developmental sequences of mental processes nor developmental tasks was sufficiently refined to stake out the principles and sequences for growing maturity.<sup>123</sup>

Taba observed that experimentation with the activity curriculum made two lasting contributions to the curriculum. One was the recognition of the role of active learning through manipulation, expression, construction, and dramatization. The second was the impetus it gave to the study of child development, the principles and sequence of growth, and an effort to consider these sequences in the planning of the curriculum sequences.<sup>124</sup>

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<sup>123</sup>D. B. Ausubel, "Viewpoints from Related Disciplines: Human Growth and Development." Teachers College Record, 60 (February, 1959), pp.245-247.

<sup>124</sup>Taba, op. cit., p.406.

### SECTION III

#### METHOD OF PROCEDURE

The purpose of this study was to survey the opinions held by some graduates of the Kwadaso Agricultural College (now Agricultural Assistants) and their supervising Senior Officers regarding the relevance of the College subjects to the work those Agricultural Assistants were doing at the time of the study; and to apply the findings of the study to suggest a curriculum for the College.

The discussion of the procedures used for the study is organized around the sample, the instrumentation, and the analysis of the data.

##### The Sample

The actual selection of the sample was not controlled by this investigator. The Chief Agricultural Training Officer, Ministry of Agriculture, Accra, Ghana -- by whose permission the study was undertaken -- mailed 15 copies of Questionnaire A (See Appendix, page 139) to each of eight Regional Agricultural Officers in all the eight administrative regions of Ghana. Each Regional Agricultural Officer then distributed the questionnaires to 15 Agricultural Assistants working in the Region, seeing to it that as many Divisions/Units of the Ministry of Agriculture as possible were represented in the distribution.

Besides Questionnaire A, six copies of Questionnaire B (See Appendix, page 142) were mailed to each of six Regional Agricultural Officers, and seven to each of the remaining two Regional Agricultural Officers, for distribution to the Senior Officers under whom the Agricultural Assistants

(who had received Questionnaire A) worked.

In view of the fact that estimated ratio of Agricultural Assistants to Senior Officers within the established staff of the Ministry of Agriculture was 7:1, the quantities of 15 to six for Questionnaire A and B respectively were considered adequate. In all, the questionnaires mailed from the office of the Chief Agricultural Training Officer, Accra, consisted of 120 for Agricultural Assistants and 50 for Senior Officers.

Both questionnaires were prepared by this investigator and airmailed from the Kansas State University Campus Post Office on May 16, 1970. On July 18, 1970, the first batch of 105 completed questionnaires of 78 Questionnaire A and 27 Questionnaire B was received, and on August 10, 1970, the last batch of the completed questionnaires of 21 A and one of B was received.

The tabulated returns of the questionnaire were:

Total questionnaire mailed .....	170
Total questionnaire returned .....	130
Total per cent return .....	76.5
 Agricultural Assistants Questionnaire mailed .....	120
Agricultural Assistants Questionnaire returned .....	102
Per cent of return .....	85.0
 Senior Officer Questionnaire mailed .....	50
Senior Officer Questionnaire returned .....	28
Per cent of return .....	56.0

#### The Instrument

Two instruments were used to obtain the data. The first instrument was

a questionnaire developed by this investigator by which the Agricultural-Assistant-respondents, themselves graduates of the Kwadaso Agricultural College, could grade four aspects of the subjects they were taught at the College: 1) the value of the subjects to the work they were doing; 2) adequacy of the material covered in the subject; 3) difficulty of the subject; and 4) the interest generated for the subject. The fifth question requested them to grade the over-all training programme at Kwadaso in the areas of: basic agricultural knowledge or skill; supervision of labour; getting along with others; and ability to communicate ideas to others.

The second instrument also consisted of a questionnaire, developed by this investigator, requesting the Senior Officers under whom the Agricultural Assistants were working, to rate the extent to which they (Senior Officers) considered the Kwadaso subjects important to the work assigned to the Agricultural Assistants. The limitation of that aspect of the instrument was recognized. "...determining the scope of education by accounting the .... subjects in the program without knowledge of what these subjects contain or what learnings they entail is an extremely dubious enterprise."<sup>1</sup> However, short of asking the Senior Officers to review the entire content of the Kwadaso curriculum -- assuming the time was available -- the instrument was considered adequate, under the circumstances, to get their opinions on that aspect of the Kwadaso curriculum. This contention was underscored by the fact that a considerable number of the Senior Officers, those who rose through the ranks, were once students at the Kwadaso Agricultural College, and therefore were not total strangers to the Kwadaso curriculum.

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<sup>1</sup>Taba, op. cit., p.392.

Section II of the second instrument requested the Senior Officers to grade the performance of the Agricultural Assistants in the area of: basic agricultural knowledge or skill; supervision of labour; getting along with others; ability to communicate ideas; and readiness to take on responsibility.

Both instruments consisted of questionnaires to which the respondent was to answer by rating from one to five, with five being "very high" and one "very little."

#### Analysis of Data

A break-down of the completed questionnaires was as follows:

REGION	QUESTIONNAIRE A			QUESTIONNAIRE B		
	Mailed	Returned	Useable	Mailed	Returned	Useable
ASHANTI	15	13	13	7	5	3
BRONG/AHAFO	15	15	15	6	5	5
CENTRAL	15	11	11	6	3	3
EASTERN	15	13	10	7	3	3
NOTHERN	15	3	3	6	-	-
UPPER	15	12	12	6	6	6
VOLTA	15	24*	24	6	4	4
WESTERN	15	11	11	6	2	2
TOTALS	120	102	99	50	28	26

\*Apparently, 9 additional copies of the questionnaire were made at the Volta Regional Agricultural Office and distributed. This suspicion was borne out by the fact that those copies looked different from the rest.

The data were analyzed to determine three major outcomes: 1) what were



the opinions of the Kwadaso Agricultural College graduates, as scored under the given scale, regarding the given specific aspects of the courses they were taught at the College; 2) was there any pattern in those opinions; 3) did these opinions differ from those held by the supervising Senior Officers.

It was assumed that all the courses would score equally in all the aspects being surveyed. The method selected for the analysis was Analysis of Variance.

The first step of the analysis was to tabulate the raw scores for each region. Then the scores for each subject and aspect being surveyed were totaled and averaged for the region. The second step was to set up the averages in a two-way analysis of variance table; and the third step was to process the data to determine if the differences among the averages were significant.

The following table (Table 1) was the data for Question 1 on Questionnaire A. At 0.05 level of significance, both null hypotheses that: 1) there is no difference among the Subject-Means; (All  $\tau_i = 0$ ) and 2) there is no difference among Regional-Means; (All  $\beta_j = 0$ ) were rejected. Table 2 showed the degree of rejection of the null hypotheses. Both the Subject and Regions were considered as fixed factors.

It was recognized that the rejection of the over-all hypotheses of equal Subject-Means without identifying which Subject-Means were significantly larger than which other Subject-Means was not enough for deciding upon the relevance of the subjects. The literature on educational research reviewed indicated that the problem of multiple comparisons in the analysis of variance was controversial among statisticians. "Several procedures

TABLE 1

Average Scores per Subject per Region on Question 1: "To what extent do you consider each subject you studied at Kwadaso valuable to the work you are doing now?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	ANIMAL PRODUCTION	CROP PRODUCTION	CROP PROTECTION	ECONOMICS	EXTENSION EDUCATION	FARM MANAGEMENT	FARM MECHANIZATION	FIELD EXPERIMENT	HOME ECONOMICS	METEOROLOGY	REPORT WRITING	SOIL SCIENCE	SURVEYING	TOTAL
ASHANTI	3.62	4.31	3.54	3.46	4.38	3.67	2.92	3.23	5.00	2.91	4.38	3.54	3.31	48.27
BRONG/AHAFO	2.94	4.25	3.50	3.50	4.31	3.36	2.31	3.00	-	2.64	4.00	2.73	3.38	39.92
CENTRAL	3.45	3.45	2.82	3.30	3.55	2.90	1.91	2.64	4.50	2.27	3.89	2.56	2.60	39.84
EASTERN	3.60	3.90	3.60	3.40	4.10	4.00	2.67	3.33	-	2.66	3.40	3.67	3.22	41.55
NORTHERN	3.67	2.67	2.67	2.67	3.33	3.00	2.33	1.67	-	1.67	3.67	2.67	2.33	32.35
UPPER	3.08	3.92	3.58	3.00	4.00	3.33	3.10	3.00	5.00	3.11	4.50	4.00	3.33	46.95
VOLTA	3.00	4.21	3.67	3.33	3.96	3.55	2.57	2.96	4.00	2.17	3.74	3.54	3.27	43.97
WESTERN	2.27	3.82	3.27	3.50	4.27	3.45	1.54	3.09	2.00	2.55	4.00	2.67	3.55	39.97
Subject Total	25.63	30.53	26.65	26.18	31.90	27.26	19.35	22.92	20.50	19.98	31.58	25.35	24.99	332.80
Subject Means	3.20	3.82	3.33	3.27	3.99	3.41	2.42	2.87	4.10	2.50	3.95	3.17	3.12	

have been developed for making multiple comparisons, but some of these tend to yield significant findings when the test of the over-all hypothesis provided by the analysis of variance is nonsignificant. In view of the fact that it has not been established that any of these tests is more powerful than the test provided by the analysis of variance, their validity is subject to question."<sup>2</sup>

TABLE 2

Analysis of Variance Summarizing the Computations from Table 1.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
SUBJECTS	12	25.92	2.16	11.37	Some $\bar{T}_i \neq 0$
REGIONS	7	9.85	1.41	7.42	Some $\beta_j \neq 0$
ERROR	84	16.07	0.19	-	-
Total about $\bar{x}..$	103	48.92	-	-	-

However, this investigator used the Fisher Least Significant Difference (LSD) to compare the Subject-Means. This procedure was preferred to alternative procedures because it was simple, and too, the result of a Kansas State Monte Carlo studies indicated that "over the range of sets of means studied, there is no support for the fear that the Fisher LSD test lacks protection against Type I error."<sup>3</sup> Table 3 showed the Fisher LSD

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<sup>2</sup>John T. Roscoe, Fundamental Research Statistics for the Behavioral Sciences; (New York: Holt, Rinehart & Winston, Inc.; 1969), p.239.

