

AN EXAMINATION OF THE ROLE OF EDUCATION  
IN SUPPORTING THE RURAL ECONOMY OF SOUTHERN GHANA

BY

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BEING A THESIS PRESENTED FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY (Ph.D.),  
IN THE UNIVERSITY OF HULL, 1982.

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ACKNOWLEDGEMENTS

For a study such as this, it is almost an impossible task to thank individually, all the people who have contributed, in diverse ways, to its ultimate realisation. I am therefore thanking, enblock, entrepreneurs and employees of rural small-scale industries and teachers in rural schools who gave of their time to answer interviews and fill in my questionnaires.

Very special mention must be made of my supervisor, Colin Brock, who at all stages of the study, offered me warm encouragement and excellent advice. I am very grateful to him.

Mr. J.L. Moore of Hull University contributed ideas and suggestions on the construction of the questionnaires, and later, on computer analysis, of the survey data. Dr. George Botchie of the University of Ghana, Legon, did not only agree willingly to be my 'local supervisor' during the fieldwork period, but also, he made useful suggestions concerning the lines along which the survey should be conducted. I am most grateful to both of them.

Messrs. K. Asigbey, B.Sc.(Tech.), and Q. Agyabu were my fieldwork assistants. My thanks are due to them as well as to Ben Fiah, my brother, who provided me with transport facilities, at no cost to me, during my fieldwork. I am also grateful to Ghana Industrial Holding Corporation (GIHOC) officials who assisted me in locating most of the rural small-scale industries and also provided me with accommodation facilities during the fieldwork.<sup>1</sup>

Lastly my thanks are due to Doreen Fenwick who proof-read the manuscript and to Maxine Benton who typed the thesis.

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1. See Letter on Page xv.

# Ghana Industrial Holding Corporation

(xv)

Telephone: 64990, 64998-9  
Cables/Telegrams: HOLDINGS  
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Head Office  
Maxwell Road  
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Your Ref:

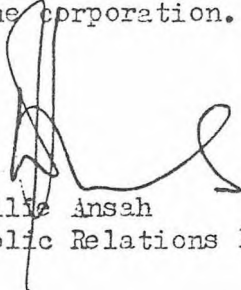
21st October, 1980

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TO WHOM IT MAY CONCERN

REF: SOLOMON Y.F. FIAH, BEd, MSc

The above gentleman is a bona fide PhD student of the University of Hull. He is conducting fieldwork in Ghana for his thesis and has approached us for assistance. This is to ask you to accord him every assistance consistent with the regulations of the corporation.

  
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COMMON ABBREVIATIONS USED IN TEXTGhana's Administrative Regions With Their Capital Towns.

AS	:	Ashanti Region	Kumasi
BA	:	Brong Ahafo Region	Sunyani
CR	:	Central Region	Cape Coast
ER	:	Eastern Region	Koforidua
GA	:	Greater Accra Region	Accra
NR	:	Northern Region	Tamale
UR	:	Upper Region	Bolgatanga
VR	:	Volta Region	Ho
WR	:	Western Region	Sekondi- Takoradi

.....

- ADPE : Accelerated Development Plan for Education. This programme was started in 1951 with the aim of providing educational facilities for all children of school-age.
- CPP : Convention Peoples' Party. This party won the general elections meant for the first nationalist government in Ghana in 1951. The party was led by Kwame Nkrumah. It was under this political party that Ghana attained independence in 1957.
- EIS : Entrepreneurs Inventory Schedule. A questionnaire used during fieldwork of this thesis to survey proprietors of rural industries.
- GDP : Gross Domestic Product. An economic term.
- GNP : Gross National Product. An economic term.
- GIHOC : Ghana Industrial Holding Corporation. A Government parastatal company responsible for large-scale industrial investment in Ghana.
- IDS : Institute of Development Studies. A British Government institute located at, but not belonging to, the University of Sussex concerning itself with studying problems of under-development.
- ILO : International Labour Organization. A Branch of United Nations concerned with global labour problems.
- MDPI : Management Development and Productivity Institute. An institution charged with the duties of training industrial workers, researching into industrial establishment problems and providing advisory services to industrialists in Ghana.

- RT : Rural Teachers. Teachers teaching in rural areas of Ghana.
- RSSI/SSI : Rural Small-Scale Industries/Industry/Industrial; depending on the contextual meaning. A terminology used in the survey to stand for rural small-scale industrial activity.
- TAS : Teachers' Attitude Schedule. A questionnaire used to survey rural teachers' attitudes.
- UN : United Nations.
- WAS : Workers' Attitude Schedule. A questionnaire used to survey rural industrial workers' attitudes.

## INTRODUCTION

The data used for writing this thesis was gathered mainly from twenty-one small-scale rural industries which fall under six categories: Food, Ceramics, Woodwork, Iron Extraction, Textiles and Bricks and Tiles.

These industries were located in five administrative regions of Southern Ghana : Greater Accra, Central, Eastern, Volta and Western; and the fieldwork was conducted over the period of June, 1980 to March, 1981. The total distance covered during the fieldwork was approximately 2,300 miles.

The aim of this study, is to bring to focus, the role which adopted European education plays in supporting the Ghanaian rural economy, particularly in the creation of certain attitudes of the rural industrial entre-preneurial and working classes.

Previous literature surveyed on this area revealed that concern was mainly directed towards large-size urban-oriented industries in the modern sector of the Ghanaian economy. Therefore, such findings could not be used strictly as a basis for this study although some of their themes were drawn upon. Consequently, the thirty-five hypotheses postulated by this study concerning the influence of formal education on the formation of attitudes, self-concept, job satisfaction, educational relevance to rural industries, teacher influence, skill training programmes, modernization and perceptions of rural small-scale workers had to be investigated in their own right.

Computer analysis of the collected data suggests that:

(i) The adopted European education has created some awareness in certain categories of the elite to venture into, what until recently, has been termed indigenous industries.

(ii) Certain categories of attitudes of rural workers have been strongly influenced in their formation by the process of formal schooling.

(iii) Certain categories of attitudes of rural workers which, although necessary for industrial development, have not been significantly influenced in their formation by the process of formal education.

(iv) Contrary to widespread belief that rural industries employ mainly first-cycle school leavers, significant proportions of second-cycle and tertiary school leavers find employment in this sector.

This thesis has been divided into four parts. Part One consists of Chapters One, Two and Three. In Chapter One, frequently recurring terms throughout the thesis have been defined. Literature on the area to be studied was reviewed in Chapter Two and in Chapter Three, the theme, the problem and the hypotheses arising from review of the literature and statement of the problem were formulated.

Part Two consists of Chapters Four and Five. In Chapter Four, Ghana's rural small-scale industries were discussed in relation to European or formal education. Chapter Five examines Ghana's rural small-scale industries in a theoretical context.

Part Three consists of Chapters Six, Seven and Eight. The methodology adopted in the research was set out in Chapter Six. In Chapters Seven and Eight, the statistical analysis of fieldwork data were presented.

Part Four consists of Chapters Nine and Ten. In Chapter Nine, a synopsis of research results was given and in Chapter Ten, conclusions and implications of research results were stated.

PART   ONE

This part consists of Chapters One, Two and Three.

In Chapter One, terms of central importance to clearer understanding of the problem investigated have been defined.

In Chapter Two, existing literature on the area of investigation has been reviewed.

In Chapter Three, the theme, the problem and the hypotheses derived from reviewing the literature and statement of the problem were formulated.

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CHAPTER ONE  
DEFINITION OF TERMS

1:0:0     The Importance of Defining Common Terms Used in This Text.

At the beginning of this thesis, the common abbreviations used in the text have been defined. In addition to these abbreviations, however, some terms of central importance to clearer understanding of the theme of the problem which has been investigated tend to recur. It is envisaged that defining such terms in this section will ensure consistency in usage and meaning to the issues raised. It is possible, however, that the terms defined here may be accorded different meanings under some specific circumstances. Whenever a different meaning in usage is applied to any of the terms in the text, explanatory footnotes will be added.

1:0:1     Definition of Common Terms Used:  
European Education.

The term 'European Education' is used to describe the processes of teaching and learning which Europeans established in Africa, although the original processes could be said to have subsequently undergone many structural and conceptual changes.

Before Europeans arrived in Ghana, there were other systems of education in existence. 'European Education' is distinctive from these other traditional systems of education. Today, in Ghana, the European education system coexists with the surviving elements of the traditional education systems. The degree of acceptance of European education by local communities varies in different parts of the country.

The term 'European Education', therefore, distinguishes the system of education that accompanied European arrival in Africa from

the traditional African education systems; for, all the systems could be termed 'education' in their own right. This is the case because the term 'education', viewed as a contemporary social science term, is susceptible to many flexible definitions. Although most people could claim to 'understand' what is meant by education, no two educators define it in the same way. There is also clearly a range and overlap between everyday usage of the term among different people. Conventional wisdom in respect of this particular human activity exhibits many different concepts about the selection of both content and methodology of teaching and learning. Likewise, notions of what constitutes an 'educated' person, and of the stimuli needed to acquire such a state, are highly subjective.

Nevertheless, the process of 'education' seems to have been generally assigned four basic roles:

- (i) To transmit the accumulated knowledge and skills of a society to its successive generations.
- (ii) To impart moral, ethical and aesthetic values to individuals of a new generation so as to make them useful citizens in a corporate state. This means that through the process of education, individuals would learn 'responsibility': the 'rights', the 'wrongs' and the general standards that a society sets for itself.
- (iii) To define and allocate the occupations that individuals are to engage in; control distribution of resources available in the society and direct the ways in which individuals spend the rest of their lives.
- (iv) To control social stratification as a function related to the level of learning that the individual manages to attain in the system.

Below, four definitions have been randomly selected from different sources to illustrate the numerous ways in which these four basic roles

of education can be combined. Good, for instance, proposes the following definitions for education:

(i) Education is the aggregate of all the processes by means of which a person develops abilities, attitudes, and other forms of behaviour of positive value in the society in which he lives.

(ii) Education is the social process by which people are subjected to the influence of a selected and controlled environment so that they may attain social competence and optimum individual development.

(iii) Education is the art of making available to each generation the organized knowledge of the past.<sup>1</sup>

(iv) Another authority indicates that education can be viewed as the transmission of the values and accumulated knowledge of a society.

In this sense, it is equivalent to what social scientists term socialization or enculturation. A child - whether conceived among African Bushmen, the Renaissance Florentines, or the middle classes of Manhattan - is born without culture. Education is designed to guide that child in learning a culture, to mould behaviour in the ways of adulthood, and guide toward an eventual role in society.<sup>2</sup>

Education, defined in such broad terms as above, encompasses both the European and the traditional African education systems.

Busia, writing on African traditional education, states:

In African communities, the older generation passed on to the young the knowledge, the skills, the mode of behaviour and the beliefs they should have for playing their social roles in adult life. The young were taught how to cope with their environment; how to farm, or hunt, or fish, or prepare food, or build a house, or run a home. They were taught the language and manners, and generally the culture of the community. The methods were informal, the young learnt by participating in activities

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1. Good, C.V. (Editor), The Dictionary of Education, Third Edition, McGraw Hill Book Co., New York, 1973, paraphrased from page 202.

2. Encyclopaedia Britannica Inc., The Encyclopaedia Britannica, 15th Edition, Vol. 6, London, 1974, p.316. (Paraphrased).



alongside their elders. They learnt by listening, by watching, by doing. In many practical ways they learnt how to live as members of their community.<sup>1</sup>

What sets 'European education' apart from the traditional systems is the 'school':

School is the age-specific, teacher-related process requiring full-time attendance at an obligatory curriculum. School groups people according to age. This grouping rests on three unquestionable premises. Children belong to school. Children learn in school. Children can be taught only in school.<sup>2</sup>

School, the formally organized institution on which European education rests, has the added characteristics of attracting fees directly or indirectly from its pupils and certification via examination serves as a terminal process to attendance.

The fundamental concepts about European education such as institutionalisation of schools, teacher-oriented curricula, age-specific classes and certification per examinations, viewed in their totality, incorporate ancient Greek and Roman education ideas which were handed down to Europe and, improved by the European experience, were transmitted to other parts of the world such as Ghana.

Both the classical and the contemporary concepts about education rest on the aggregate characteristics of schooling processes; and 'European education' or education, as used in this thesis bears the definition of school or schooling.

But again, evidence suggests that before the arrival of Europeans in Ghana in 1471,<sup>3</sup> there were schools of a kind in existence. However, these pre-colonial schools were organised by Muslim teachers.

1. Busia, K.A., Purposeful Education for Africa, Mouton, The Hague, 1969, p.13.

2. Illich, I., Deschooling Society, Penguin, Hamondsworth, Middlesex, 1971, pp. 32-33.

3. Ward, W.E.F., A History of Ghana, George Allen and Unwin Ltd., London, 1958, p.66, states that: 'In January 1471 two of the captains employed by Fernao Gomez, named Joao de Santarem and Pedro de Escobar, reached the Gold Coast (now Ghana) itself. They rounded Cape-Three-Points and came to land somewhere between the cape and the next landmark, the much smaller Cabo Corso, now Anglicized into Cape Coast'.

Armattoe,<sup>1</sup> for instance, illustrated how Arabic literacy skills had spread to many parts of northern Ghana by 1200 A.D.; and Braimah and Goody<sup>2</sup> cited some published Arabic manuscripts of local history and events in the same area during the same period.

But Muslim schools, some of which are still in existence, are very different from European schools. Classes in Muslim schools are not differentiated by age. Individual pupils have access to any stage of learning irrespective of their age. In Muslim schools, there are neither entrance nor terminal examinations which confer any sort of qualifications or certificates upon the learner. Instead, a system known as 'Ijaza' is used to describe a pupil's level of attainment. Ijaza is a kind of scholarly genealogy which links the pupil with the line of teachers to whom he owes his knowledge. Thus the extent to which a teacher is patronised depends on his proven ability to produce a high quality calibre of scholars.