<sup>3</sup>H. C. Fryer, Concepts and Methods of Experimental Statistics; (Boston: Allyn and Bacon, Inc.; 1966), p.270.

comparisons for the Subject-Means with  $\alpha = 0.05$ .

TABLE 3

Ordered Array of Subject-Means from Table 1 and Indications of Significant Differences Among the Subject-Means at 0.05 Level. (LSD = 0.43)

HOME ECONOMICS	EXTENSION EDUCATION	REPORT WRITING	CROP PRODUCTION	FARM MANAGEMENT	CROP PROTECTION	ECONOMICS	ANIMAL PRODUCTION	SOIL SCIENCE	SURVEYING	FIELD EXPERIMENT	METEOROLOGY	FARM MECHANIZATION
4.10	3.99	3.95	3.82	3.41	3.33	3.27	3.20	3.17	3.12	2.87	2.50	2.42

(The means lying above the same horizontal line are not significantly different; those over different line are with  $\alpha = 0.05$ )

The following table (Table 4) was the averages calculated for Question 2 on Questionnaire A. At 0.05 level of significance, the null hypothesis that there is no difference among the Subject-Means was rejected; but the null hypothesis that there is no difference among the Regional-Means was retained. Table 5 showed the ANOVA table for Table 4. Both factors (Subjects and Regions) were considered fixed.

Table 6 showed the results of the Fisher LSD multiple-comparison for the Subject-Means.

Table 7 was the averages calculated for Question 3 on Questionnaire A. The null hypotheses for the analysis of variance for the data in Table 7 were: 1) there is no difference among the Subject-Means; and 2) there is no difference among the Regional-Means. Both hypotheses were rejected at 0.05 level of significance. The ANOVA table was as shown in Table 8.

TABLE 4

Average Scores per Subject per Region to Question 2: "To what extent do you consider the quantity of material covered in each subject adequate for the work you are doing now?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	SURVEYING	SOIL SCIENCE	REPORT WRITING	METEOROLOGY	HOME ECONOMICS	FIELD EXPERIMENT	FARM MANAGEMENT	FARM MECHANIZATION	EXTENSION EDUCATION	ECONOMICS	CROP PROTECTION	CROP PRODUCTION	ANIMAL PRODUCTION	TOTAL
ASHANTI	3.50	3.15	4.15	2.92	5.00	3.54	3.54	2.46	4.46	3.08	3.92	4.62	3.62	47.96
BRONG/AHAFO	3.38	2.44	3.75	2.73	-	3.06	3.40	2.81	3.94	3.38	3.81	4.19	3.19	40.08
CENTRAL	2.00	2.64	3.11	2.30	4.50	2.73	3.10	1.64	3.73	3.45	3.27	3.55	3.18	39.20
EASTERN	3.22	3.50	2.90	2.67	-	3.33	3.50	2.00	4.10	3.60	3.70	4.00	3.20	39.68
NORTHERN	3.00	3.33	4.00	3.00	-	2.67	2.67	3.00	4.33	4.67	4.33	4.33	4.33	43.66
UPPER	2.50	3.42	4.36	2.30	4.00	3.00	3.82	3.27	4.33	2.75	3.42	3.92	3.09	44.18
VOLTA	3.22	3.50	3.05	2.67	4.00	3.09	3.26	3.04	3.75	3.43	4.00	4.29	3.54	44.84
WESTERN	3.18	2.54	3.55	2.18	3.00	2.82	3.18	1.82	4.36	3.36	3.55	3.91	3.00	40.45
Subject Total	24.00	24.52	28.87	20.73	20.50	24.24	26.47	20.04	33.00	27.72	30.00	32.81	27.15	340.05
Subject Means	3.00	3.07	3.61	2.59	4.10	3.03	3.31	2.51	4.13	3.47	3.75	4.10	3.39	

TABLE 5

Analysis of Variance Summarizing the Computations from Table 4.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
SUBJECTS	12	26.82	2.24	2.36	Some $\pi_i \neq 0$ $\beta_j = 0$
REGIONS	7	4.85	0.69	0.73	
ERROR	84	8.00	0.95	-	
Total about $\bar{x}_{..}$	103	48.92	-	-	

TABLE 6

Ordered Array of Subject-Means from Table 4, and Indications of Significant Differences Among the Subject-Means at 0.05 Level. (LSD = 0.99)

EXTENSION	HOME ECONOMICS	CROP PRODUCTION	CROP PROTECTION	REPORT WRITING	ECONOMICS	ANIMAL PRODUCTION	FARM MANAGEMENT	SOIL SCIENCE	FIELD EXPERIMENT	SURVEY	METEOROLOGY	FARM MECHANIZATION
4.13	4.10	4.10	3.75	3.61	3.47	3.39	3.31	3.07	3.03	3.00	2.59	2.51

(The means lying above the same horizontal line are not significantly different; those over different lines are with  $\alpha = 0.05$ )

TABLE 7

Average Scores per Subject per Region to Question 3: "To what extent did you find each subject difficult?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	EXTENSION	ECONOMICS	CROP PROTECTION	CROP PRODUCTION	ANIMAL PRODUCTION	SURVEYING	SOIL SCIENCE	REPORT WRITING	METEOROLOGY	HOME ECONOMICS	FIELD EXPERIMENT	FARM MECHANIZATION	FARM MANAGEMENT	TOTAL
ASHANTI	1.93	2.42	2.32	2.15	1.85	2.42	2.62	2.08	2.36	2.00	2.62	2.85	1.54	29.22
BRONG/AHAFO	3.00	3.38	3.13	2.81	3.06	3.44	3.19	2.63	2.67	-	2.87	2.88	2.93	35.99
CENTRAL	2.18	2.10	2.50	2.22	2.00	2.64	2.64	1.70	2.45	1.00	2.73	2.91	1.80	28.87
EASTERN	2.20	2.78	2.30	2.20	2.67	2.60	2.50	2.10	2.50	-	2.70	2.10	2.10	28.75
NORTHERN	2.67	2.67	3.33	3.00	3.00	3.00	3.00	2.33	2.50	-	3.00	2.00	3.00	33.50
UPPER	2.25	2.92	2.92	2.25	2.67	3.36	3.00	2.42	2.18	1.00	3.00	2.18	2.50	32.65
VOLTA	2.00	2.52	2.52	2.29	2.25	3.00	2.83	1.83	2.43	3.33	3.00	3.00	2.22	33.22
WESTERN	1.82	2.64	2.36	1.55	2.09	2.73	2.73	1.73	2.82	1.00	2.45	2.82	1.91	28.65
Subject Total	18.05	21.43	21.44	18.47	19.59	23.19	22.51	16.82	19.91	8.33	22.37	20.74	18.00	250.85
Subject Means	2.26	2.68	2.68	2.31	2.45	2.90	2.81	2.10	2.49	1.67	2.80	2.59	2.25	



TABLE 8

Analysis of Variance Summarizing the Computations from Table 7. Subjects and Regions were both considered as fixed factors.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
SUBJECTS	12	9.35	0.78	6.50	Some $\tau_i \neq 0$
REGIONS	7	7.13	1.02	8.50	Some $\beta_j \neq 0$
ERROR	84	8.92	0.12	-	
Total about $\bar{x}..$	103	25.40	-	-	

The Fisher LSD multiple-comparison was used to test the Subject-Means. The result was what is shown in Table 9.

TABLE 9

Ordered Array of Subject-Means from Table 7, and Indications of Significant Differences Among the Subject-Means at 0.05 Level. (LSD = 0.34)

SURVEYING	SOIL SCIENCE	FIELD EXPERIMENT	CROP PROTECTION	ECONOMICS	FARM MECHANIZATION	METEOROLOGY	ANIMAL PRODUCTION	CROP PRODUCTION	EXTENSION	FARM MANAGEMENT	REPORT WRITING	HOME ECONOMICS
2.90	2.81	2.80	2.68	2.68	2.59	2.49	2.45	2.31	2.26	2.25	2.10	1.67

(The means lying above the same horizontal line are not significantly different; those over different lines are, with  $\alpha = 0.05$ )

Table 10 was the calculated averages for Question 4 on Questionnaire A.



TABLE 10

Average Scores per Subject per Region to Question 4: "To what extent did each subject capture and hold your interest?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	FARM MANAGEMENT	FARM MECHANIZATION	FIELD EXPERIMENT	HOME ECONOMICS	METEOROLOGY	REPORT WRITING	SOIL SCIENCE	SURVEYING	ANIMAL PRODUCTION	CROP PRODUCTION	CROP PROTECTION	ECONOMICS	EXTENSION	TOTAL
ASHANTI	4.23	3.00	3.85	5.00	3.25	3.85	3.69	3.54	4.31	4.92	4.23	3.77	4.92	52.56
BRONG/AHAFO	4.61	3.75	3.81	-	2.87	3.67	3.13	3.13	3.94	4.94	4.56	4.31	4.56	47.34
CENTRAL	3.60	3.00	3.30	4.50	2.18	3.11	3.18	2.45	4.09	4.09	3.91	4.09	4.00	45.50
EASTERN	3.90	4.10	3.50	-	2.80	3.30	3.50	3.50	3.50	4.30	3.90	3.44	4.10	43.84
NORTHERN	4.67	3.00	4.33	-	2.33	3.67	3.00	2.67	5.00	5.00	4.33	4.67	5.00	47.67
UPPER	4.00	3.37	2.73	5.00	2.73	3.92	3.92	3.50	3.92	4.33	4.00	3.50	4.42	49.34
VOLTA	4.22	3.26	3.48	4.00	3.05	3.86	3.74	3.33	4.00	4.63	4.00	3.95	3.96	49.48
WESTERN	3.91	2.91	2.91	5.00	2.09	3.91	3.36	3.18	3.73	4.27	3.64	4.18	4.00	47.09
Subject Totals	33.20	26.39	27.91	23.50	21.30	29.29	27.52	25.30	32.49	36.48	32.57	31.91	34.96	382.82
Subject Means	4.15	3.30	3.49	4.70	2.66	3.66	3.44	3.16	4.06	4.56	4.07	3.99	4.37	

At 0.05 level of significance, both the null hypotheses, namely, 1) there is no difference among the Subject-Means, and 2) there is no difference among the Regional-Means, were rejected. (See Table 11).

TABLE 11

Analysis of Variance Summarizing the Computations from Table 10. Both factors -- Subjects and Regions, were considered fixed.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
SUBJECTS	12	31.24	2.60	18.57	Some $\bar{T}_i \neq 0$
REGIONS	7	3.20	0.46	3.29	Some $\beta_j \neq 0$
ERROR	84	12.09	0.14	-	
Total about $\bar{x}..$	103	46.53			

Table 12 shows the results of the Fisher LSD multiple-comparison applied to the Subject-Means from Table 10.

TABLE 12

Ordered Array of Subject-Means from Table 10, and Indications of Significant Differences Among the Subject-Means at 0.05 Level. (LSD = 0.37)

HOME ECONOMICS	CROP PRODUCTION	EXTENSION EDUCATION	FARM MANAGEMENT	CROP PROTECTION	ANIMAL PRODUCTION	ECONOMICS	REPORT WRITING	FIELD EXPERIMENT	SOIL SCIENCE	FARM MECHANIZATION	SURVEY	METEOROLOGY
4.70	4.56	4.37	4.15	4.07	4.06	3.99	3.66	3.49	3.44	3.30	3.16	2.66

(The means lying above the same horizontal line are not significantly different; but those over different lines are, with  $\alpha = 0.05$ )

The calculated averages for Question 5 on Questionnaire A were as shown in Table 13.

TABLE 13

Average Scores per Area of Training per Region to Question 5: "To what extent do you consider the training you received at Kwadaso adequate in each of the following areas?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	Basic agricultural knowledge or skill	Supervision of Labour	Social Adjustment	Ability to Communicate	TOTAL
ASHANTI	4.69	4.23	4.00	4.54	17.46
BRONG/AHAFO	4.44	3.75	4.00	4.13	16.32
CENTRAL	3.82	3.09	3.36	3.82	14.09
EASTERN	3.90	3.60	3.50	3.90	14.90
NORTHERN	4.67	3.33	3.33	4.00	15.33
UPPER	4.00	3.83	3.82	4.17	15.82
VOLTA	4.13	3.39	3.92	3.79	15.23
WESTERN	4.27	4.09	3.45	4.00	15.81
Area Totals	33.92	29.31	29.38	32.35	124.96
Area Means	4.24	3.66	3.67	4.04	

Both the null hypotheses: 1) there is no difference among Area-Means, and 2) there is no difference among Regional-Means, were rejected. (See Table 14). Using the Fisher multiple-comparison for the Area-means, the results showed the following: (Table 15)

Table 16 was the averages calculated for Question 1 on Questionnaire B.

TABLE 14

Analysis of Variance Summarizing the Computations from Table 13. Areas and Regions were considered fixed.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
AREAS	3	1.95	0.65	10.83	Some $\bar{T}_i \neq 0$
REGIONS	7	1.03	0.15	2.50	Some $\beta_j \neq 0$
ERROR	21	1.18	0.06		
Total about $\bar{x}_{..}$	103	46.53			

TABLE 15

Ordered Array of Area-Means from Table 13, and Indications of Significant Differences Among the Area-Means at 0.05 Level. (LSD = 0.25)

Basic agricultural knowledge or Skill	Ability to Communicate	Social Adjustment	Supervision of Labour
4.24	4.04	3.67	3.66

(The means lying above the same horizontal line are not significantly different; but those over different lines are, with  $\alpha = 0.05$ )

TABLE 16

Average Scores per Subject per Region to the Question: "To what extent do you consider the following subjects important to the work which the A.A 's/3rd Year Learners under you are doing now?" (5 = Very high; 4 = Above average; 3 = Average; 2 = Below average; 1 = Very little.)

REGION	AGRIC SURVEYING	SOIL SCIENCE	REPORT WRITING	METEOROLOGY	HOME ECONOMICS	FIELD EXPERIMENTS	FARM MECHANIZATION	FARM MANAGEMENT	EXTENSION EDUCATION	ECONOMICS	CROP PROTECTION	CROP PRODUCTION	ANIMAL PRODUCTION	TOTAL
ASHANTI	2.67	2.33	4.00	1.67	1.50	2.33	1.00	4.00	3.00	4.33	2.00	3.00	2.67	34.50
BRONG/AHAFO	3.80	3.00	4.40	2.40	2.20	3.20	3.00	4.20	3.40	3.80	2.60	3.60	3.80	44.40
CENTRAL	4.00	3.00	4.00	2.33	4.00	2.67	3.00	4.00	3.67	4.33	3.33	4.00	3.67	46.00
EASTERN	3.33	2.67	3.33	2.67	2.00	1.33	1.00	2.67	3.67	3.33	3.33	3.67	2.00	35.00
UPPER	3.00	3.67	4.17	3.00	2.17	3.67	3.33	3.83	4.33	3.50	3.83	4.17	3.00	45.67
VOLTA	4.00	3.75	4.75	3.25	2.25	3.00	2.50	3.50	4.25	3.00	3.50	3.75	3.00	44.50
WESTERN	4.00	2.00	3.50	2.00	1.00	4.00	2.00	3.00	3.50	2.50	1.50	3.50	2.50	35.00
Subject Totals	24.80	20.42	28.15	17.32	15.12	20.20	15.83	25.20	25.82	24.79	21.09	25.69	20.64	285.07
Subject Means	3.54	2.92	4.02	2.47	2.16	2.89	2.26	3.60	3.69	3.54	3.01	3.67	2.95	

Both the null hypotheses about equal Subject-Means and Regional-Means were rejected. The degree of rejection was as shown in Table 17.

TABLE 17

Analysis of Variance Summarizing the Computations from Table 16. Subjects and Regions were both considered as fixed factors.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
SUBJECT	12	29.65	2.47	7.72	Some $\tau_i \neq 0$
REGION	6	14.18	2.36	7.38	Some $\beta_j \neq 0$
ERROR	72	22.97	0.36		
Total about $\bar{x}..$	90	66.80			

The Fisher LSD multiple-comparison for the Subject-Means showed the following (Table 18).

TABLE 18

Ordered Array of Subject-Means from Table 16, and Indications of Significant Differences Among the Subject-Means. (LSD = 0.60)

REPORT WRITING	EXTENSION EDUCATION	CROP PRODUCTION	FARM MANAGEMENT	ECONOMICS	AGRIC. SURVEYING	CROP PROTECTION	ANIMAL PRODUCTION	SOIL SCIENCE	FIELD EXPERIMENTATION	METEOROLOGY	FARM MECHANIZATION	HOME ECONOMICS
4.02	3.69	3.67	3.60	3.54	3.54	3.01	2.95	2.92	2.89	2.47	2.26	2.16

(The means lying above the same horizontal line are not significantly different; those over different lines are, with  $\alpha = 0.05$ )

TABLE 19

Average Scores per Area of Competency per Region  
to the Question: "How do you rate the A.A's/3rd  
Year Learners under you in the following areas  
of competency?" (5 = Very High; 4 = Above average;  
3 = Average; 2 = Below average; 1 = Very little.)

REGION	Basic agricultural knowledge or Skill	Supervision of Labour	Social Adjustment	Ability to Communicate	Readiness to take Responsi- bility	TOTAL
ASHANTI	3.50	3.67	3.50	3.50	3.67	17.84
BRONG/ AHAFO	3.60	3.20	4.00	3.20	3.40	17.40
CENTRAL	3.80	3.40	3.60	3.40	3.80	18.00
EASTERN	2.33	3.00	2.67	2.67	3.00	13.67
UPPER	3.17	3.33	3.33	3.17	3.67	16.67
VOLTA	3.50	3.50	3.25	3.50	3.00	16.75
WESTERN	3.50	3.50	4.00	3.50	3.50	18.00
Area Totals	23.40	23.60	24.35	22.94	24.04	118.33
Area Means	3.34	3.37	3.47	3.27	3.43	

The null hypothesis about equal Area-Means was retained; but that about  
equal Regional-Means was rejected at 0.05 level. (See Table 20)

TABLE 20

Analysis of Variance Summarizing the Computations from Table 19. Areas and Regions were considered fixed.

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F ratio	Decision at 0.05 Level
AREAS	4	0.17	0.04	0.75	$\bar{\tau}_i = 0$
REGION	6	2.81	0.47	8.36	Some $\beta_j \neq 0$
ERROR	24	1.36	0.06	-	
Total about $\bar{x}_{..}$	34	4.34			



## SECTION IV

### FINDINGS OF THE STUDY

It was believed that through this study it would be possible to identify a hierarchy among the subjects taught at the Kwadaso Agricultural College regarding their relevance to the work which the Agricultural Assistants were doing at the time of the study.

The findings of the survey were organized around 1) the opinions of the Agricultural Assistants, 2) the patterns of the opinions, and 3) the differences between the opinions held by the Agricultural Assistants and those of the supervising Senior Officers.

#### Opinions of the Agricultural Assistants

Over the range surveyed, the Agricultural Assistants were of the opinion that:

- a) some subjects taught at the Kwadaso Agricultural College were more valuable to their work than others;
- b) more material was covered in some subjects than in others;
- c) some subjects were more difficult than others; and
- d) some subjects captured and held their interest more than others.