Teachers in the Muslim system are not paid salaries. Pupils pay what they can afford directly to their teachers. No fixed fees for pupils nor fixed salaries for teachers exist therefore in that particular educational context. Lastly, the Muslim school curriculum emphasises religious studies and literacy skills more than intellectual curiosity especially at the lower levels of study.

Given the various African and Islamic inputs to informal and non-formal components of pre-European educational tradition in Ghana, this thesis is concerned with certain links between these influences, in as far as they contribute to Ghanaian rural attitudes, and the European style of formal education implanted by the colonial experience.

Within this general context, the study is principally about school leavers and their employment in rural small-scale industries in southern Ghana.

1. Armattoe, R.E.G., The Golden Age of West African Civilization, Londonderry, 1946, p.32.

2. Braimah, J.A. and Goody, J.R., Salaga : The Struggle for Power. Longmans, London, 1967, pp. v-vii.

In Fig, 1, the basic structure of the adopted European education as it operates in Ghana is illustrated. Subsequently, there have been some detailed modifications (see Fig. 2).

#### 1:0:2 Southern Ghana and Northern Ghana.

Throughout the text, the terms, 'Southern Ghana' and 'Northern Ghana' have been used. These terms bear no strict geographical significance. Administratively, Ghana is divided into nine regions (See Map 1). This thesis is based upon data collected in rural small-scale industries (SSI) located in the five coastal regions: Greater Accra, Eastern, Central, Volta and Western. For the purposes of this study, these five regions surveyed are collectively given the nomenclature 'Southern Ghana'. The rest of the country is referred to as 'Northern Ghana'.

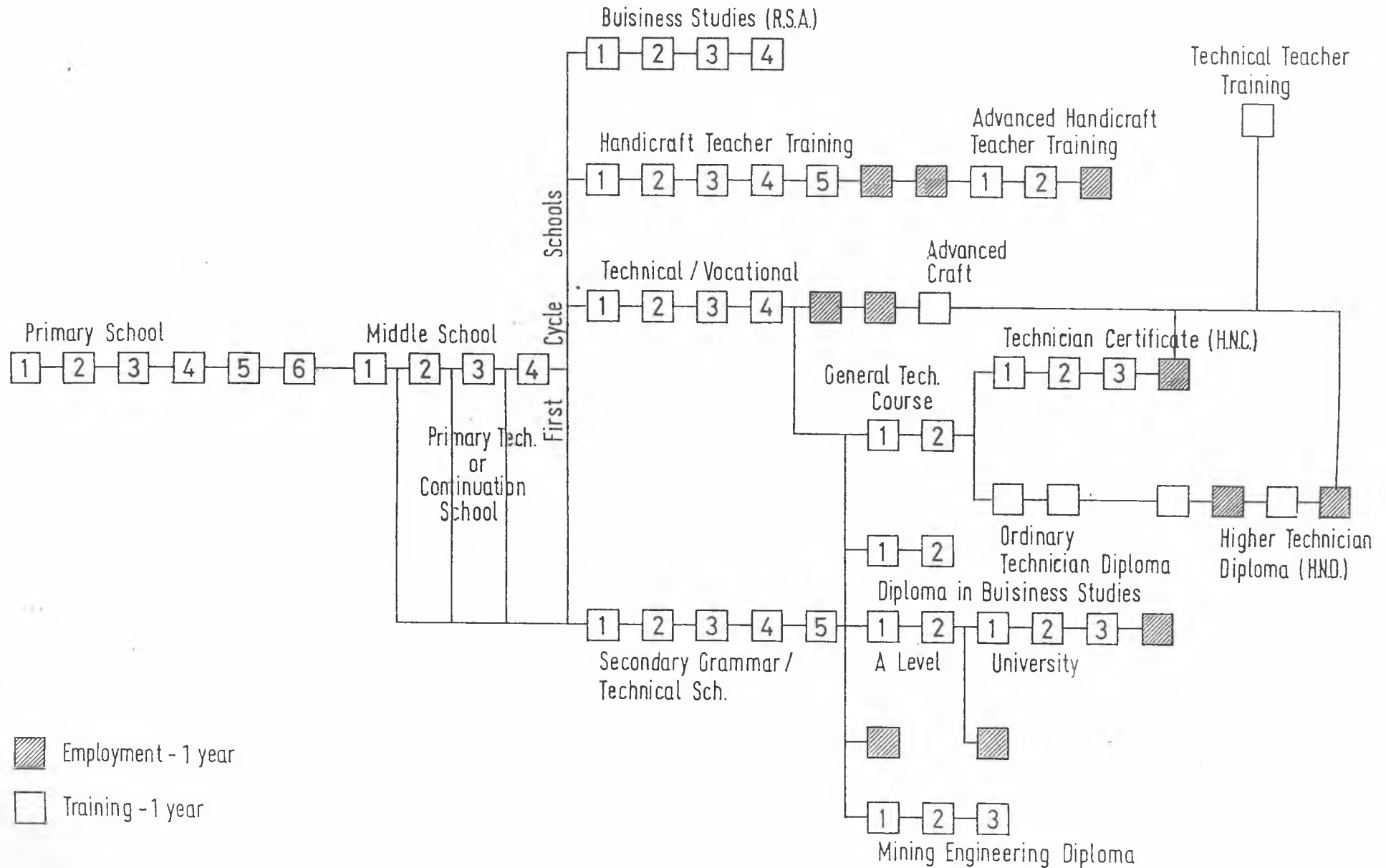
Whenever 'northern' is used as a proper noun, it refers to the Northern Administrative Region. It is essential to note that the terms 'northern Ghana' and 'southern Ghana' do not necessarily coincide with what a strictly geographical division of the country may represent.

#### 1:0:3 Rural Small-Scale Industry/Industries (RSSI) or (SSI).

There is no general agreement among international and intra-national developers about a unitary definition for rural small-scale industries. This difficulty is due to the varied and often disparate factors which have to be considered in a single definition even for a multi-regional geographical area within Ghana. Nevertheless, a coherent definition is a very important preliminary exercise for determining holistic strategies directed at finding solutions to some of the problems arising from this sector:

The definition of small-scale rural industries is sometimes considered a problem which has to be overcome before rural industrial development can begin. The term 'small-scale rural industries' can be interpreted in many ways

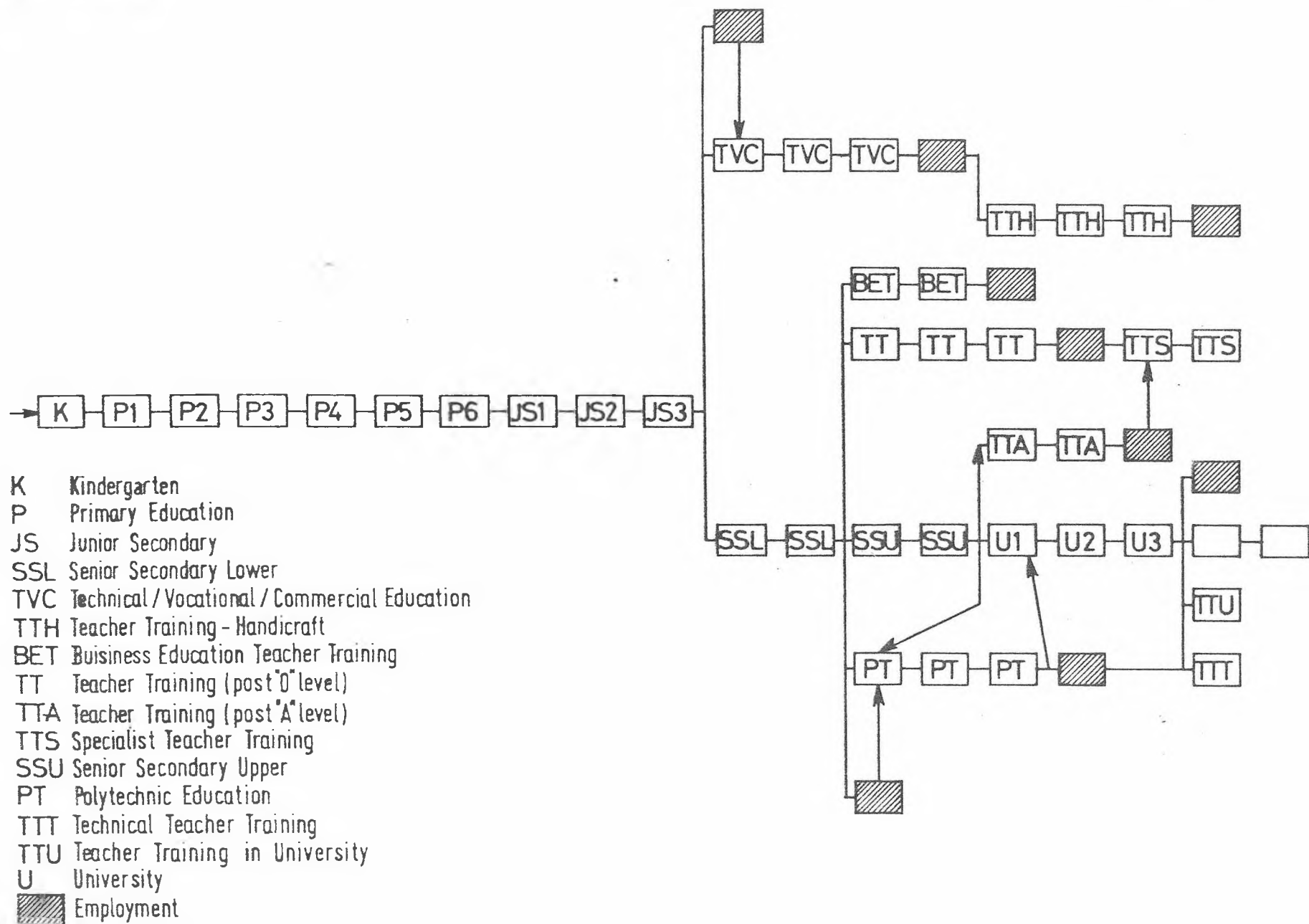
Fig.1. Educational Structure - Ghanaian Schools



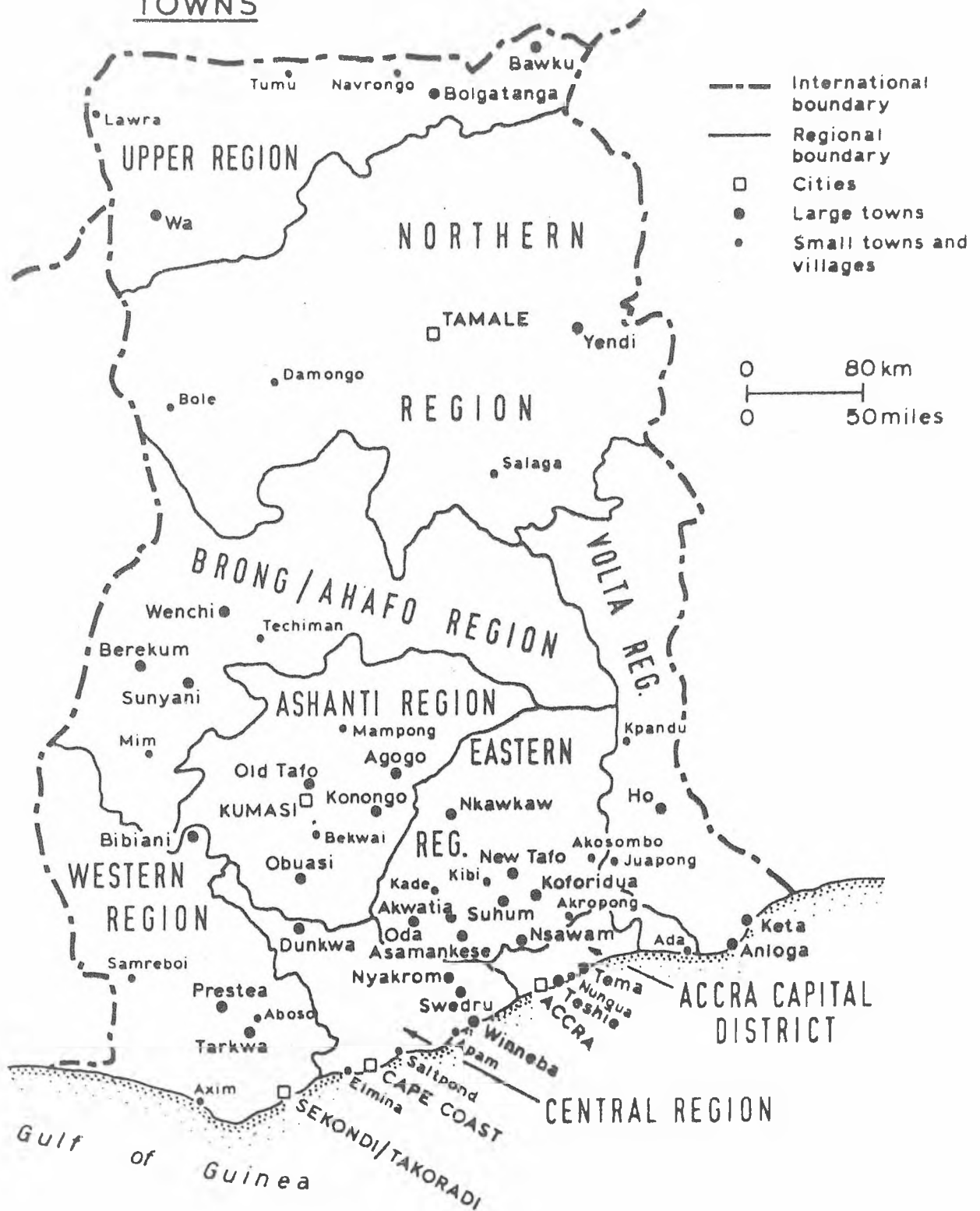
Source: Ghana Ministry of Education Circular No.14/6/74

Fig.2. New Structure of Education

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23



Map 1. POST-INDEPENDENCE GHANA SHOWING ADMINISTRATIVE REGIONS AND LARGE TOWNS



Source : Census Office, 1970 Population Census of Ghana, Vol II, Accra, 1972, p.XLIV

and there is a wide range of definitions in various countries ...<sup>1</sup>

Different planners, for instance, place emphases to different degrees, on factors such as number of employees, fixed capital assets, population size of community in which an industry is located, types of equipment and technology used in the manufacturing process and whether or not the goods produced attract local or outside markets.