They considered that in the four general areas of training, namely, basic agricultural knowledge or skill, ability to communicate, social adjustments, and supervision of labour, the training they received in some areas were more adequate than in some others. (See Figures 1 through 5)

#### Patterns of Agricultural Assistants' Opinions

The functional role of the Kwadaso Agricultural College, as stated

FIGURE 1

The Array of the Extent to which the Agricultural Assistants considered the Subjects taught at Kwadaso Agricultural College VALUABLE to their work.

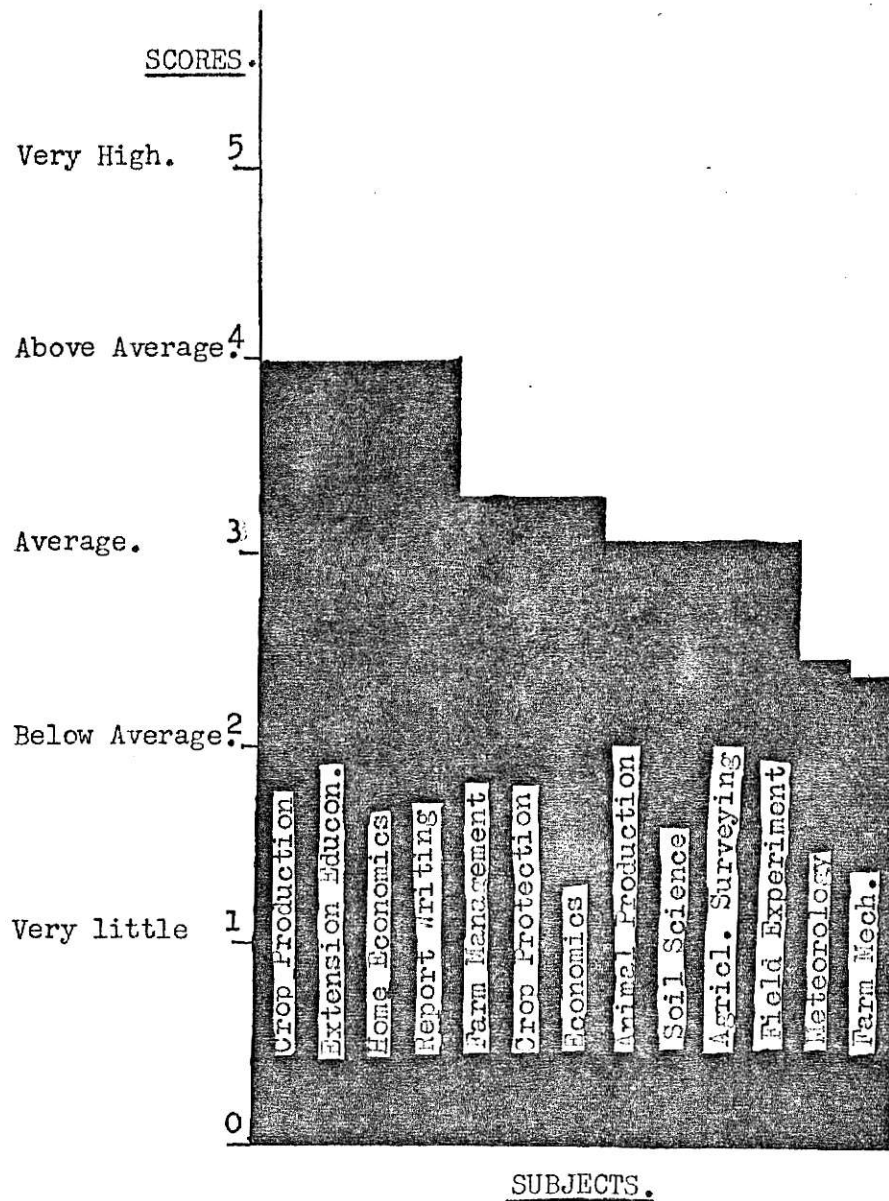


FIGURE 2

The Array of the Extent to which the Agricultural Assistants considered the QUANTITY OF MATERIAL covered in the Subjects ADEQUATE for their work.

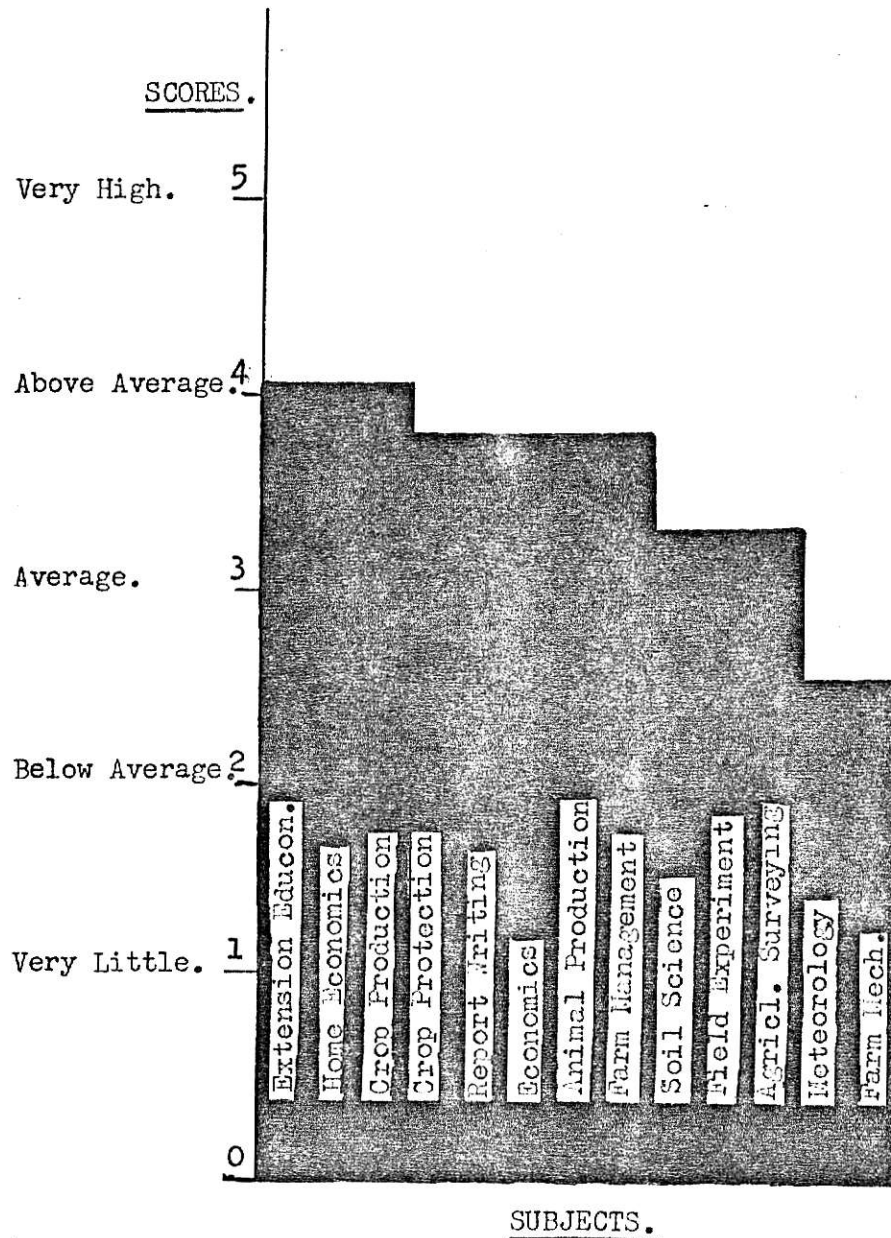


FIGURE 3

The Array of the Extent to which the Agricultural Assistants found the Kwadaso subjects DIFFICULT.

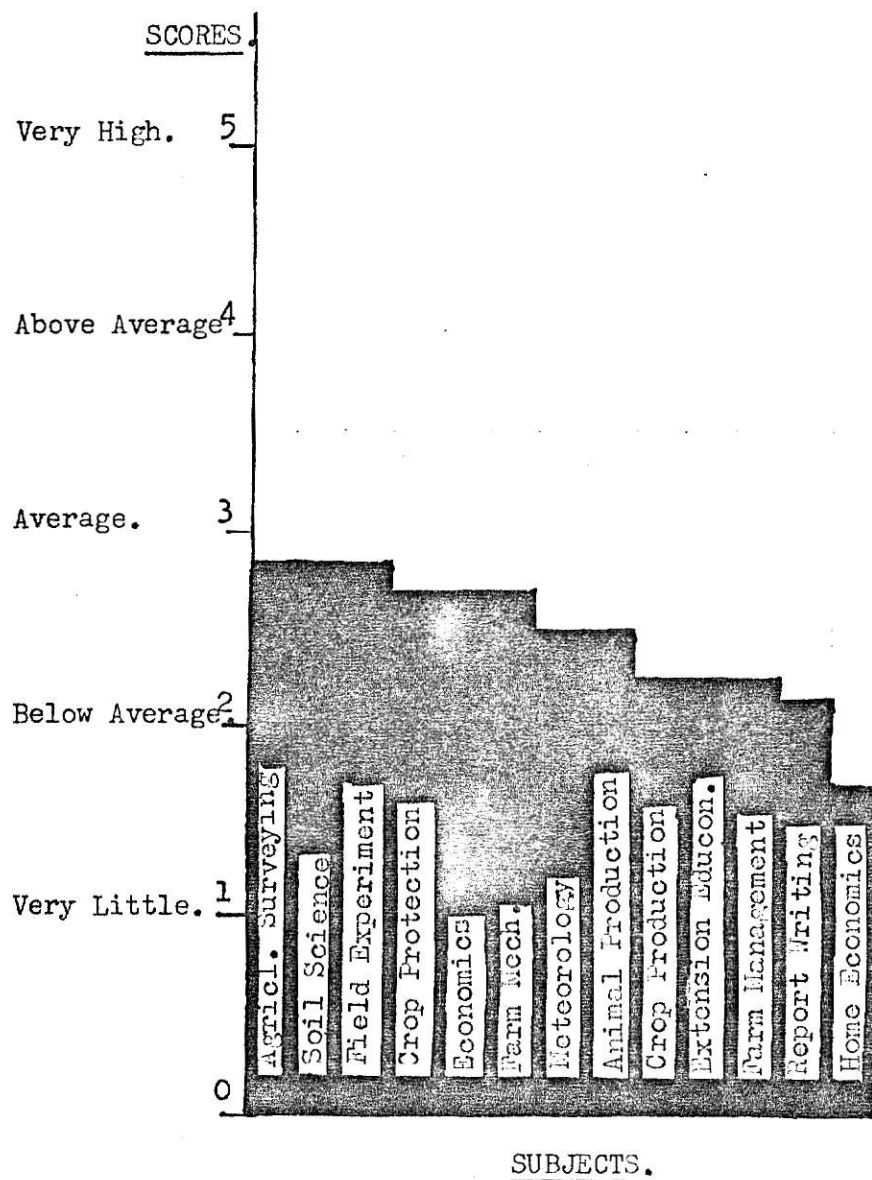


FIGURE 4

The Array of the Extent to which the Agricultural Assistants found the Kwadaso subjects INTERESTING.

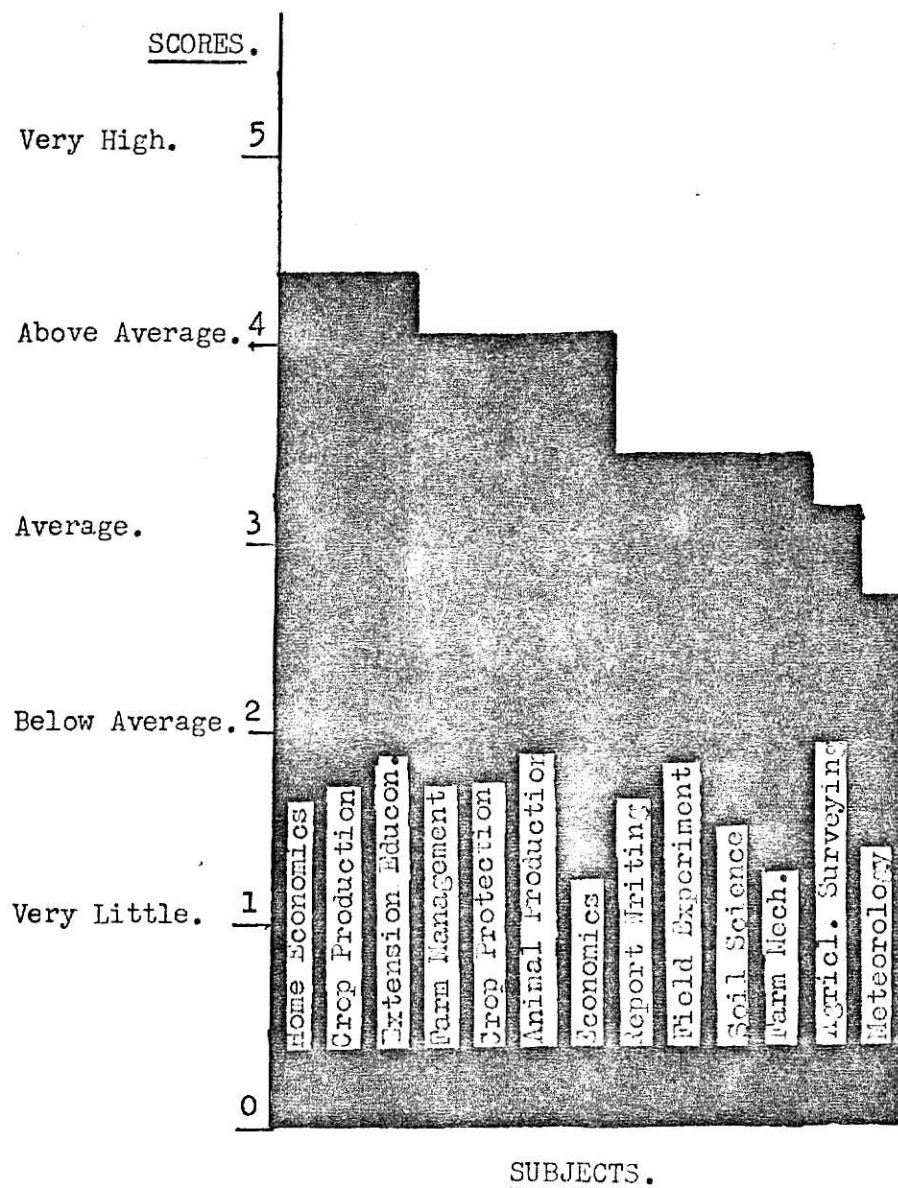
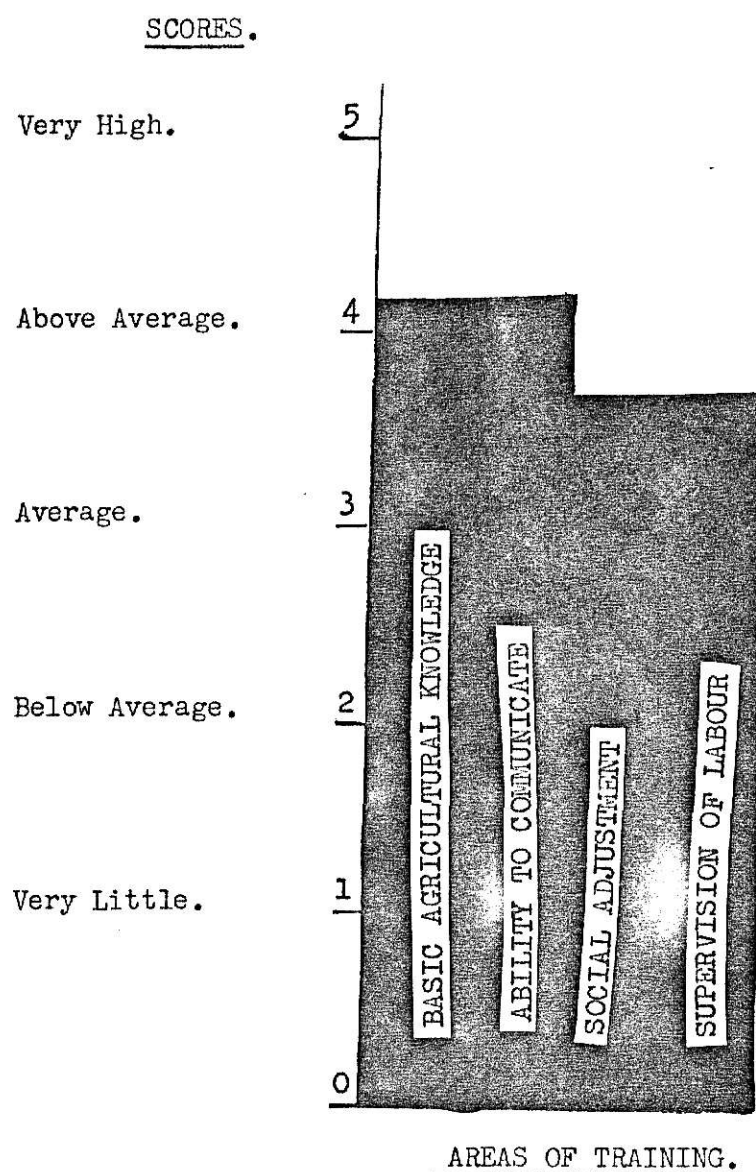


FIGURE 5

The Array of the Extent to which the Agricultural Assistants rated each Training Area as ADEQUATE.



earlier, was the training of junior technical staff for the Ministry of Agriculture. This role was synonymous with vocational education, for "most educators, both general and vocational, agree that vocational education is concerned with learning to work."<sup>1</sup> Therefore, the central issue of the survey was determining the relevance of the Kwadaso subjects to the work which the graduates were subsequently assigned.

However, it was recognized that a curriculum guidance (which was the second purpose of this report) would benefit from a consideration of the relationships, if any, which existed between the work-relevance-value scores of the subjects and the other aspects of the subjects -- difficulty, interest, and adequacy of course coverage -- which were studied.

Over the range surveyed, there was a positive correlation ( $r = 0.93$ ) between the scores for the value of the subjects and the extent of the adequacy of the material covered in the subjects. Other positive correlations were between the value of the subjects and the interest generated in the subjects ( $r = 0.80$ ); between the adequacy of the material covered in the subjects and the interest generated in the subjects ( $r = 0.90$ ).

There were negative correlations between the degree of difficulty experienced in learning on the one hand, and the value of the subjects ( $r = -0.68$ ), or the adequacy of the material covered in the subjects ( $r = -0.59$ ), or the interest generated in the subjects ( $r = -0.61$ ), on the other hand. (Table 21)

#### Opinions of Senior Officers

It was believed that the two groups of respondents -- the Agricultural

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<sup>1</sup>Row W. Roberts; Vocational and Practical Arts Education, (New York: Harper and Row, 1971), p.1.

Assistants and their supervising Senior Officers -- had acquired similar occupational views which working together had necessarily engendered. Therefore, it was suspected that any disagreement between their views regarding the value of the Kwadaso subjects to the work of the Agricultural Assistants would be minimal. This suspicion was partially confirmed.

TABLE 21

Correlation Coefficients of Four Aspects  
of the Subjects taught at Kwadaso Agri-  
cultural College. (N = 13)

VAR. NO.	1	2	3	4
1	1.00	0.93	-0.68	0.80
2	0.93	1.00	-0.59	0.90
3	-0.68	-0.59	1.00	-0.61
4	0.80	0.90	-0.61	1.00

KEY:

1 = Value of Subjects.

2 = Adequacy of Quantity of Material Covered in Subjects.

3 = Difficulty Experienced in Learning Subjects.

4 = Interest Generated in Subjects.