Let us examine some of the concepts which make a definition for rural small-scale industries a problem.

#### 1:0:3.1 Industrial Employee Capacity.

Identifying the definition of SSI by the number of employees in an industry raises questions about part-time employment, seasonal fluctuations in employment and unpaid family workers. These issues vary from one enterprise to another to the extent that computation for an employee index as a basis for arriving at a general definition becomes difficult; especially in developing countries where records on temporary employment are minimal.

#### 1:0:3.2 Capital Assets :

Defining rural SSI on the basis of capital assets becomes unsatisfactory, because there are no adequate methodologies available for converting human capital assets to physical capital equivalents.

#### 1:0:3.3 Rural Communities.

Rural communities are usually arbitrarily defined in Ghana as having population figures up to 5,000.<sup>2</sup> In this thesis, however, the idea of defining rural SSI in relation to arbitrarily fixed community population figures is viewed as restrictive and sometimes eliminates some potential small industries from their rightful category.

1. Austin, V., Rural Industrial Development: A Practical Handbook for Planners, Project Managers and Field Staff, Cassell Ltd., London, 1981, pp. 2-3.

2. 1970 Census of Ghana, p.xviii.

For example, if a population of 5,000 is used to define rurality, then a small-scale industry located in a community having a population of 5,100 could not, strictly, be termed a rural small-scale industry: it is an urban small-scale industry. Consequently, arbitrary population figures used to define rural communities appear to have numerous problems of inaccuracy.

To overcome these problems, and for the purposes of this study, a rural area could be defined as any community located geographically peripheral to or outside the Accra-Tema metropolitan area; for rural-urban migration being what it is, most of the fringe communities of the urban areas maintain rural attitudes if not life-styles. For this reason, inter alia, one of the sample areas included in the survey below is from such an area.

#### 1:0:3.4 Technology and Methods of Production.

A definition of RSSI based on the use of labour-intensive techniques in the production processes alone has the danger of excluding small-scale industries which must necessarily utilise power-driven equipment or modern machinery for certain operations. It is equally unsatisfactory to define SSI on the basis of applied modern equipment alone.

The four limitations stated above, therefore, suggest a strong case for the argument that there should always be a certain amount of flexibility incorporated in the definition of rural small-scale industries, bearing in mind any special local circumstances.

For the purposes of this thesis, the official Ghana Government definition for rural SSI has been basically adopted but some adaptations have been effected in the light of current fieldwork experience.

#### 1:0:4 Ghana Government Definition for Rural Small-Scale Industries .

In a Ministerial white paper circulated in 1979 by the Ministry of Industries, Accra, as a result of the Budget Statement for the



Fiscal Year 1978-79, the following definition was given for rural small-scale industries.<sup>1</sup>

(i) Under this category, proponents will be expected to use at least 60% of local raw materials, that is, locally extracted or locally manufactured inputs.

(ii) The fixed investment in machinery and equipment of such small-scale industries should not be more than £10,000. The machinery employed in such enterprises is not expected to involve sophisticated processing technology.

(iii) Employment in such small-scale industries should be less than five (5) persons.

(iv) Such small-scale projects should be sited in rural areas, that is, outside the Accra-Tema Metropolitan area.

(v) Such small-scale industries should be owned by indigenous Ghanaians.

1:0:5 The Adapted Definition for the Purposes of this Thesis .

It became obvious from fieldwork undertaken that some of the factors emphasised in the Ghana Government definition were arbitrarily selected at the time it was framed. The definition has therefore been adapted as below in accordance with the fieldwork experience:

(i) A rural SSI is one using at least 60% of local raw materials in its manufacturing processes for the goods produced.

(ii) Any small-scale industry employing up to nineteen persons.

This employee figure was arrived at as a result of observations made during the fieldwork on this sector together with comparing the observed average employee figures to the ones published by the Central Bureau of Statistics in 1971, the latest published figures by the Bureau, see Table 1. During preliminary fieldwork investigations,

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1. The title of the Ministerial White paper was: Possible Areas for Further Investment. It was signed by Colonel B.K. Ahlidja, Commissioner for Industries.

TABLE 1

## GHANA: RECORDED NUMBER OF EMPLOYEES IN INDUSTRY BY REGIONAL LOCATION

31 DECEMBER 1971

	All Regions	Regions							
		Upper Region	Northern Region	Ashanti Region	Brong- Ahafo Region	Western Region	Central Region	Eastern <sup>1</sup> Region	Volta Region
All establishments	112,900	1,342	1,836	24,653	1,062	15,966	5,877	60,251	1,913
Up to 4 persons	1,550	29	21	421	88	107	48	736	100
5 to 9 persons	1,705	38	69	303	62	229	104	785	115
10 to 19 persons	3,409	59	243	790	13	402	176	1,557	169
20 to 49 persons	10,018	465	357	2,323	194	725	349	5,304	301
50 to 99 persons	17,182	354	472	3,235	705	1,361	843	9,630	582
100 and over	79,036	397	674	17,581	-	13,142	4,357	42,239	646

Source: Central Bureau of Statistics, Labour Statistics, Accra, 1971, p.15

1. Figures for Greater Accra region were included under Eastern region.

NOTE; Tables in this thesis which have no referenced sources were composed from the writer's fieldwork data.

it was observed that the majority of small-scale industries employed over five persons. The figure of five persons fixed by the Government became unrealistic. The apparent rise in the five-person figure<sup>1</sup> might probably be due to the rapid expansion that seems to have characterised this sector over the past few years.

(iii) A rural SSI must be in the private sector and must be owned by a Ghanaian or by Ghanaian entrepreneurs. The Ghanaian Industrial Promotions Act of 1960 which was amended in 1969, reserved this area of investment for Ghanaians only.

(iv) The industry must employ labour-intensive or intermediate technology in its production processes. This excludes industries, no matter how small they are, employing advanced machinery, automated gadgets and electronic devices in their manufacturing processes.

(v) The industry must be located in a rural area. In one case, however, an industry located in Accra-Tema Metropolitan suburban area which qualified under (i), (ii), (iii), and (iv), as well as being predominantly rural in its attitudes and life-styles, has been included in the survey. .

For the purposes of this survey, it was not considered of any importance to include a fixed capital investment component in the definition, because this study is not strictly concerned with capital investment. It is rather concerned with human capital investment in this sector.

In Table 1, the number of industrial employees given under Eastern Region include those from Greater Accra Region. In this sense, the population size of industrial employees in industries employing up to 19 persons in southern Ghana is 4,528. But some of the industries employing up to 19 persons belong to urban small-scale industries, with which this study is not concerned. The survey for

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1. See Section 1:0:4. Despite the rapid expansion of this sector, the Government, unfortunately, has decided to maintain the 5 person figure in its definitions.

this thesis is concerned with only the portion of 4,528 employees working in rural small-scale manufacturing industries in southern Ghana.

1:0:6      Industrialization.

Industrialization is concerned mainly with the material progress of man by the use of his labour and ingenuity in converting natural resources into useful goods and services. This definition which shall apply in this thesis appears to underscore Slater's assertion that:

The poverty of the past, from earliest beginnings of human society up till very recently, was due to lack of power to produce adequately the necessaries of life.<sup>1</sup>

Industrialization, therefore, is a process whereby strategies are adopted in bringing casually employed labour together, giving the random labour skilled training in specialised areas of manufacture and then employing the skilled labour in technological or mechanized means of production of goods and services. By this means, goods and services produced are increased, giving a better quality to life. In England, for example, between 1750 and 1830,

The industrial revolution consisted, essentially, of a change from farming to industry and services, and led to a rapid growth of output, population and urbanisation.<sup>2</sup>

The practice of specialisation and division of labour as a means of increasing material welfare of man is historically recent all over the world and especially so in developing countries such as Ghana:

A belief in material progress of man is not old. During the greater part of history such a belief was neither compatible with experience nor encouraged by religion ... and anyone, before

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1. Slater, G., Poverty and the State, OUP, London, 1930, p.1.

2. Hartwell, R.M., et. al. (Contributors), The Long Debate on Poverty, The Institute of Economic Affairs, London, 1972, p.4.

the middle of the eighteenth century who had expected a progressive improvement in material welfare here, as a result of the division of Labour, the discoveries of science and the boundless fecundity of the species, would have been thought eccentric. In the eighteenth century, for obscure reasons which economic historians have not yet sufficiently explored, material progress commenced over wide areas in a decided and cumulative fashion not previously experienced.<sup>1</sup>

The practice of industrialization seems to come, therefore, with fundamental changes in the structure and performance of the economy such as shifting from subsistence to monetary exchange economy and the society as a whole. The structural changes such as transferring resources from subsistence lower-agricultural production base to higher-factory production base causes increases in goods and services. Also, changes in the growth of population, urbanization and capital accumulation cause the establishment of secondary production factories for the processing of raw materials such as bauxite, iron ore, cocoa and timber which hitherto had found their way only into overseas factories.

Lastly, the efficient organization of economic activities in the forms of: replacing one-man-business with more sophisticated co-operative societies; the home-workshop by factories; the non-formal skill training by informal and formal apprenticeship training schemes; reading and writing by formal education and superstition by scientific explanation of causality relationships, engender rapid economic growth and higher standards of living. In Ghana, in recent years, superstructures have replaced pre-industrial structures such as subsistence farming, fishing and simple handicrafts.

'Industrialization' in this text, therefore, refers to the processes of adoption and the use of mechanical devices to aid increased production in a predominantly subsistence economic sector

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1. Keynes, J.M., Preface to Wright, H., Population, C.U.P. , London, 1923, p.vii.

and thereby raise the standard of living of the people in the country. Consequently, the organization of labour, capital, distribution facilities and manpower recruitment have undergone tremendous changes. This study is directed at examining the manpower recruitment into the rural SSI sector as a factor of schooling.

1:0:7      The Rural Economy .

The term Rural Economy consists of two distinct entities which are progressively non-static in nature. These two constructs are integrated by the process of dynamic human activity within a social and an ecological framework.

For the full meaning of rural economy to emerge, therefore, it may be appropriate to, first define the two entities separately. Later when the two definitions are synthesised, the role which the process of human practicability plays in uniting the two concepts may clearly come out. This aspect of the definition is considered important because both the rural and the economic constructs are human phenomena.

Let us start with Economy. Economics, viewed as a construct, a process or a practice, is a universal phenomenon. For instance, Adam Smith,<sup>1</sup> the man often referred to as the father of economics, postulated some of the classical economic laws that up to today form the basic features of every economic system regardless of its political or ideological framework or level of development.

Hodder, one of the contemporary authorities on development, commenting on economic development, brings out clearly the aspect of universality of economics:

Although there is still no generally accepted theory of economic development, all definitions imply that

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1. Smith, A., The Wealth of Nations, (first published in 1776) Random House Inc., New York, 1937.

it involves raising living standards: it is, for example, a social process which results in a cumulative increase in levels of consumption. It can thus occur in all countries, including those already highly developed. But though many of the theories and applied problems of economic development may be the same for economically advanced as for developing countries, important differences of approach or attitude seem to be needed.<sup>1</sup>

Keynes stated the same point, but differently, in a very powerful conclusion to one of his writings:

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.<sup>2</sup>

The concepts of economics are not only universal, but they also embrace ideas about decision-taking; about free choice in the utilisation of limited resources; scarce goods and services; about the methods of distributing goods and services to satisfy numerous needs; above all, about decisions on selecting an appropriate strategy by which to develop the available resources to an optimum level. Furthermore, areas such as psychological, moral and aesthetical are also covered. It is the multifacets of man that give manifestation to the kind of economic attitudes that persist in a particular society.

Economy, therefore, is a process by means of which man contends with problems of production techniques, quantitative production, qualitative production, correcting distribution imbalances, co-operating with other members of the community, improving innate

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1. Hodder, B.W., Economic Development in the Tropics, Methuen and Co. Ltd., London, 1968, p.1.

2. Keynes, J.M., The General Theory of Employment, Interest and Money, (first published by Macmillan and Co. Ltd., London, 1955) New Edition, C.U.P. London 1974, The conclusion. Emphasis mine.

talents and abilities to the maximum, and making profit on production ventures to enable him to realise the fruits of his labour and survive in the framework of his imposed environment.

Subsequently, the state of an economy depicts the level of development of man at which his multivalent characteristics succeed in solving conflicting problems that his environment presents. David P. Eastburn states this concept thus:

Each of us, of course, is both Economic and Social Man. Each of us is concerned with making a living with his fellows, but the mix varies and it is there that the source of conflict lies ... the resolution of social problems requires a strong and expanding economy; conversely, long term economic health requires wider and more equitable<sup>1</sup> participation in the fruits of economic progress.