According to the data, the Senior Officers considered some of the subjects taught at Kwadaso Agricultural College more important than others. Six subjects were considered to be most important to the work of the Agricultural Assistants. (Figure 6) These included three subjects which also scored top points with the Agricultural Assistants. (Figure 1)

Home Economics appeared at the bottom of the scale with the Senior

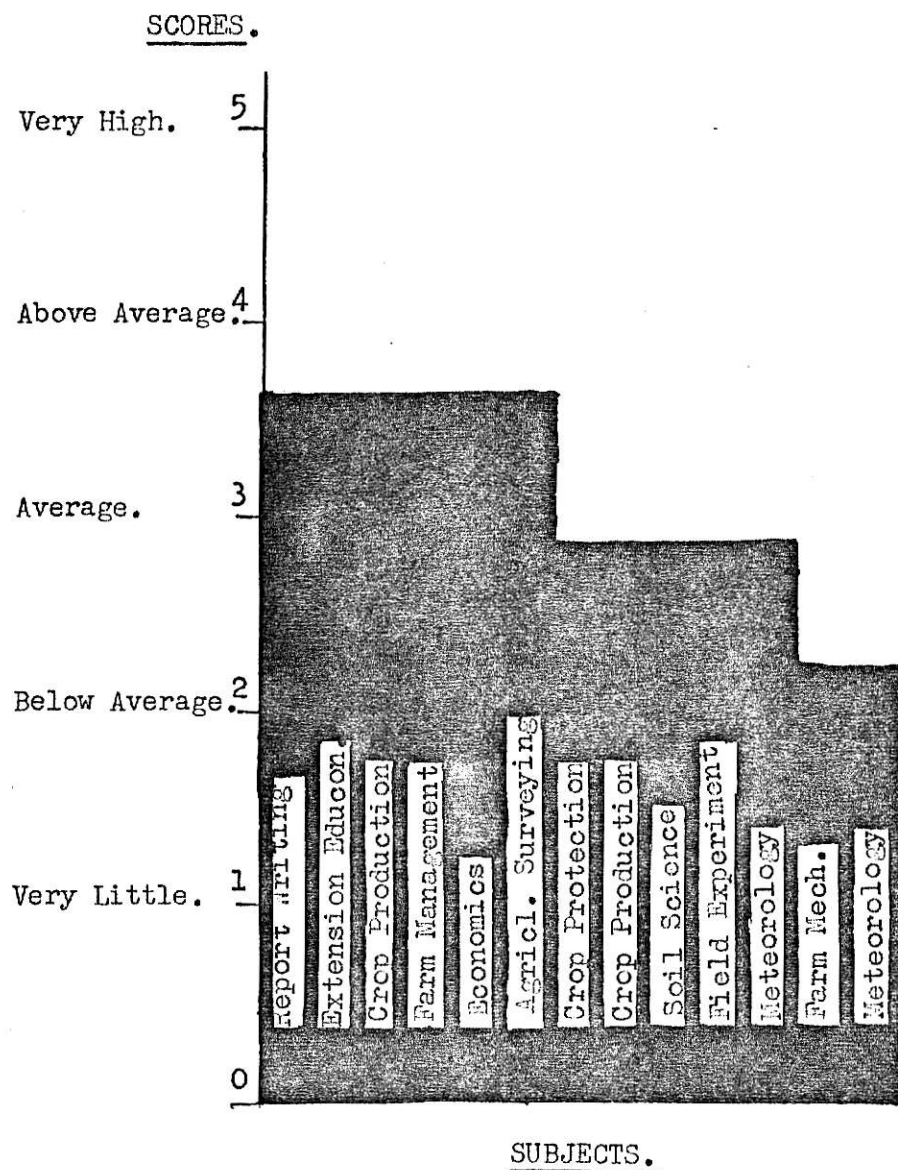


Officers, but was among the most important with the Agricultural Assistants. This wide discrepancy was more than what was anticipated. It was found out, however, that of the 28 returned Questionnaire B from the Senior Officers, one (3.5%) was from a woman, while of the 102 returned Questionnaire A from the Agricultural Assistants, eight (7.8%) were from women. Moreover, responses about the value of Home Economics on Questionnaire A were necessarily restricted to women respondents, because Home Economics as a subject was restricted to girls at the College. No adjustments were made for this bias in the statistical analysis and therefore, it could not be established if sex of the respondent influenced the value-score of Home Economics. (Figure 6)

In rating the Agricultural Assistants regarding the given areas of competencies, namely, basic agricultural knowledge, supervision of labour, social adjustment, ability to communicate, and readiness to take on responsibility, the Senior Officers, as a whole, rated the competencies of the Agricultural Assistants equal in all the five areas. Considered regionally, however, at least one region (Eastern Region) rated the competencies differently from the rest. (Tables 19, 20)

FIGURE 6

The Array of the Extent to which the Senior Officers considered the Subjects taught at Kwadaso IMPORTANT to the work assigned to their Agricultural Assistants.



## SECTION V

### CURRICULUM GUIDE

The first part of this paper was to survey the opinions of Agricultural Assistants and their supervising Senior Officers regarding the relevance of the courses at the Kwadaso Agricultural College. The second part was to apply the findings of the survey to suggest a curriculum guide which the Chief Agricultural Training Officer could consider for use at Kwadaso.

The survey and analysis of the data having been completed, this section was concerned with the curriculum guide, and was organized around the Kwadaso philosophy; certain assumptions about the learning process, the needs of the individual, and the needs of society; educational objectives; occupational information; curriculum implementation; and curriculum evaluation. It contained recommendations based upon the findings of the study, or drawn from the philosophical foundations upon which the Kwadaso Agricultural College stood.

#### A Statement of Philosophy

This Kwadaso Agricultural College is an educational institution which is committed to do two things. Firstly, it is to equip you with the technical know-how which will fit you for appointment in the Ministry of Agriculture. Secondly, it is to help in nurturing in you the ability to use your senses with advantage to yourself and others, to cultivate those emotions that are worthy and responsible; to develop a mind that is disciplined, discerning and honest, with the moral courage that goes with such a mind; and to foster a spirit that is sensitive and responsive to "truth, beauty, goodness and love."

If we succeed in these two commitments, you will not only acquire the tools for earning an honest living, but you will be a superior citizen able to contribute to the

economic development of our society.<sup>1</sup>

From the above arose the functional role that the Kwadaso Agricultural College prepared its students for gainful employment. But, beyond the scope of occupational knowledge and skills for the duties and position of the Agricultural Assistant, it was involved in the development of the total growth of the individual. This was an essential part of the training since every graduate brought to his appointment as Agricultural Assistant, attitudes, values, skills, and competencies which affected his performance and subsequent progress in his career. Therefore, the training programme was the means for meeting the psychological, sociological, and economic needs of the individual.

#### Assumptions

According to the literature reviewed, curriculum builders must make decisions based upon certain assumptions about the learning process, the needs of the individual, and the needs of society. These assumptions varied according to geographical location, biological inheritance, and the cultural heritage transmitted to the target population. However, for the purpose of this guide, the following assumptions were considered:

#### About the Learning Process

1. There is no one form of correct teaching for all persons.
2. The school is not the only place where learning occurs.
3. Curricula must be relevant to the world in which people live.
4. Education should involve all of the senses.

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<sup>1</sup>Kwadaso Agricultural College, "Introduction," Standing Orders; (Kwadaso: Ministry of Agriculture, Training and Manpower Division; 1969), Mimeo.

5. Education has no end.
6. Teacher behaviour is an integral part of the educational process.

#### About the Needs of the Individual

1. All persons need to be recognized as having dignity and worth.
2. All persons need opportunities for self-realization.
3. Diversity in education is essential.
4. Work and the income attached to it are essential for individual fulfillment.
5. Individuals may change their occupations several times during their lives.
6. Individuals have a need for self-improvement.

#### About the Needs of Society

1. Society needs individuals who have acceptable attitudes and values.
2. Society needs an educational programme which provides an adequate and efficient labour supply.
3. Society needs individuals who are self directed in a socially constructive manner.
4. Society needs individuals who are willing and able to participate in worthy civic projects.

#### Educational Objectives

Several sources reviewed indicated that planning for the learning process within education demanded the definition and specification of objectives at each level of the total curriculum. When planning experiences for students, educational objectives must be defined in terms of observable behaviour. A behavioural objective generally defined a capability,

disposition, or tendency, and each statement must begin with such words as "ability to ...." Objectives should pertain to human performances, and therefore operationally defined.

Clear statements of learning outcomes were necessary to guide the behaviour of the teacher, to provide students with immediate goals, and to contribute to their motivation. They were needed as basis for assessment of the student's progress. Behaviourally defined objectives were to be perceived as minimal requirements for the attainment of long-range and less well-defined aims of the curriculum.<sup>2,3,4,5,6</sup>

#### Guidelines for Writing Behavioural Objectives

A Statement of behavioural objective should:<sup>7</sup>

- a. describe a desired outcome or goal.
- b. communicate the instructional purpose.
- c. describe the desired behaviour in its most elementary form.
- d. describe the terminal behaviour of the learner clearly enough

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<sup>2</sup>Benjamin S. Bloom, Max D. Engelhart, et al., Taxonomy of Educational Objectives, Handbook I, Cognitive Domain, (New York: David McKay Co., Inc.; 1965), Chaps. 2 and 3.

<sup>3</sup>Ralph W. Tyler, "Achievement Testing and Curriculum Construction," in Trends in Student Personnel Work; E. G. Williamson, Ed. Minneapolis, Minn.; University of Minnesota Press, 1949), pp.391-407.

<sup>4</sup>Paul L. Dressel, "Evaluation Procedures for General Education Objectives," in Educational Record, April, 1950, pp.97-122.

<sup>5</sup>E. F. Lindquist, E., Educational Measurement, (Washington, D. C.: American Council on Education, 1951), Chap. 5.