In this text, therefore, the meaning of Economy can be viewed at four levels:

- (1) Man's attempts at organizing, exploring and exploiting natural resources which are scarce.
- (ii) Man's strategies of improving factors of production and effectively distributing the wealth that accrues thereof.
- (iii) Man's rationale at progressively raising his standard of living-conditions to match the strategies of production and distribution.
- (iv) Man's ultimate objective of achieving a fulfilling and satisfying life by way of full employment and proper use of leisure.

Let us now turn to the meaning of Rural. The concept of a rural community is a relative one. In the minds of urbanized and highly industrialised people, it conjures nostalgic images such as doing things at a leisurely pace, cheap and fresh foods and clean air devoid of any industrial pollution:

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1. Eastburn, D.P., 'Economic Man Versus Social Man', in McConnell, C.R. (Editor), Economic Issues, McGraw-Hill, New York, 1975, p.3.



It is commonly stated that every Englishman is a countryman at heart. Similar claims are also made for the rurality of the Welsh, the Scots and the Irish - on the whole with a good deal more justification than for the majority of contemporary English people. To dream and sing of a green and pleasant land, to delight in a rural heritage, albeit without giving too much thought to the people who live and work in the countryside, may be a necessary antidote to the urban environment which is home to the majority of the nation's population. The rural myth has been fondly nurtured for many decades, supported by many social and commercial devices, even to the picturesque village churches, thatched cottages and rose gardens portrayed on innumerable Calendars and chocolate boxes.

Whether the attitudes of urban people in industrialised countries to rural communities are myths or not, the belief still remains. In affluent North America, to a very large extent, and parts of Australia, to a lesser extent, for example, any urban middle class person who does not own a 'rural cottage' to where he, his family and friends may retire on public or bank holidays is considered a deviation from the norm. In Britain especially, a well groomed large garden appears to be an unspoken desire of all urban dwellers. In urban Britain, the garden, like the countryside, is believed to have soothing effects on life. Some beliefs, like myths, are after all, unsubstantiated facts which guide a peoples' actions.<sup>2</sup>

In Ghana, the concept of rurality is different; whether it is being defined by an urban dweller or by village folk, there is an element of traditionality embraced in it. This is so because whereas the majority of British are urban and therefore have rarely experienced life in a rural setting, the opposite is true for Ghanaians, the majority of whom live under traditional conditions.

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1. Jones, G.E., Rural Life : The Social Structure of Modern Britain, Longman, London, 1973, p.1.

2. See Chapter 1 of Combs, A.W., The Myths in Education, Allyn and Bacon, Boston, 1979, for the definition of a myth and how myths are used to rationalize behaviour; normally behaviour that is faulty in its reasoning and explanation.

Even those who live in urban centres have close associations with rural life through the extended family system and for the fact that urbanization is, relatively, a recent occurrence in Ghana. In the introduction to the 1970 Census of Ghana, for example, it is stated that the urban population formed only 19.2% of the total population of the country. N.O. Addo also asserts that:

.... for nearly 40 years the urban population increased by only about 300,800 (i.e.  $2\frac{1}{2}$  times from the base year of 1911) as compared with over one million increase within a period of only 12 years (i.e. 3 times from the base year 1948). Urbanization in Ghana by and large is a mid-twentieth-century phenomenon. <sup>1</sup>

Rostow's assertion that:

A traditional society is one whose structure is developed within limited production functions, based on pre-Newtonian science and technology, and on pre-Newtonian attitudes towards the physical world .... But the central fact about the traditional society was that a ceiling existed on the level of attainable output per head. This ceiling resulted from the fact that the potentialities which flow from modern science and technology were either not available or not regularly and systematically applied, <sup>2</sup>

is true for Ghana today as it was true for Europe a few centuries ago. Rural Ghana, which exists mainly under traditional conditions, experiences low standards of living: lack of medical care facilities; lack of healthy and comfortable accommodation facilities; high levels of malnutrition; bad roads linking centres; lack of basic amenities and services such as toilets, water supply, electricity and post offices. A letter published in the Legon Observer is reproduced below to illustrate some of the harsh conditions that persist in rural Ghana: <sup>3</sup>

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1. Addo, J.O., 'Urbanization, Population and Employment in Ghana', in Ominde, S.H. and Ejiogu, C.N. (Editors), Population Growth and Economic Development in Africa, Heinemann, London, 1972, p.243.

2. Rostow, W.W., The Stages of Economic Growth, C.U.P., London, 1971, p.4.

3. The Legon Observer, Vol. xii, No. 2, 1-14 Feb., 1980, p.45.

Staff Accommodation at Dambai Training College

Sir, Dambai is being built as a new settlement. It is situated at the southern side of the Oti River and came into limelight as a result of the formation of the Volta Lake of which River Oti is an inlet. Dambai Old Town, Banka and Wankayaw are some of the suburbs.

Situated in the heart of fertile lands, Dambai is an important food producing centre - yams, rice, legumes, maize, cassava and vegetables, as well as fresh water fishes are produced here. This has made this neglected but economically important settlement in the northern Volta Region a vantage marketing point and a passenger stopover. Farmers, fishermen and traders from all parts of Ghana may be found there! The town boasts of a junior secondary, four primary and two middle schools. There is neither a postal agency nor a health post. The nearest hospital - Worawora or Krachi - is more than eighty kilometres away and it takes more than a day to reach any of these. Roads leading to the village are motorable only during the dry season and the commonest passenger transports are cargo trucks and articulators. No dailies reach here and, literates, especially teachers who must read journals to keep abreast with the times, simply forget about them.

Sanitation in this area leaves much to be desired. There is no public latrine and pigs are kept to serve as conservancy labourers and a source of pork. Water-filled pits which are perpetual breeding grounds for mosquitoes are not uncommon. And it is here that Dambai Training College is sited! The College has no staff bungalows. The only bungalow being built by Volta Star Enterprise (a building contracting firm) since 1976 is yet to be completed. The tutors live in terrible surroundings, though other government employees live in comfortable quarters. It is good the Ministry of Education built this college here for a fair distribution of facilities in this Region. But the staff need to be well accommodated.

If, out of frustration, a tutor decides to leave the college for the enjoyment of better facilities elsewhere who is to blame? It is high time we realised that it is one thing spending huge sums of scarce government revenue to produce qualified manpower, and another thing retaining and maintaining the trained manpower. Ghana is fast becoming the producer of highly qualified manpower for other countries.

F. Carl Cudjoe

Dambai Training College  
Private Mail Bag  
Dambai - V/R.



Rural in this thesis, therefore, refers to physical geographical areas that lack basic amenities such as piped water, health services, adequate roads, postal services, spacious and structurally sound houses, electricity and good sanitation systems. The problem here is not merely that the people who live in these areas are unaware of better conditions of living, but that they themselves have been unable to contribute any significant initiative towards eradicating these conditions.

So, Rural Economy may be defined essentially as a social system that involves the techniques and strategies adopted by rural people, whether or not they are aided by an external agency, in solving problems of economic choice, processing scarce natural resources into goods, trying to raise the standard of living within the rural framework, and co-operating with the rest of other communities in the country. In short, Rural Economy is concerned with problems of poverty, development and co-operation. The central theme of rural economy lies with the techniques employed in eliminating, reducing or containing all aspects and manifestations of poverty through a viable relationship between productivity and raising the level of living standards. Schooling, or European education is one of these techniques, the role of which this thesis attempts to examine.

Although the central government in Ghana has been trying to integrate the rural and urban economies through raising the levels of performance or the rural economies by way of planning and diffusing funds and human resources to remote areas, there still exist disparities and imbalances between the two economies. Consequently, four main factors characterise and set the rural economy apart:

(i) Spatially, areas with predominant rural economies are geographically located in areas of low population density; normally below fifty

people per square mile. In such areas, distances between neighbouring villages are considerable and greatly inhibit contact as well as co-operation.

(ii) These areas suffer predominantly from inadequate infra-structural development such as pipe borne water, electricity, at least adequate roads and health facilities.

(iii) The economic activities such as fishing, farming, wood carving, leather works and textile weaving take place at the level of one-man, few-men or family-based businesses. Normally, the production units are so small that their economies become subsistence. Besides this, the technologies adopted in the methods of production are usually archaic and inefficient.

(iv) Personnel organization of enterprises are based purely on family relations, and social interaction derives from the extended family system. There is relatively higher illiteracy rates found among employees, and business transactions are conducted on personal or face-to-face basis.

These characteristics appear to be under-going changes and are perceived as being affected by the roles education plays in society. The burden of this study is to examine how far education has affected these characteristics. Of course, the rural economy comprises a number of activities such as petty trading, small-scale construction, fishing, farming and small repair works in addition to RSSI. By selecting the RSSI sector, it is not implied that this is typical of the entire rural economy. None-the-less, it is probable that in attitudinal terms, RSSI component is exhibiting quite widely held behaviour patterns in respect of education in rural Ghana.

#### 1:0:8 Modernization.

Modernization is an umbrella term. Generally speaking, though, it signifies two distinct processes: on the one hand, it categorises

vanguard actions or pioneering developmental processes in socio-economic sectors. It connotes the raising of the standard of living by the provision of goods and services in adequate quantities at reasonable prices to satisfy the demands of society. On the other hand, it may denote acceptance or adoption to local problems in industry of developmental processes pioneered elsewhere.

While the former process may be unique in nature and form the basis of new innovations and inventions, the latter is usually imitative or adopting of the former model. To whatever category the modernization process belongs, it entails the development and application of more sophisticated techniques in the production, distribution and exchange processes of goods and services available in the society. Subsequently, this calls for the development of a high level of infrastructural framework and efficient parastatal organizations necessary to sustain the overall survival of the economic system.

One of the major parastatal institutions connected with the modernization process in a Ghanaian context is European education.

In this text, the concept of modernization will be restricted to take the second category of meaning. That is, adopting social organizational forms, economic processes, technologies of production and education patterns that have been pioneered in Western Europe and North America to help solve the developmental problems of Ghana.

In this chapter, definitions have been offered of some of the commonly recurring terms in the thesis. The next chapter, comprises a review some of the existing literature most related to the central theme of the thesis.

CHAPTER TWO

REVIEW OF THE LITERATURE:

RURAL SMALL-SCALE INDUSTRIES IN GHANA

2:0:0 Review of the Literature.

In any discussion concerning rural small-scale industrialization (RSSI) in Ghana, it is essential to review selected relevant literature on the subject. It is important, at this stage, to restate that this particular study seeks primarily to investigate and evaluate certain aspects of education and RSSI in Ghana such as:

- (i) The level of education attained by rural small-scale industrial entrepreneurs in Ghana.
- (ii) The level of education attained by workers in rural small-scale industries in Ghana.
- (iii) The types of skill training provided for and received by workers in rural small-scale industries (SSI) in Ghana in relation to education attainment.
- (iv) Attitudes of workers in rural SSI towards the relevance of school curricula and skill-training programmes available.
- (v) Attitudes of workers to occupations in the rural SSI sector.
- (vi) Attitudes of rural teachers towards occupations in the rural SSI sector in Ghana.
- (vii) Attitudes of rural teachers towards the relevance of school curricula to rural SSI in Ghana.

In the following chapter the aspects of education and RSSI as stated above will be framed into investigable hypotheses. Analysis of data resulting from this investigation forms the basis for this thesis. It can therefore be reasonably claimed that this present thesis is the first serious study of this nature in this field.

The most related contemporary researches in this area are, in fact, those carried on by Steel<sup>1</sup> in 1973, Peil<sup>2</sup> in 1970 and extended in 1971 by Peil,<sup>3</sup> to cover factory workers in large size firms in metropolitan Accra.

There are other studies related, albeit less centrally, to this present investigation. These studies are Lewis,<sup>4</sup> Foster,<sup>5</sup> and Ewusi.<sup>6</sup> All these studies have enlightened the present research in various ways, especially in relation to education and RSSI in Ghana. But it must be pointed out that with the exception of Lewis's study, which was a general survey covering both small-scale and large-size industrial development in Ghana, all the other studies were conducted in urban Accra or in similar urban centres in other parts of Ghana. In a very strict sense, therefore, the contextual framework of these studies differ, in no small measure, from the present study. For, the distinction between rural-urban areas in Ghana is not considered by the present study as a superficial one: it denotes different socio-cultural traditions and realities. In this fact lies its interest and uniqueness: to discover more about the characteristics such as education and attitudes of workers in grassroot industries in rural communities of Ghana.

The majority of areas investigated are Ghanaian rural communities. The rationale for incorporating Alajo, of suburban Accra, in this study

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1. Steel, W.F., Small-Scale Employment and Production in Developing Countries: Evidence from Ghana, Praeger, London, 1977, (Researched in 1973, Published in 1977.)
  2. Peil, M., 'The Apprenticeship System in Accra', in Africa, (A Journal of International African Institute), Vol. XL, 1970.
  3. Peil, M., The Ghanaian Factory Worker: Industrial Man in Africa, C.U.P. London, 1972.
  4. Lewis, Sir, W.A., Industrialization and the Gold Coast, Government Printer, Accra, 1953.
  5. Foster, P., Education and Social Change in Ghana, Routledge and Kegan Paul, London, 1971, (First Published in 1965).
  6. Ewusi, K., The Size of the Labour Force and Structure of Employment in Ghana, Technical Publication Series No. 37, University of Ghana, Accra, 1978.



is based on Alajo's socio-cultural realities. Alajo, like many of its types around boom towns such as Nairobi, Lagos or Cape Town, has come about as a result of economic constraints which have necessitated enormous rural exodus to industrial Accra. The socio-cultural realities in Alajo, therefore, approximate to those found in other areas covered by this study.

#### 2:0:1 The Significance of the Present Study.

The significance of this study lies in an attempt to remedy some of the inadequacies and to confirm some of the conclusions in previous studies. While Peil, for instance, uses the 1960 Census figures to assert that:

Only 9% of the working (1960) population (233,947 people) were engaged in manufacturing. The majority of these are self-employed, small-scale craftsmen (and women) who provide for local needs as carpenters, tailors, fitters etc. Many are part-time farmers, practicing their trade in the dry season or whenever there is a demand for their services. Participation in manufacturing in the conventional sense is<sup>1</sup> limited to less than a quarter of the total.

Ewusi's study, on the other hand, draws attention to issues particularly related to discrepancies in the presentation of 1960 labour statistics in Ghana:

While the 1960 Census gives employment in the public institutions as being 38.8 per cent, the Labour Statistics gives a figure of 56.0 per cent. One reason for this discrepancy could be that it is relatively easy for the officers of the Central Bureau of Statistics to get fairly accurate figures for employment in government and other public bodies, but far more difficult to get reliable data<sup>2</sup> for small-scale establishments in the private sector.

Such inconsistencies, as Rimmer says, are not unusual:

Such inconsistencies in data are not found only when evidence is drawn from different countries. They occur also when different authorities in the same country ... produce independent estimates of

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1. Peil, M., (1972), op. cit., p.1.
  2. Ewusi, K., (1978), op. cit., p.68.

the same quantities ... It is even possible - and, indeed, not out of the ordinary - for the same authority to report, at different times,<sup>1</sup> different measurements of the same quantity.

But inconsistencies such as stated above have drawn the attention of the writer to carefully appraise any official data that is to be used for the purposes of this thesis. For example, estimates made during fieldwork for this study suggest that the number of workers in the RSSI sector for the five regions selected approximates to 4,500 people. Inclusion of Table 1, (1971 Labour Statistics Data), in this thesis is therefore justified on the basis of fieldwork estimates.

The significance of this study also lies in the fact that, in the opinion of the present writer, the section of the Ghanaian population engaged in RSSI constitutes a very important sector which provides a useful economic function and therefore demands serious study. This observation is amplified by Steel in drawing conclusions to his study on small-scale industries in Ghana:

Many small-scale business owners have training in their trade, but not in operating business. Any scheme to provide credit and materials to the intermediate sector must be accompanied by a programme of education in simple business skills, such as book-keeping and price setting. More advanced management training, plus technical skills such as machine maintenance and repair, are needed to help successful entrepreneurs make the transition to the modern sector; but the needs of the inexperienced business person also should be addressed. Thus a small business extension service is an appropriate means of assisting the intermediate sector.<sup>2</sup>

For a project of the nature suggested by Steel to be successful, requires, first, a knowledge about the characteristics, the type

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1. Rimmer, D., 'Official Statistics' in Peil, M., et. al., Social Science Research Methods: An African Hand Book, Hoder and Stoughton, London, 1982, p.49.

2. Steel, W.F., (1977), op. cit., p.183

of education and skill training which participants in the RSSI sector have attained and their attitudes to the content of such programmes in relation to work in the sector.

It is an aim of this study therefore to attempt to answer questions such as:

- (i) What type of education have entrepreneurs and workers in rural SSI attained?
- (ii) What are the attitudes of workers in rural SSI to the school curricula?
- (iii) What types of skill training (in-service and off-the-job) programmes are more popular with workers?

Answers to questions such as the above become very crucial for any improvement strategy that may be intended for this sector.

The general object and purpose of this study, therefore, falls under four categories:

- (i) To draw attention of education policy makers to the type of education and skill-training schemes that may assist the RSSI sector in functioning more efficiently.
- (ii) To provide basic data on workers and their attitudes to researchers in other disciplines who may be interested in this sector.
- (iii) To suggest better ways of tackling rural development in Ghana on the basis of the survey data.
- (iv) To pose questions, above all, to those in positions of political leadership in Ghana<sup>1</sup> about policies concerning the role of education in sustaining a well-planned rural SSI sector.

While Lewis, for instance, argues that:

African entrepreneurship is deficient in technical knowledge, in managerial capacity, and in capital,

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1. Especially the Ministries of Education and Economic Planning.

and recommends, therefore, that:

Of these three, the easiest to remedy is the deficiency of technical knowledge. For this can be learnt in technical schools and universities, or by placing Africans in foreign firms, at home or overseas, to learn the necessary techniques ... To train up African enterprise must naturally be one of the major objectives of economic policy,<sup>1</sup>

Foster<sup>2</sup> and Peil<sup>3</sup> contend that:

technical trainees may be too 'high-powered' to be useful in small-scale, indigenous businesses and most holders of technical certificates drift into work quite different from that for which they were trained.<sup>4</sup>

Peil and Foster, therefore, suggest that:

alternative and much cheaper sources of skilled workmen be provided by training within industry and apprenticeship to an individual craftsman.<sup>5</sup>

Assessment of the role of education in the context of Labour development such as above requires a survey on the small-scale industrial sector in Ghana. The aim should be an attempt to resolve issues connected with education and training patterns characteristic of workers in rural SSI. And as we shall show in chapter five, the contents of questions constituting questionnaire schedules administered on both workers and rural teachers for this present study have been guided by a consideration of soliciting data, which, when analysed, would attempt to resolve some of the contradictions and inadequacies of these previous studies.

Apart from the literature sources which have already been referred to, other literature sources have helped in determining content, structure and format, classification of factors and selection of variables adopted in the construction of questionnaire schedules

1. Lewis, Sir, W.A., (1953), op. cit., p.12.
2. Foster, P., (1971), op. cit., pp.294-295..
3. Peil, M., (1970), op. cit., pp. 137-150.
4. Ibid., p.137.
5. Ibid., p.137.

used for this survey. These literature sources are: Science Research Associates (Chicago),<sup>1</sup> Hartley, Davies and Burnhill,<sup>2</sup> Carruthers,<sup>3</sup> Killcross and Bates,<sup>4</sup> Payne and Mansfield,<sup>5</sup> Strien,<sup>6</sup> Wilson,<sup>7</sup> Youngman,<sup>8</sup> Peil, Mitchell and Rimmer,<sup>9</sup> The Open University,<sup>10</sup> Oppenheim,<sup>11</sup> and Toplis.<sup>12</sup>

It must be pointed out that all these studies, although marginal to the central theme of this present study, have contributed in some measure to the design, format or framing of questions in the questionnaire schedules used for this study.<sup>13</sup>

In addition to its objectives and purposes, the significance of this study could be said to lie in the coincident conclusions drawn by most previous studies;<sup>14</sup> namely that the rural SSI sector

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1. Science Research Associates, The SRA Attitude Survey, SRA Inc., Chicago, 1972. This is a package outlining content, layout and construction of questionnaire instruments for investigating a company.
  2. Harley, J., Davies, L., and Burnhill, P., 'Alternatives in the Typographic Design of Questionnaires', in Journal of Occupational Psychology (JOP), Vol. 50, 1977.
  3. Carruthers, T.E., 'Note on a Trial of an American Work Values Inventory with British Subjects', in JOP, Vol. 42, 1968.
  4. Killcross, M.C., and Bates, W.T.G., 'The Applied Psychology Unit Occupational Interest Guide: A Progress Report', in JOP, Vol. 42, 1968.
  5. Payne, R., and Mansfield, R., 'Correlates of Individual Perceptions of Organizational Climate', in JOP, Vol. 51, 1978.
  6. Strien, P.J.V., 'Paradigms in Organizational Research and Practice', in JOP, Vol. 51, 1978.
  7. Wilson, J., Discipline and Moral Education: A Survey of Public Opinion and Understanding, Nelson, Windsor, 1981.
  8. Youngman, M.B., Analysing Social and Educational Research Data, McGraw-Hill, London, 1979.
  9. Peil, M., Mitchell, P.K., and Rimmer, D., Social Science Research Methods: An African Handbook, Hodder and Stoughton, London 1982.
  10. Open University, The, Research Design, (Prepared by Neville Bennett) Oxford University Press, London, 1973.
  11. Oppenheim, A.N., Questionnaire Design and Attitude Measurement, Open University Press, London, 1976.
  12. Toplis, J.W., 'Studying People at Work: Outline of a System', in JOP, Jubilee Volume, Vol. 44.
  13. See Appendices 1, 2 and 3.
  14. See, for example, Ghana Government, Proposals For the Establishment of a National Board for Small-Scale Industry, Ministry of Industries, Accra, 1974; and Stell, W.F., (1977), op. cit., pp. 175-186.

possesses a valuable potential which could contribute substantially to Ghana's economic development if properly organized and operated. An efficient operation of this sector could also lead to a significant minimization of Ghana's dependence, on developed countries for manufactured goods.

It is indeed hoped that this thesis will help planners in Ghana to taking relevant decisions concerning the roles that education might play in this potentially very important sector of the country's economy.

In the next chapter, orientation of the research, statement of hypotheses and the rationale behind generating the hypotheses will be discussed.

CHAPTER    THREE

THEME, PROBLEM AND HYPOTHESES OF THIS STUDY

3:0:0    The Theme of this Study.

The theme of this thesis is the nature of formative influence which European education or formal schooling contributes to the development of the Ghanaian rural economy. Specifically, it is an attempt to examine the role that European education has played in supporting the induction and expansion of rural small-scale industries in southern Ghana.

3:0:1    Economic Development and Education.

The relationship between economic development and European education, in developed as well as developing countries, has never been clearly established although many researchers have, over a considerable period, focused their attention and researches on this issue.

Attempts to quantify the role of education in economic growth started in 1925 with economists such as S.G. Stumilin.<sup>1</sup> This debate continued through 1930s and 1940s in the works of Walsh,<sup>2</sup> Friedman and Kusnetz<sup>3</sup> to the 1950s and early 1960s in the works of Schultz,<sup>4</sup> Becker,<sup>5</sup> Blaug,<sup>6</sup> Mincer,<sup>7</sup> and many others.

Nevertheless, the contributions made by these earlier works

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1. See for instance, Stumilin, S.G., 'The Economic Significance of National Education', in Robinson, E.A.G., and Vaizey, J. (Editors), The Economics of Education, St. Martins Press, New York, 1965.
  2. Walsh, J.R., 'Capital Concept Applied to Man', in Quarterly Journal of Economics, February, 1935.
  3. Friedman, M., and Kusnetz, S., Income for Independent Professional Practice, National Bureau of Economic Research, New York, 1946.
  4. Schultz, T., The Economic Value of Education, Columbia University Press, New York, 1963.
  5. Becker, G.S., Human Capital, Princeton University Press, Princeton, 1965.
  6. Blaug, M., 'Private and Social Rates of Return to Education', in Manchester School, September, 1965.
  7. Mincer, J., 'On-the-Job Training Costs Returns and Some Implications', Journal of Political Economy, Supplement of October, 1962.

to the 'economy/education debate' did little to clarify the long standing relationship between education and economic development; and Williamson pointed out that, at best, those earlier works identified the role of education as a 'paradoxical one'.<sup>1</sup>

By the late 1950s and 1960s, this issue was being viewed from a different angle; namely, that of human capital development. This era was marked by the works of Abramowitz,<sup>2</sup> Solow,<sup>3</sup> Aukurst,<sup>4</sup> Denison<sup>5</sup> and Harbison.<sup>6</sup> These works attempted to relate school enrolments to quantifiable variables such as Gross National Product (G.N.P.) per capita and Gross Domestic Product (G.D.P.) of nations.

In 1969, Hobsbawm<sup>7</sup> noted that the technology which was behind the Industrial Revolution was not so complex as to be beyond the design of ordinary artisans and suggested, therefore, that the factors which induced industrial development in Britain during the Industrial Revolution had little to do with formal schooling and school enrolments. This observation is crucial to planners in developing countries because although Harbison and Myers<sup>8</sup> reported 'good correlation coefficients' with G.N.P. per capita, and Peaslee<sup>9</sup> found a threshold of 10% enrolments for a nation's population in

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1. Williamson, B., Education, Social Structure and Development, MacMillan Press Ltd., London, 1979, p.11.

2. Abramowitz, M., Resource and Output Trends in the United States since 1870, National Bureau of Economic Research, Occasional Research Paper 52, New York, 1956.

3. Solow, R., 'Technical Change and the Aggregate Production Function', in Review of Economics and Statistics, XXXIX, August, 1957.

4. Aukurst, O., 'Investment and Economic Growth', in Productivity Measurement Review, February, 1959.

5. Denison, E.F., 'Measuring the Contribution of Education (and the Residual) to Economic Growth', in OECD, The Residual Factor and Economic Growth, Paris, 1964.

6. Harbison, F. and Myers, C.A., Education, Manpower and Economic Growth, McGraw Hill, New York, 1964.

7. Hobsbawm, E., Industry and Empire, Penguin, London, 1969.

8. Harbison, F. and Myers, C.A., (1964), op. cit.

9. Peaslee, A.L., 'Primary School Enrolments and Economic Growth', in Comparative Education Review, February, 1967.



primary-school before any 'significant' economic growth could be effected, the debate is far from concluded. Williamson expressed the same view when he wrote that:

And in a similar vein Mark Blaug has emphasised the importance of the human capital approach as a step in economic theory which opens up questions that have been virtually suppressed since Adam Smith. He calls the human capital perspective 'a programme for research rather than a pronouncement of an indisputable insight'.<sup>1</sup>

The governments of many independent countries in the Third World are pre-occupied with searches for strategies which could cause rapid economic and technological development in their countries. This fact is supported by the many Development Plans that emanate from this region. Few would deny that large shares of development budgets are constantly being devoted to the provision and improvement of European education facilities with the view of creating reserves of human capital.