<sup>6</sup>H. H. Remmers and N. L. Gage, Educational Measurement and Evaluation, (New York: Harper and Bros., 1955), Chap. 1.

<sup>7</sup>These Guidelines were drawn from Class Notes: 410 824 Curriculum in Agriculture I (Summer, 1970).

to avoid misinterpretation.

- e. specify the kind of behaviour which will be accepted as evidence that the learner has achieved the objective.
- f. describe the conditions under which the behaviour will be expected.
- g. describe the acceptable level of performance of the learner.
- h. indicate all desired attitudinal and value outcomes.
- i. indicate a time limit for acceptable performance when applicable.
- j. state the criteria for performance adequacy.
- k. refer to the student; rather than the text, instructor, or classroom experiences.
- l. be concerned with ends rather than means.
- m. associate specific practices or instructional procedures with objectives.

Specific examples of behavioural objectives for three subjects in the Kwadaso curriculum were based on these guidelines and presented as follows:

#### 1. Home Economics

<u>Goal</u>	The ability to lay out a pattern on material.
<u>Behaviour</u>	Identify the face of the material, and pin on pattern according to directions.
<u>Conditions</u>	The student must have <ol style="list-style-type: none"> <li>a. material</li> <li>b. pattern</li> <li>c. pins</li> <li>d. directions.</li> </ol>
<u>Criteria</u>	The student must be able to utilize material for maximum efficiency, and he must take into account the bias of the

material.

## 2. Crop Production

<u>Goal</u>	The student must be able to select the proper commercial fertilizer for a given need.
<u>Behaviour</u>	Identify the proper ratio for a given need.
<u>Conditions</u>	The student must have <ul style="list-style-type: none"> <li>a. fertilizer tags</li> <li>b. predetermined conditions of soil to be fertilized</li> <li>c. type of crop to be grown.</li> </ul>
<u>Criteria</u>	The student must be able to interpret fertilizer analysis from information on tags, and he must be able to determine proper application.

## 3. Field Experiment

<u>Goal</u>	Ability to solve for unknown variance in a collection of yield figures using a given formula.
<u>Behaviour</u>	To solve for variance using a given formula.
<u>Conditions</u>	The student must have <ul style="list-style-type: none"> <li>a. paper</li> <li>b. pencil</li> <li>c. word problem</li> <li>d. formula for variance.</li> </ul>
<u>Criteria</u>	<ul style="list-style-type: none"> <li>i. The student must be able to apply formula to solve problem.</li> <li>ii. The student must be able to substitute given values and compute for correct answers.</li> </ul>

## Occupational Information

As already stated, the Kwadaso training programme was occupationally



directed. This fundamental concept required that the curriculum be based upon the occupational needs of the students and the trends in the Ministry of Agriculture. If the training was to be effective, Kwadaso had to continually re-evaluate the educational objectives.

Occupational information served as a basis for making changes and up-dating to keep the curriculum current and dynamic. For example, it was important to know whether there was justification to allot four hours per school week to Farm Mechanization, but half as much time to Extension Education when, according to the occupational information gathered, the Agricultural Assistant was more involved with farmer-education programmes than the workings of the internal combustion engine.

Projections of manpower needs for the Units and Divisions of the Ministry of Agriculture were necessary to justify enrollment. Types of occupational information considered were:

- a. job descriptions of Agricultural Assistants.
- b. manpower needs of the Ministry of Agriculture and allied establishments.
- c. job classifications within the Ministry of agriculture.
- d. changing agricultural and industrial patterns in the country.
- e. effect of technological change on job requirements.
- f. information about Civil Service schedules.

The information should not be restricted to the occupation of the Agricultural Assistant. Information gathering, which should be an integral and continuing part of curriculum development, should be extended to include information on the individual student -- his background, his previous schooling, his interests, his hopes for the future. If this was done, it

enabled the curriculum developer to determine the extent to which he was meeting the needs of the country and the students.

### Implementing the Curriculum

Once behavioural objectives were determined and the relevant information concerning the learner and his future occupation had been gathered, the next stage was a series of decisions regarding the question: What content was appropriate? What teaching sequence should be used? How should scheduling be handled? What administrative support was needed for staffing and organizing instruction? These were not only important decisions in their own right but were interdependent.

Five major curriculum decisions areas were focussed upon: scope, sequence, staffing, scheduling, and organizing instruction.

#### Decisions about Scope

Scope was concerned with breadth of coverage.<sup>8</sup> It attempted to provide those educational experiences necessary to achieve the behaviour objectives of the curriculum.<sup>9</sup>

The best method of determining what to include in the curriculum was to study descriptions and analysis of the jobs for which students were being prepared. It was necessary to teach for a) entry level proficiency, b) up-grading after the graduate was appointed Agricultural Assistant, and c) preparations for post graduate study.<sup>10</sup>

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<sup>8</sup>Taba, op. cit., p.187.

<sup>9</sup>Oliver, op. cit., Chap. 9.

<sup>10</sup>Class Notes: 410 824 Curriculum in Agriculture I (Summer, 1970).

### Decisions about Sequencing

The literature reviewed indicated that sequence was a systematic organization of activities compatible with the ways students learn. Sequencing decisions were made at two levels in developing the curriculum: the sequence of courses within the overall curriculum; the sequence of learning experiences within a specific course.

The types of sequences that were considered for making these decisions were:

- a. simple to complex: from single skills or concepts to combinations of skills and concepts.
- b. developmental: preceding from the previous concept or skill.
- c. general to specific: proceeding from the whole to the parts.
- d. chronological: teaching skills or concepts in the order of their occurrence.
- e. frequency: teaching skills or concepts in the order of their frequency of use.
- f. skill: organizing tasks to provide orderly development.
- g. interest: dispensing strategically throughout the course units that were interesting to the students.<sup>11</sup>

### Decisions about Staffing

According to the literature reviewed, the important points in the curriculum process at which staffing decisions needed to be made were the formation of the curriculum team, feasibility checks, and selection of teachers.

When selecting the curriculum team, it was necessary to determine first the objectives of the curriculum development at hand, and then to select the personnel best able to perform the task. The curriculum team could include institutional personnel whose areas of responsibility lay outside the curriculum being developed, as well as other individuals

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<sup>11</sup>Ibid.

outside the educational institution.

As broad curriculum questions were resolved, a point was reached where consideration must be given to the development of specific courses. At that point, it was necessary to consider the feasibility of staffing: were instructors available within or without the staff who could meet the objectives tentatively developed for the course? were opportunities for in-service programmes available to prepare teachers to meet curriculum objectives?

In the selection of teachers, decisions resulted in selecting teachers who would:

- a. have views which were in the instructional assignment.
- b. have a favourable attitude toward changes and self-improvement through in-service training.
- c. have desirable qualities which could influence the students.
- d. have an interest in the student and his needs.
- e. be willing to work with students in co-curricular activities.
- f. have willingness and ability to work with others.
- g. meet the educational requirements set up by the authorities.

#### Decisions about the Time Table or Scheduling

The Time Table or scheduling was concerned with organizing the students, teachers, and facilities in the most efficient manner to meet the objectives of the instructional programme. The students, teachers, and facilities were the controlling factors, and the basic problem was to facilitate the attainment of instructional goals with the most efficient utilization of plant facilities and staff resources.

In scheduling instructional programmes it was necessary to take into

consideration the fact that students entered the College with varying abilities and experiences; that students required varying types of instruction and advanced at different rates.

Factors which needed to be considered in the drawing up of the time table were:

- a. general objectives of the school.
- b. general objectives of the curriculum.
- c. specific objectives of the subject.
- d. facility and classroom/laboratory utilization.
- e. student population.
- f. transportation.
- g. unique local situation, such as lunch time, club activities.

#### Decisions about Organizing Instruction

The literature reviewed and class notes indicated that decisions for organizing instruction were made at two levels -- administrative and classroom. Administrative responsibilities lay in the efficient management and coordination of such items as finance, instructional media, space, equipment, clerical help, and materials and supplies necessary to meet the objectives of the instructional programme. Administrative decisions depended upon the validity of data provided by the following considerations:

- a. number of students affected.
- b. grade level of students.
- c. student characteristics.
- d. programme changes involved.
- e. staffing requirements

- f. availability of needed equipment, facilities, supplies, and materials.
- g. date of implementation.
- h. initial and continuing funding.
- i. provisions for evaluation.

Within the classroom, it was necessary that instructional lessons should be organized to follow a developmental learning sequence, interesting and stimulating to the student. The materials and media used for instruction were to be personalized for the student, and the teacher was to deliberately create an environment conducive to learning in his classroom through planning, organizing, leading and controlling. He should always answer the questions 1) what does the teacher have to do? and 2) what does the student have to do to achieve the objective or perform the task.

### Evaluation

The procedure for checking the effectiveness of a course, and for spotting places where improvements could be made, was to measure the student performances against the objectives. (Page 7)\* Information gained from the analysis would show where course emphasis needed to be changed, and where effort was warranted in course design.

Of all programmes conducted within the field of education, vocational-technical programmes -- such as the type at Kwadaso -- lend themselves best to evaluation by a follow-up study. This was the basis whereby efficiency of instruction could be accurately measured.

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\*See Limitations of Study.

The literature reviewed indicated that there are two types of follow-up: immediate, and long-range. The purpose was the same for each -- to find out what former students were doing.

The long-range follow-up was necessary to provide up-to-date records for statistical purposes and for projected long-range curriculum planning. It was necessary to contact former students to determine if they were working in the occupation or related area or one for which they were prepared. As these data were compared realistically with the educational requirements, patterns emerged which would suggest needed modification of a given programme.

It was necessary that students be informed prior to graduation, of the importance of responding to follow-up studies, and the instruments of the studies should be constructed by competent personnel. Records for student follow-up studies should be kept separate from student personnel files for easy accessibility.