The question arises whether or not such massive expenditures invested in the provision of more European education in order to generate the expertise needed to man some of the advanced technological machinery adopted in sectors such as health care, transport, industry and agriculture are justified in primary-producing and dependent economies of the Third World? In addition, planners in developing countries would like to know whether economic and technological development may be attained more rapidly through the investment of more funds in industry designed to incorporate artisan skill-training schemes or through investment in the expansion of European education facilities. Issues such as the above, become more complex in rural societies, especially in the Third World where rural poverty and people's attitudes militate against the introduction of new ideas and change in general. Hobsbawm sums up the problem of human capital

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1. Williamson, B., (1979), op. cit., p.15.

development as a factor of education and economic development in

'emerging nations' of today as:

The most elementary step forward - say, the construction of an adequate transport system - assume a command of science and technology which is centuries removed from the skills familiar to more than a tiny fraction of the population until yesterday ... Even the minor skills and habits whose existence we take for granted in developed societies, but whose absence would totally disrupt them, are scarce as rubies: literacy, a sense of punctuality and regularity, the conduct of routines.<sup>1</sup>

The assertion of this thesis, like that of Lewis's,<sup>2</sup> is that a command of rudimentary science and technology, acquisition of literacy skills, cultivating attitudes of punctuality and the 'conduct of routine', are factors which are necessary for serious evolution of economic development; and in Ghana, these factors appear to be imparted by the school system in an organized and effective fashion.

It must be pointed out that although Peil and Foster<sup>3</sup> contend that apprenticeship programmes in Ghana could impart similar skills which schools offer at a lesser cost, it could be argued that apprenticeship programmes in Ghana at present appear not to be organized on a uniform basis. They are apparently incapable of producing certain minimum desired 'workmanship-quality' in the majority of their participants.

### 3:0:1:1 Statement of the Problem.

The problem to which this thesis attempts to address itself, therefore, could be stated simply as: an examination of selected characteristics of a representative sample of human resources in rural SSI in southern Ghana and how these characteristics are

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1. Hobsbawm, E., (1969), op. cit., p.61.

2. See Section 2:0:1 of this thesis.

3. See Section 2:0:1 of this thesis.

influenced by schooling or European education.

During the process of examination, some specific issues, about the sample of rural SSI workers selected for this study will be given more attention than others:

- (i) The level of education attained by rural small-scale industrial entrepreneurs.
- (ii) The level of education attained by rural small-scale industrial workers.
- (iii) The types of skill-training provided for and received by RSSI workers in relation to workers' education attainment.
- (iv) Attitudes of RSSI workers to the relevance of content of the present school curricula and skill-training programmes.
- (v) Attitudes of rural SSI workers to occupations in the RSSI sector.

All the five characteristics mentioned above will be examined in relation to workers' educational attainment. In addition to examining the five specific issues about rural workers, two specific areas will be examined on a selected sample of rural teachers:

- (i) Attitudes of rural teachers (RT) towards occupations in the RSSI sector.
- (ii) Attitudes of RT towards relevance of the school curricula to RSSI.

A subsidiary examination of selected characteristics of rural teachers is seen as constituting an important aspect to this study, because rural teachers form an essential part of the school system that moulds some of the attitudes that may be attributed to educated rural small-scale industrial workers.

As a consequence of examining and discussing the issues above, it becomes necessary to first describe the structures of the selected

sample-populations of this study in terms of such indications as: age, sex, ethnicity, parental occupation, working experience, interpersonal relations and so on; but above all, why southern Ghana is chosen as a suitable area for this study. While the general structural characteristics of the surveyed sample-populations will be given in Chapter Seven, reasons for selecting southern Ghana for this study are given below.

### 3:0:2 The Choice of Southern Ghana as a Suitable Area for the Study.

During the period of research for this study, three major characteristics were observed to have set southern Ghana apart from the rest of the nation as an area suitable for the study of the relationship between European education and rural small-scale industries.

#### 3:0:2.1 Provision of Facilities for European Education.

Before the advent of European education, Arabic literacy skills were known to have been widespread in northern Ghana but less so in the southern part of the country. When, therefore, European education was introduced in 1471, it had a better chance to be accepted by the people of southern Ghana than by those of the north.<sup>1</sup> Additionally, the pattern of colonization of Ghana, in many cases, especially in the initial stages, precluded northern Ghana. McWilliam and Kwamena-Poh,<sup>2</sup> for instance, noted that while northern Ghana came under British colonial rule in 1901, European education institutions did not start there until 1906. Colonial education policies, therefore, were limited to southern Ghana until that year when some schools were eventually established in the northern parts of the country. Any

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1. See the section under 1:0:1 of this thesis.

2. McWilliam, H.O.A., and Kwamena-Poh, M.A., The Development of Education in Ghana, Longman, London, 1975, pp.43-44.

study of Ghana which involves elements of European education, therefore, must take into consideration this historical and cultural disparities in the provision of educational facilities for the two sections of the country. It is reasonable to suggest that European education values have had almost four hundred years to crystallize in southern Ghana ahead of the northern region. The two sets of regions cannot therefore be treated together in a study concerning the influence of European education on rural SSI workers unless there is a comparative intent.<sup>1</sup> This thesis is not a comparative study.

Furthermore, even as late as 1970, inter-regional literacy rates showed that there had been a greater incidence of illiteracy among the northern peoples than the southern (See Table 2.) The only exception to this pattern was Ashanti region where literacy rates appeared to be in a category similar to those of southern regions.

### 3:0:2.2 Population Distribution.

Table 3 shows the regional distribution of population in Ghana according to administrative divisions for the years 1960 and 1970. The population for the five administrative regions redesignated as 'southern Ghana' totalled 3,740,845 in 1960 and 4,720,765 in 1970. These totals constituted 55.6% and 55.2% respectively to the 1960 and the 1970 national population figures. Southern Ghana, therefore, appears to have slightly higher population figures than northern Ghana and therefore constitutes a distinct region.

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1. In Grindal, B., Growing Up in Two Worlds: Education and Transition Among the Sisala of Northern Ghana, Holt, Rinehart and Winston, New York, 1972, the educational dichotomy between Northern and Southern Ghana is vividly illustrated.

Table 2. Ghana: Literacy Rates by Region, 1970.

Regions	Population	Literacy Rates (%)
Greater Accra	851,614	64.5
Eastern	1,261,661	53.4
Central	890,135	43.7
Volta	947,268	47.4
Western	770,087	47.9
Ashanti	1,481,698	51.5
Brong Ahafo	766,509	38.9
Northern	727,618	11.1
Upper	862,723	12.1
All Regions	8,599,313	43.2

Table 3. Ghana: Population Figures for 1960 and 1970 by Regions.

Regions	Population	
	1960	1970
All Regions	6,726,815	8,559,313
Greater Accra	491,817	851,614
Eastern	1,094,196	1,261,661
Central	751,392	890,135
Volta	777,285	947,268
Western	626,155	770,087
Ashanti	1,109,133	1,481,698
Brong Ahafo	587,920	766,509
Northern	531,573	727,618
Upper	757,344	862,723

Source: 1970 Population Census of Ghana (Vol. II),  
Census Office, Accra, 1972, p.xxiii.

### 3:0:2.3 Access to European Education.

As a result of the relatively easy access to schools among the peoples of southern Ghana, it could be suggested that the effects of this type of education on rural SSI workers are likely to be more influential in shaping their values and attitudes towards status of

occupations in RSSI and the school curricula.

3:0:3 Formation of the Research Ideas: A Personal Note.

Living and growing up in Ghana between 1948 and the late 1960s was an exhilarating experience. This period was epoch-making in Ghana's history: By 1948, although Ghanaians were still a colonial people, they were in the last decade of being so; and in any case internal self-government was attained in 1951. Full political independence was achieved in March, 1957 and in 1960, the country became a republic.

Those years were years of political, economic and social enterprise engendering many transformations in many sectors including education. In that comparatively short space of time, many structural and conceptual changes simultaneously swept through the society. Ghanaians, apart from being politically free, occupied administrative positions which were formerly reserved for Europeans only, and above all, decided the direction in which they wanted their development to go.

Educational facilities were rapidly expanded and all children of school-age were encouraged to attend school. In 1951, for example, primary and middle school education was made free and in 1960, primary schooling became compulsory for all aged five years and above. It was not uncommon to see youths in their teens among primary school classes in those days.

During the same period, industrialisation which had, hitherto, been neglected, was given more attention. Both working people and school pupils were encouraged and assisted in developing their occupational interests at vocational training centres which were especially built for use outside normal working hours in the spirit of independence euphoria.

Probably, it was at this time that the seeds of interest in eventually undertaking a study of this sort were sown. It was even then clear to see that people who were entrusted with important public positions were unable to discharge their duties efficiently. The policy of Ghanaianization at that time, however, prevented official government dismissals of inefficient African workers. Understandably, the majority of these inefficient workers possessed high educational qualifications. But this brought to prominence questions about the possibilities of an efficient correspondence between educational provision and occupational structure.

Clearly, inefficiency in any sector of development produced adverse effects on the desired national economic and social progress. The question, therefore, publicly arose as to what was the role of European education or schooling, the criterion used in occupational placement, in creating efficient human capital resources capable of stimulating and sustaining economic development.

Educational planners in Ghana, and indeed, in many parts of the Third World, do not seem to have the basic human resource data, the analysis of which may form the basis for sound immediate or future economic development strategies. One of the major unresolved issues that has remained with planners in Ghana is the problem of sectoral balances. For instance, planners would like to know the extent to which, say, the rate of human capital resource formation through schools influences agricultural production or the role that school attainment plays in the fulfilment of personal job-satisfaction. In many cases, such evaluative studies are non-existent. It must be pointed out here that such data are not lacking only in Ghana but also in other parts of the world, including many developed countries.

The ideas behind this study have evolved over many years. Some



of these ideas were gradually formed and, to some extent, clarified as a result of critical observations made in Ghana and overseas, attendance at universities, especially in the United Kingdom, and opportunities to discuss and debate international development issues connected with education, human resource development and economic development with colleagues and teachers.<sup>1</sup>

This thesis, therefore, incorporates both empirical data and documented evidence as well as personal experience in testing some of the issues arising out of the research ideas.

### 3:0:4 Questions Arising Out of Research Ideas.

In a study of this nature, it becomes necessary to seek some specific questions that may guide the methodology of the research. For the purpose of focussing the major problems undertaken by this study, specific questions, as below, were considered first:

- (i) What sample size of the RSSI sector was to be surveyed?
- (ii) What characteristics of the sample population were to be investigated?
- (iii) How were the hypotheses to be framed and tested on the basis of the stated problem?

It must be emphasised that, at this stage, these basic questions were not attempting to explore causal relationships between the selected characteristics of the sample population. Instead, the research ideas necessitated some preliminary observations about European education and rural small-scale industries.

Later, when the research ideas were fully developed into testable hypotheses, elements of causal relationships emerged.

### 3:0:5 The Hypotheses.

The hypotheses framed below are, strictly, summaries of the

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1. A Masters' degree programme pursued at Edinburgh University's Departments of Educational Studies and Centre for African Studies, was especially very useful in this respect.

basic questions arising from issues meant to focus the problem of the study as stated under Section 3:0:1 above; or, they could be viewed as projected possible outcomes of the study. In other words, they represent the framework for the analysis of the problem in relation to the methodology of research and the conclusions that may result.

Mouly puts it thus:

A hypothesis can be considered a tentative generalisation concerning the relationship between two or more variables of critical interest in the solution of the problem under investigation. It is an assumption, a proposition whose tenability is to be tested on the basis of the compatibility of its implications with current knowledge and with specially gathered empirical evidence. It begins with facts but goes beyond facts to their possible interrelationships; i.e. it provides the conceptual scheme that systematizes loose ends into a meaningful and coherent picture.<sup>1</sup>

In this thesis, a relationship between European education and its role in supporting rural small-scale industries in southern Ghana is being sought. This implies that situational variables, attitudes of employees in rural SSI and aspects of job satisfaction among rural industrial employees are being viewed against the independent variable of educational standards attained by workers in these industries.

Three major considerations have been underscored in framing the hypotheses for this thesis: (a) relevance and importance of education and skill training programmes of rural industrial employees to rural industrial work in Southern Ghana; (b) job satisfaction attitudes among rural industrial workers and their relation to workers' education; (c) attitudes of rural industrial workers as they indicate acceptance or willingness to adopt factors of modernization into the rural small-scale industrial sector and how these attitudes

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1. Mouly, G.J., Educational Research, Allyn and Bacon Inc., Boston, 1978, pp.62-3.

relate to workers' intake of 'European Education'.

In accordance with the considerations stated above, three general hypotheses were then framed to cover the three areas of interest. Beneath each general hypothesis, a number of specific hypotheses have been stated as a break-down of the general hypothesis. The specific hypotheses were framed in such a way as to render them empirically testable. In Chapter seven, the specific hypotheses stated in this section will be matched with the appropriate WAS items which will be used in testing them.

Below are three general areas of interest, the general hypotheses and the specific testable hypotheses:

Area (a):

Relevance and Importance of Education and Skill Training Programmes of Rural Industrial Employees to Rural Industrial Work in Southern Ghana.

General Hypothesis 1:

Workers in Rural Small-Scale Industries Will Acknowledge that European Education Supports the Rural Economy (Rural Small-Scale Industries) of Southern Ghana.

Testable Hypotheses: .

Relevance of Education to Rural Small-Scale Industries.

1(i) Workers with higher education and workers with lower education<sup>1</sup> will agree more than disagree that what they learnt at school is relevant to rural small-scale industrial work.

Importance of Education in Rural Small-Scale Industries.

1(ii) Workers with lower education and workers with higher education will agree more than disagree that management here encourages private study.

1(iii) Workers with lower education will agree more than disagree

1. The term Lower Education applies to those who have had 1-10 years of formal schooling and the term Higher Education applies to those who have had over 10 years of formal schooling. A more concise definition will be given to these two categories of educated workers in Chapter Seven.

that through private study they can get better jobs than their present ones. As a corollary, workers with higher education will disagree more than agree that through private study they can get better jobs than their present ones.

Teacher-Influence on Rural Small-Scale Industrial Workers.

1(iv) Workers with higher education will agree more than disagree that their class teachers wanted them to go on to higher education. As a corollary, workers with lower education will disagree more than agree that their class teachers wanted them to go on to higher education.

1(v) Workers with lower education will agree more than disagree that their school teachers were concerned about what they were going to do after they finished school. As a corollary, workers with higher education will disagree more than agree that their class teachers were concerned about what they were going to do after they finished school.

Relevance and Importance of Skill Training Programmes In Rural Industries.

1(vi) Workers with higher education will agree more than disagree that training programmes by their companies are not relevant to their work. As a corollary, workers with lower education will disagree more than agree that training programmes by their companies are not relevant to their work.

1(vii) Workers with higher education will agree more than disagree that they can easily change jobs without further training. As a corollary, workers with lower education will disagree more than agree that they can easily change jobs without further training.

1(viii) Workers with higher education will agree more than disagree that the experience they gain on the job from their day to day work is much more useful to them than the company training programmes.

As a corollary, workers with lower education will disagree more than agree that the experience they gain on the job from their day to day

work is much more useful to them than the company training programmes.

1(ix) Workers with lower education will agree more than disagree that the company needs more training schemes if the employees are to work better. As a corollary, workers with higher education will disagree more than agree that the company needs more training schemes if the employees are to work better.

Area (b):

Attitudes of Job Satisfaction Among Rural Industrial Workers and Their Relation to Workers' Formal Education.

General Hypothesis 2:

Workers in Rural Small-Scale Industries Will Acknowledge that Attitudes of Job Satisfaction Are Influenced by the Level of Their Formal Education.

Testable Hypotheses:

Promotion and Pay in Rural Small-Scale Industries.

2(i) Workers with higher education will agree more than disagree that it is not difficult to get promotion in their industries. As a corollary, workers with lower education will disagree more than agree that it is not difficult to get promotion in their industries.

2(ii) Workers with Lower education will agree more than disagree that the pay here is better than the pay in other industries. As a corollary, workers with higher education will disagree more than agree that the pay here is better than the pay in other industries.

Attitudes of Self-Esteem Among Rural Industrial Workers.

2(iii) Workers with lower education will agree more than disagree that they see themselves as very low in their company set-ups. As a corollary, workers with higher education will disagree more than agree that they see themselves as very low in their company set-ups.

2(iv) Workers with lower education will agree more than disagree that office work is more respectable than factory work. As a corollary,

workers with higher education will disagree more than agree that office work is more respectable than factory work.

2(v) Workers with higher education will agree more than disagree that their working conditions are better than those of their parents. As a corollary, workers with lower education will disagree more than agree that their working conditions are better than those of their parents.

2(vi) Workers with lower education will agree more than disagree that things were easier for their parents than they are for them now. As a corollary, workers with higher education will disagree more than agree that things were easier for their parents than they are for them now.

Inter-Personal Relations Among Rural Industrial Workers.

2(vii) Workers with higher education will agree more than disagree that the people they work with help each other at work. As a corollary, workers with lower education will disagree more than agree that the people they work with help each other at work.

2(viii) Workers with lower education will agree more than disagree that some people they work with act as if they own this place. As a corollary, workers with higher education will disagree more than agree that some people they work with act as if they own this place.

Health Trends Among Rural Industrial Workers.

2(ix) Workers with higher education will agree more than disagree that their health has shown improvement recently. As a corollary, workers with lower education will disagree more than agree that their health has shown improvement recently.

2(x) Workers with lower education will agree more than disagree that they are not overworked but they feel tired after their day's work. As a corollary, workers with higher education will disagree more than

agree that they are not overworked but they feel tired after their day's work.

Attitudes of Workers in Rural Industries to Supervisors.

2(xi) Workers with higher education will agree more than disagree that their supervisor is fair to all workers. As a corollary, workers with lower education will disagree more than agree that their supervisor is fair to all workers.

2(xii) Workers with higher education will agree more than disagree that their supervisor does not care about the way they do their work. As a corollary, workers with lower education will disagree more than agree that their supervisor does not care about the way they do their work.

2(xiii) Workers with lower education will agree more than disagree that they cannot talk freely with their supervisor if they have a problem. As a corollary, workers with higher education will disagree more than agree that they cannot talk freely with their supervisor if they have a problem.

Attitudes of Industrial Workers to Routine Tasks.

2(xiv) Workers with lower education will agree more than disagree that they work at the same task the whole day. As a corollary, workers with higher education will disagree more than agree that they work at the same task the whole day.

2(xv) Workers with lower education will agree more than disagree that they easily feel bored with their work these days. As a corollary, workers with higher education will disagree more than agree that they easily feel bored with their work these days.

Workers' Education and Job Satisfaction.

2(xvi) Workers with higher education will agree more than disagree that many things they learnt at school were related to job satisfaction.

As a corollary, workers with lower education will disagree more than agree that many things they learnt at school were related to job satisfaction.

Area (c):

Attitudes of Rural Industrial Workers as they Indicate Acceptance or Willingness to Adopt Factors of Modernization into the Rural Small-Scale Industrial Sector and How These Attitudes Relate to Workers' Formal Education.

General Hypothesis 3:

Workers in Rural Industries Will Acknowledge that Attitudes of Willingness to Accept Factors of Modernization are Dependent upon their Level of Formal Educational Attainment.

Testable Hypotheses:

Attitudes of RSSI Workers to the Use of Modern Machines and Production Techniques.

- 3(i) Workers with lower education will agree more than disagree that high quality work is produced only by machines. As a corollary, workers with higher education will disagree more than agree that high quality work is produced only by machines.
- 3(ii) Workers with higher education will agree more than disagree that new and advanced machines are what their industries need. As a corollary, workers with lower education will disagree more than agree that new and advanced machines are what their industries need.
- 3(iii) Workers with lower education will agree more than disagree that there is no point in using their hands to work if machines could be found to do the same work. As a corollary, workers with higher education will disagree more than agree that there is no point in using their hands to work if machines could be found to do the same work.
- 3(iv) Workers with higher education will agree more than disagree that new machines will help to produce more goods in this industry. As a corollary, workers with lower education will disagree more than agree that new machines will help to produce more goods in this



industry.

3(v) Workers with higher education will agree more than disagree that they are encouraged to develop simple tools suitable for their work at the industry. As a corollary, workers with lower education will disagree more than agree that they are encouraged to develop simple tools suitable for their work at the industry.

Freedom to Use New Ideas in Rural Industries.

3(vi) Workers with lower education will agree more than disagree that it is difficult to try new ideas here, the supervisor is always watching. As a corollary, workers with higher education will disagree more than agree that it is difficult to try new ideas here, the supervisor is always watching.

3(vii) Workers with higher education will agree more than disagree that they have plenty of freedom to use their own ideas at work. As a corollary, workers with lower education will disagree more than agree that they have plenty of freedom to use their own ideas at work.

Attitudes of Rural Workers Serving As Barrier to Modernization.

3(viii) Workers with lower education will agree more than disagree that working in a large city is not as good as working in a small town. As a corollary, workers with higher education will disagree more than agree that working in a large city is not as good as working in a small town.

3(ix) Workers with lower education will agree more than disagree that no matter what we do in this country, we will never catch-up with overseas industry. As a corollary, workers with higher education will disagree more than agree that no matter what we do in this country, we will never catch-up with overseas industry.

3(x) Workers with lower education will agree more than disagree that machines manufactured overseas are better than the ones made here.

As a corollary, workers with higher education will disagree more than agree that machines manufactured overseas are better than the ones made here.

### 3:0:6 The Rationale Behind Formulation of Hypotheses.

The hypotheses stated above were based on the rationale that if attendance at school influences or induces certain categories of attitudes in school attendants, then the more schooling a person has attained, the more influenced the person's attitudes should be by the school system. In other words, a person who has attained higher education must exhibit school-induced attitudes more than one with lower educational attainment.

During analysis of data collected on RSSI workers, therefore, the sample will be categorised into two: those with higher education and those with lower education.

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The hypotheses stated above formed the basis on which this survey was designed and the methodology of research planned. In the following two chapters, Chapters Four and Five the research problem will be viewed in contextual and theoretical frameworks; and in Chapter Six, a description will be given of research methodology and research design for this study.

PART TWO

This part consists of Chapters Four and Five. In Chapter Four, the problem investigated was viewed in a contextual framework.

Chapter Five discussed the theoretical context of the problem investigated.

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CHAPTER FOUR

GHANA'S RURAL SMALL-SCALE INDUSTRIES AND EDUCATION

4:0:0 Background Factors Relating to Education and Rural Small-Scale Industries in Ghana.

Although some readers of this thesis may well know much about Ghana's contextual history, this section is included in order to provide useful introductory background information for readers unfamiliar with some broader issues giving rise to a study like this of the role of European education in relation to rural small-scale industrial development in Ghana. This chapter, therefore, provides a brief introduction to Ghana and a context for appreciation of the eventual assessment of issues raised by the subject under study in the later stages of the thesis. If such readers wish to compare Ghanaian rural SSI workers with a group of similar workers from elsewhere, this chapter may assist the level of comparison by at least providing the context for Ghana.

4:0:1 Ghana's Industrial Development in the Context of Colonialism.

The majority of significant educational, industrial and urbanization transformations that occurred in Ghana between the early fifteenth century and the late 1940s were dramatically influenced by European colonization and, in effect, dependency policies formulated in Britain. To a very great extent, the colonial development policies tended to obliterate indigenous patterns of development. We shall show this more clearly in chapter 5.

It is reasonable, therefore, to suggest that nobody could truly predict what course Ghanaian development would have taken without colonization. However, it is the belief of the writer that a close examination of factors relating education to industrial development in general, and specifically to rural industrialisation, would be helpful at this stage. It could also assist Ghanaian education planners and

economic policy-makers to co-ordinate these two sectors in a more meaningful way to the benefit of the country in future policy statements.

Ghana was, and still is, predominantly an agricultural country and its economy, until some two decades ago, was mainly subsistence in nature:

Ghana is a predominantly agricultural country, with approximately 22% of the total land area being devoted to agricultural production. In 1976 it was estimated that the agricultural sector, which consists mainly of small-scale subsistence production, employed about 60% of the population, and accounted for approximately 45% of the Gross Domestic Product (GDP).<sup>1</sup>

Although the economy of Ghana has begun to turn towards a mixed economy over the past twenty years, the majority of Ghanaians still live in rural areas and, in many cases, under deprived conditions (See Section 1:0:7 Staff Accommodation at Dambai Training College). The latest population census conducted in Ghana was in 1970, and among other things, it stated, for example, that only 19.2% of the country's population could be termed as living in urban centres.<sup>2</sup> Even so, Addo draws attention to the fact that industrialisation and the consequent result of urbanization are mid-twentieth century phenomena.<sup>3</sup>

In Ghana, as Peil correctly points out, urbanization at the three main centres of Accra-Tema, Kumasi and Sekondi-Takoradi, is the direct outcome of industrialisation policies of the mid-twentieth century Government.<sup>4</sup> Consequently, she argues that most of the

1. Lloyds Bank, Economic Report: Ghana, London, July, 1979, p.13.

2. See the Introduction to 1970 Census of Ghana, already referred to in Section 1:0:7.

3. Addo, N.O., in Ominde, S.H., and Ejioglu, C.N., (1972), op. cit., p.243.

4. Peil, M., The Ghanaian Factory Worker: Industrial Man in Africa, C.U.P. Cambridge, 1972, The Introduction.

population found in these main urban centres are migrants from rural areas whose purpose of gravitating to the centres lies in the search for industrial employment in the urban-oriented large-scale-industry modern sector. Alajo, referred to in chapter two,<sup>1</sup> is an example.

It is clear, therefore, that the educated rural migrants who invade urban centres are initially less experienced in coping with urban living conditions and industrial problems.

#### 4:0:1.1 Factors Influencing Educo-Industrial Reform in Ghana Since 1960s.

In Ghana, as we turn to examine some of the factors that necessitated reforms in the educo-industrial relationship, one important consideration which must not be overlooked, is the exclusive techno-economic view that colonial governments sometimes had of the principal mechanisms of development. For this reason, all too often, colonial governments, and to some extent, current nationalist governments, appealed to economists who were usually imbued with Western orthodox capitalist notions to solve the problems of underdevelopment. For the first time, in 1978, however, the World Bank was advised as:

At bottom, what is meant by 'development' is a process of enabling people to accomplish things that they could not do before - that is, to learn and apply information, attitudes, values and skills previously unavailable to them. Learning is not usually enough by itself. Most aspects of development require capital investment and technical processes. But capital and technology are inert without human knowledge and effort. In this sense, human learning is central to development.<sup>2</sup>

This new mode of thinking about the role of education in the process of development sparked off complex social re-evaluation exercises upon the inherited socio-economic system in Ghana as far back as early

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1. See Section 2:0:0 for notes on suburban Accra, Alajo.

2. Bell, D.E., (Chairman) Report of the External Advisory Panel on Education to the World Bank, World Bank, Washington, 31 October 1978, p.4.

1950s. But in the early 1960s, and the late 1970s, the awareness of the important place accorded education became almost an obsession and every debate was incomplete if it was not related to education.

In early 1960s, through to late 1970s, for instance, one obvious administrative difficulty that became a topic of national debate was the lack of co-ordination between planners of education and policy makers for the employment of school-leavers. At that time, especially, and probably continuing up to the present day, the Ministry of Education, and indeed many educators, seem to be concerned mainly with turning out literate citizens without apparent consideration for what happens to school-leavers. Ankrah, talking about the school-leavers' unemployment problem in Ghana in 1968, had this to say:

With the economy still developing and about 70,000 school-leavers joining the labour force every year, unemployment has always been a problem in this country. The previous administration tackled it by keeping in employment workers whose contribution to the economic well-being of the nation was negligible.