## SECTION VI

### SUMMARY

The purpose of this study was two fold: first, to survey the opinions held by a group of Agricultural Assistants, who had graduated from the Kwadaso Agricultural College, and their supervising Senior Officers, regarding specific aspects of the Kwadaso training programme; second, to apply the findings of the study to suggest a curriculum guide to be presented to the Chief Agricultural Training Officer for his consideration and adaptation for the Kwadaso Agricultural College.

The aspects of the training programme surveyed were:

- 1) the extent to which the Agricultural Assistants considered the subjects they studied at Kwadaso valuable to the work assigned to them.
- 2) the extent to which the Agricultural Assistants considered the quantity of material covered in the subjects adequate for the work assigned to them.
- 3) the extent to which the Agricultural Assistants found each subject interesting.
- 4) the extent to which the Agricultural Assistants found each subject difficult.
- 5) the extent to which the Agricultural Assistants considered the training they received at Kwadaso adequate in the areas of: basic agricultural knowledge or skill, supervision of labour, social adjustment, and the ability to communicate ideas to others.
- 6) the extent to which the supervising Senior Officers considered the



Kwadaso subjects important to the work which they had assigned to their charges -- the Agricultural Assistants.

- 7) the performance of the Agricultural Assistants, as rated by their Supervisors, in the areas of: basic agricultural knowledge, supervision of labour, social adjustment, ability to communicate, and readiness to take on responsibility.

The study was limited to 102 Agricultural Assistants and 28 Senior Officers selected from the eight regions of Ghana.

The gathering of data was by means of a questionnaire which was prepared by this investigator and mailed from the Kansas State University Campus Post Office to the Chief Agricultural Training Officer at Accra, Ghana, for distribution to the respondents.

The findings of the study appeared to support the following conclusions:

- 1) There was more than average agreement between the opinions of the Agricultural Assistants and those held by the Supervising Senior Officers regarding the relevant importance of the subjects taught at the Kwadaso Agricultural College.
- 2) The subjects which the Agricultural Assistants found most interesting were also the most valuable and least difficult.

Drawing from the findings of the survey, and buttressed by the philosophy which gave birth to the Kwadaso Agricultural College, a curriculum guide was prepared. The guide emphasized the need for clear, measurable educational objectives and the gathering of occupational information; the mechanics of curriculum implementation and the significance of curriculum evaluation.

It was the hope of this investigator that this report, when presented to the Chief Agricultural Training Officer, Ghana, would help, in some little measure, in his perennial efforts to improve the training programme of the Kwadaso Agricultural College.

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## APPENDIXES

## QUESTIONNAIRE A

EDUCATIONAL SURVEY  
(AGRICULTURE)

REGION.....TOWN/CITY/STATION.....

RANK: 3rd. Year Learner/Agric. Assistant/ (Underline whichever applies)

DIVISION/UNIT/ORGANIZATION.....

YEAR ENTERED KWADASO AGRICULTURE COLLEGE.....SEX: Male/Female.....  
 (Underline)

1. Copy from your field notebook or diary the specific jobs you did (day by day) for the last seven days. If you do not keep a field notebook or diary, try to remember what you did the last seven days.

Here is an example:

Monday Feb. 2, 1970

Castrated 3 pigs farrowed by Sow No. JT 7721. Telephoned the Veterinary Officer about vaccination of pullets in Pen 7. Completed and submitted my report for last month.

2. Answer the following questions by putting a mark (x) in the appropriate space according to how you rate the subjects you studied at Kwadaso. Please, be sincere and fair.

Note: 5 = Very high

4 = Above average

3 = Average

2 = Below average

1 = Very little.

(a) To what extent do you consider each subject you studied at Kwadaso valuable to the work you are doing now?

S U B J E C T	R A T I N G				
	1	2	3	4	5
Animal Production					
Crop Production					
Crop Protection					
Economics					
Extension Education					
Farm Management					
Farm Mechanization					
Field Experimentation					
Home Economics					
Meteorology					
Report Writing					
Soil Science					
Surveying					

(b) To what extent do you consider the quantity of material covered in each subject adequate for the work you are doing now?

S U B J E C T	R A T I N G				
	1	2	3	4	5
Surveying					
Soil Science					
Report Writing					
Meteorology					
Home Economics					
Field Experimentation					
Farm Management					
Farm Mechanization					
Extension Education					
Economics					
Crop Protection					
Crop Production					
Animal Production					

(c) To what extent did you find each subject difficult?

S U B J E C T	R A T I N G				
	1	2	3	4	5
Extension Education					
Economics					
Crop Protection					
Crop Production					
Animal Production					
Surveying					
Soil Science					
Report Writing					
Meteorology					
Home Economics					
Field Experimentation					
Farm Mechanization					
Farm Management					

(d) To what extent did each subject capture and hold your interest?

S U B J E C T	R A T I N G				
	1	2	3	4	5
Farm Management					
Farm Mechanization					
Field Experimentation					
Home Economics					
Meteorology					
Report Writing					
Soil Science					
Surveying					
Animal Production					
Crop Production					
Crop Protection					
Economics					
Extension Education					

(e) To what extent do you consider the training you received at Kwadaso adequate in each of the following areas?

A R E A	R A T I N G				
	1	2	3	4	5
Basic agricultural knowledge or skill					
Supervision of labour					
Social adjustment -- getting along with others					
Ability to communicate your ideas to others					

## QUESTIONNAIRE B

EDUCATIONAL SURVEY  
(AGRICULTURE)

REGION.....TOWN/CITY/STATION.....

DIVISION/UNIT/ORGANIZATION.....

YOUR RANK.....

YOUR SEX:..Male/Female (Underline whichever applies)

1/ Please, describe the duties you generally assign to the A.A's/3rd. Year Learners under you.

2/ Answer the following questions by putting a check (✓) in the appropriate space according to how you rate the answer.

Note: 5 = Very high  
4 = Above average  
3 = Average  
2 = Below average  
1 = Very little.

(a) How do you rate the A.A's/3rd. Year Learners under you in the following areas of competency?

A R E A	R A T I N G				
	1	2	3	4	5
Basic agricultural knowledge or skill					
Supervision of Labour					
Social adjustment -- getting along with others					
Ability to communicate his ideas to others					
Readiness to take on responsibility					

(b) To what extent do you consider the following subjects important to the work which the A.A's/3rd. Year Learners under you are doing now?

S U B J E C T	R A T I N G				
	1	2	3	4	5
Agricultural Surveying					
Soil Science					
Report Writing					
Meteorology					
Home Economics					
Field Experimentation					
Farm Mechanization					
Farm Management					
Extension Education					
Economics					
Crop Protection					
Crop Production					
Animal Production					

3/ Most of us think that some A.A's/3rd. Year Learners are well trained and some not so well trained. How do you tell whether or not an A.A/3rd. Year Learner under you has good agricultural training?

4/ I completed this questionnaire on ..... 1970.

CURRICULUM GUIDE FOR THE KWADASO AGRICULTURAL COLLEGE,  
GHANA, BASED ON OPINION-SURVEY OF SPECIFIED ASPECTS OF  
THE CURRICULUM

by

KWAME GYAMFI .

B. S., California State Polytechnic College, 1964

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AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1971

## ABSTRACT

The purpose of this study was to survey the opinions held by a group of Agricultural Assistants and their supervising Senior Officers, regarding specified aspects of Kwadaso Agricultural College training programme; and to apply the findings of the study to suggest a curriculum guide for the College to be presented to the Chief Agricultural Training Officer.

The Kwadaso Agricultural College was responsible for the training of Agricultural Assistants for posts in the Units and Divisions of the Ghana Ministry of Agriculture, and related institutions. These Agricultural Assistants occupied a middle-level manpower link between the university trained agriculturists (so-called agricultural graduates) and the farmers.

As a background for the dual exercise, this investigator reviewed literature selected to concern five areas of curriculum development:

- 1) what the curriculum is, 2) confusion in curriculum development,
- 3) the evolution of the curriculum idea, 4) some curriculum theorists and their contributions, and 4) patterns of curriculum development.

The aspects of the Kwadaso training programme surveyed were:

- 1) the extent to which the Agricultural Assistants considered the subjects they studied at Kwadaso valuable to the work assigned to them.

- 2) the extent to which the Agricultural Assistants considered the quantity of material covered in the subjects adequate for the work assigned to them.

- 3) the extent to which the Agricultural Assistants found each subject interesting.

- 4) the extent to which the Agricultural Assistants found each subject



difficult.

5) the extent to which the Agricultural Assistants considered the training they received at Kwadaso adequate in the areas of: basic agricultural knowledge or skill, supervision of labour, social adjustment, and the ability to communicate ideas to others.

6) the extent to which the supervising Senior Officers considered the Kwadaso subjects important to the work which they had assigned to their charges -- the Agricultural Assistants.

7) the performance of the Agricultural Assistants, as rated by their Supervisors, in the areas of: basic agricultural knowledge, supervision of labour, social adjustment, ability to communicate, and readiness to take on responsibility.

The study was limited to 102 Agricultural Assistants and 28 Senior Officers selected from the eight regions of Ghana.

The gathering of the data was by means of a questionnaire which was prepared by this investigator and mailed from the Kansas State University Campus Post Office to the Chief Agricultural Training Officer at Accra, Ghana, for distribution to the respondents.

The findings of the study appeared to support the following conclusions:

1) There was more than average agreement between the opinions of the Agricultural Assistants and those held by the supervising Senior Officers regarding the relevant importance of the subjects taught at the Kwadaso Agricultural College.

2) The subjects which the Agricultural Assistants found most interesting were also the most valuable to their work and least difficult.

These findings implied that work-related courses were interesting and less difficult to learn. That being the case, it was important for the curriculum developers at Kwadaso to know the job specifications of the Agricultural Assistants and make these the centres of the courses.

Drawing from the findings of the survey, and buttressed by the philosophical considerations which gave birth to the Kwadaso Agricultural College, a curriculum guide was prepared. The guide emphasized the need for clear, measurable educational objectives and the gathering of occupational information; the dynamics of curriculum implementation and the significance of curriculum evaluation.