Consequently, it could be argued that Ghana's education system tends to frustrate, instead of support, the economy in so far as it continues to produce large numbers of unemployed or semi-employed school-leavers, the majority of whom have acquired no particular skills in school relating to the limited but specific employment possibilities.

Foster asserts that a crucial influence in the exercise of the transfer by colonial powers of education to places such as Ghana was the economic factor.<sup>2</sup> He, therefore, asserts that the colonial

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1. Ankrah, J., General (National Liberation Council), Two Years After Liberation. Ministry of Information, Accra, 1968, p.11.

2. Foster, P., (1972), op. cit., p.3.

attitude had set the tone for subsequent developments in the Ghanaian education system. Looked at from a colonial master's point of view, this assertion appears to be correct; but existing evidence in Ghana suggests a contradictory conclusion. From a Ghanaian point of view, it is needless to stress the fact that characteristics of economic underdevelopment such as all forms of unemployment, youth migration from rural to urban areas and growth of numerous shanty towns around cities all increased with the introduction of European education or formal schooling. Busia,<sup>1</sup> for instance, observes that in West Africa, the major concern of colonial educators was to produce catechists and low grade clerks; but never highly skilled personnel. The same theme has been echoed in several other writing such as McWilliam, H.O.A., The Development of Education in Ghana, Longmans, London, 1975; Barkan, J.D., An African Dilemma, DUP, London, 1975, and Graham, C.K., The History of Education in Ghana, Frank Cass, London, 1971.

The role of education in colonial times, therefore, was not perceived as supportive of any form of industrial or economic activity in the sense that Ghanaians may view it. Patterns of Ghanaian economic development in mid-twentieth century suggest that colonial planners did not envisage, even in a very remote sense, that Africans were capable of becoming literate skilled workers in an organized and advanced industrial situation. It is however possible that the colonial rulers did not deliberately set out to plan the Ghanaian education system in the way it turned out to be. But, all the same, for these reasons, it appears that no developments were effected in the education system in response to the quite considerable

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1. Busia, K.A., 'Educational Policy in West Africa: A Rejoinder', in Overseas Education, Vol. XVII, No. 4, July 1946, p.344.



economic growth revealed by the time of independence. In other words, there was nothing to fit school-leavers for jobs that tended to demand high levels of literacy and specialised skills despite the fact that such jobs were becoming available. It is, therefore, not surprising that in Ghana, like in most developing countries, a curious situation exists, even up to the present, where great numbers of unemployed school-leavers abound, while at the same time the country actually seeks skilled personnel from Western developed nations and has to pay heavily for their services, especially, in consultancy industrial positions. Although it could be said that this curious situation is not as acute in Ghana as it is in many other African countries, it still remains a major problem for the education systems of such countries to solve. One of the purposes of this thesis is to examine the present contribution that Ghana's education system makes to industrial skills and attitudes of workers in RSSI.

The type of industrial development that has been instituted in Ghana since the mid-twentieth century was geared towards the process of import substitution. However, since the manufactures required another set of imports anyway, freedom from dependence in the industrial field was not significantly enhanced. Although there are many plausible and obvious reasons why an end to industrial dependence on technologically more advanced nations may be a welcome move to Ghanaians, consideration of the present structure of the World Economic Order suggests that little option is open to Ghana to do so; for many other sectors of the Ghanaian social structures are firmly tied to the world system. Undoubtedly, some of these import substitution projects enjoy advantages such as the saving of foreign exchange and the creation of employment opportunities for unskilled as well as skilled people who are prepared to work in urban areas. However, as

a result of the urban-oriented large-scale nature of the industrialisation policy, a number of structural problems arise in the industrial sector.

The first major problem that visibly engaged the attention of planners in this sector was the inability of the sector to adequately absorb the large numbers of school-leavers. It is estimated that between 70 to 90 per cent of school-leavers in Ghana come from rural areas. These youth are children of rural farmers, fishermen, traders and craftsmen and only a very small proportion of them have the advantage of gaining access to further education which may enable them to work in large-scale industries or in government offices in the cities as senior personnel.

But the great majority have to find their life vocations in rural areas. They are more likely to find work in the characteristic small-scale enterprises in their present home localities or in other villages or small towns. The Ghana Government is, therefore, faced with seemingly infractable problems of determining how best to intervene in providing appropriate education to these young people in order to fit them for the tasks of rural small-scale industries. Furthermore, it is imperative to expand work opportunities available in the rural industrial sector for the benefit of rural growth.

In 1974, therefore, the Ghana Government called for a policy review of the industrial sector. Details of the review proposals were accordingly documented in a pamphlet entitled: Proposals For the Establishment of A National Board for Small-Scale Industry. Some of the major observations made in the proposal were:

(i) That the Government has recognized the urgency of accelerating the growth and improving the productivity of small-scale rural industries as a necessary step to stimulate and sustain the growth of

the National economy.

(ii) That the Government's wish to shift emphasis from large-scale, capital intensive manufacturing industry toward privately owned small-scale industry, especially in rural areas, is arrived at as a measure to combat the high levels of school-leaver unemployment in rural areas and the tendency of school-leavers to migrate into the cities.

(iii) That despite the existence of a strong institutional infrastructure for the growth and development of large-scale industries in Ghana, the contribution of this sector to the gross domestic product has not been significant, especially towards rural development.

The Proposals enumerated five reasons as to why rural small-scale industrial development should take precedence over the large-scale sector. In summary, the advantages of rural small-scale industrial development could be said to be:

(i) The ability of this sector to utilize about 85% of locally found raw materials with limited import content.

(ii) It has capital saving attributes and local labour-using potential; for studies on this sector have established that 80% of the total labour force was available in Ghana.<sup>1</sup>

(iii) Because of the relatively simple technology employed by rural SSI, skill acquisition and transfer to the local labour force are greatly enhanced.

(iv) The sector requires low levels of investment capital especially

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1. The writer was informed by the Ministry of Industries that national and international bodies such as the Canadian International Development Agency (CIDA), Management Development and Productivity Institute (MDPI) and Council for Women's Development (CWD), were commissioned by the Government to conduct feasibility studies on this sector. Although the studies are now completed and reports have been submitted, the information contained in these reports remains confidential at the present time. Access was not, therefore, possible.

for imported machinery, equipment and spare parts.

(v) The sector is a major contributor to the production and processing of food, manufacture of consumer goods and repair of transport facilities.

In 1973, before the review of Ghana's industrialisation policy, Agbo, Commissioner for Industries, explained that large-scale industries were no longer serving the economic purpose for which they were intended:

As our population grows our import requirements also grow and today Ghana spends at least about £150 million a year to import industrial raw material. Even this amount is not sufficient to enable our factories to operate at maximum capacities as balance of payment considerations limit such importation. The result of all these is that our factories have to operate below installed capacities. This hampers the growth of the national economy.

It must be pointed out that this was not the first time that the industrial policy of Ghana had been reviewed. In 1951, for instance, Lewis, a Nobel Prize laureate in the Economics of Developing Areas, was invited to Ghana to review and recommend appropriate industrialisation strategies for the country.<sup>2</sup> It is noteworthy that Lewis's recommendations in 1953 were similar to those made in 1974.

To return to educational reforms in Ghana which have a direct bearing on rural industrialisation, a very important point to note is the unison with which all post-independence reform-commissions emphasise the need to relate the school curriculum to local conditions. The effective colonial period in Ghana ended in 1951 when a Nationalist Government was elected to manage the affairs of the

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1. Quoted from 'Speech by Major K.B. Agbo, Commissioner for Industries at the Opening of an Exhibition of Indigenous Ghanaian Goods Held at the Trade Fair Site, Accra', in Speeches and Interviews by Commissioners, Vol. 1., Information Services Dept., Accra, 1973, p.367. The Ghana cedi (¢) is equivalent to £0.159. (¢6.3 = £1.)

2. Arthur Lewis findings were documented in the booklet: Gold Coast and Industrialisation: A Report, Gold Coast Government, 1953.

country. The first outstanding features of African leadership in the newly independent Ghana, was the overwhelming emphasis placed upon programmes of educational expansion. Essentially, in 1951, the Ghana Government instituted a programme termed the Accelerated Development Plan for Education. The aim of this plan was to expand the primary and middle school system in order to obtain the maximum enrolment of children at that level. But at the root of this programme of expansion, Foster notes that the political leaders stressed the necessity for an educational system which would reflect 'African nature and substance'.<sup>1</sup> Regretably, although these policies were pursued rigorously, it appeared that only increases in enrolments were achieved (See Table 4). Aspects of localising the curricula seemed to fail because there was reluctance on the part of educational planners to allow either structure or content of the educational programme to deviate very markedly from the previous system which was modelled on that of England.

It was no surprise, therefore, that immediately after the 1966 Coup in Ghana, the Government appointed a committee to review the entire educational provision of the country. The Report which came out in 1967 re-iterated the problem:

The education they (elementary school leavers) have received is not oriented toward productive employment. There is a tradition that anyone who has been to school should be given a white-collar job and consequently these young people drift to the towns in search of the kind of work they think they are suited for, and create social, as well as employment problems. There is no longer much demand for this level of manpower, and it is said the pupils are being educated for frustration.<sup>2</sup>

This theme is not new: in 1964, for instance, Busia, an ex-Prime Minister of Ghana had complained about the type of

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1. Foster, P., (1972), op. cit., p.186.

2. Ghana Government, Report of the Education Review Committee Appointed by the National Liberation Council, June 1966 - July 1967, Ministry of Information, Accra, 1967, p.64.

TABLE 4.

Ghana: The Growth of the Primary-School  
Enrolments, 1952-53 - 1959

Year	The Colony <sup>1</sup> Pupils <sup>2</sup>	Ashanti <sup>3</sup> Pupils	Trans Volta Pupils	Northern Pupils	Total Pupils
1952-53	183	90	58	7	338
1954	216	105	72	10	403
1955	228	112	76	13	429
1956	237	114	77	18	446
1957	250	120	78	20	468
1958	250	121	77	24	472
1959	253	128	76	27	484

Middle Schools.

1952-53	51	26	14	1	92
1954	57	28	17	2	104
1955	63	30	19	2	114
1956	64	31	18	3	116
1957	71	32	21	3	127
1958	78	35	23	5	141
1959	82	42	25	5	154

Notes:

1. Since 1951 administrative regional boundaries have been changed. The term colony now represents, Greater Accra, Eastern, Central and Western Regions.
2. The number of Pupils has been expressed in thousands.
3. Now Ashanti and Brong-Ahafo Regions.
4. Now Northern and Upper Regions.

Source: Adapted from Foster, P., (1972), op. cit., p.187.

training he received in the Ghanaian education system:

Over the years as I went through college and university, I felt increasingly that the education I received taught me more and more about<sup>1</sup> Europe, and less and less about my own society.

Busia's protest is not unique. In fact, it echoes the feeling of many educated Ghanaians and, probably, of many more educated Third World people elsewhere.

The recommendations of the 1967 Report were instituted in Ghanaian schools as from 1968. But the appointment of yet another review committee in March of 1972, shows clearly that the problem is far from solution. The report of the 1972 - review-committee was published in 1974 under the title: The New Structure and Content of Education for Ghana, or the Dzobo Committee Report. This report surpasses, by far, the previous ones in relation to the development of skill training required for work in rural small-scale industries. Under the basic principles underlying the need for new proposals, the report states that:

- (i) Before beginning formal education, every child should have between 18 to 24 months of preparation and pre-disposition;
- (ii) The child should begin formal education at the age of six;
- (iii) The length of basic formal education should be nine years and this should be free and compulsory. (This is different from the present ten years for formal basic education and, in many cases, not compulsory).
- (iv) Practical programmes which lead to the acquisition of skills should be an essential part of all formal education;
- (v) Throughout the entire pre-university course, emphasis should be laid on (a) the development of practical activities and the acquisition of manual skills, (b) the development of the qualities of leadership, self-reliance and creativity through the promotion

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1. Busia, K.A., (1969) op. cit., p.7.

of physical education, sports and games, cultural and youth programmes, (c) the study of indigenous language, science and mathematics;

(vi) Teacher education should be relevant, and geared towards the realization of the stated principles and objectives of the new reforms;

(vii) In general, institutions shall be essentially non-residential in contrast to previous patterns.

The majority of the points raised in the 1974 principles, form part of the previous reforms, but they are not given the attention they deserve in practice.

Structurally, the introduction of the Junior Secondary and Senior Secondary Courses constitute a great departure from previous patterns (Compare Figures 1 and 2). In addition to the structural change, the curricula at these levels have been injected with more practical subjects. For example, the entire Junior Secondary Course is eventually to comprise of:

- A Ghanaian language
- A second Ghanaian language or a Modern/Classical language
- English
- French
- Social Studies
- Mathematics
- General Science
- Cultural Studies (e.g. religion, music, including drumming and dancing, drama, arts and crafts
- Physical education
- Agricultural Science; including poultry and livestock keeping
- Home Science and Pre-nursing
- Youth Programme, including Community Service.

In addition to these compulsory subjects, each pupil is expected to choose at least two of the following subjects:

- Woodwork
- Masonry
- Metalwork
- Technical Drawing
- Pottery
- Commercial Subjects



- Marine Science (Fishing)
- Automobile Practice
- Crafts
- Beauty Culture (including hairdressing)
- Tailoring
- Dressmaking
- Catering.

The above subjects could be termed the electives of the system. In the previous proposals, the electives were introduced into the curricula of Secondary/Technical/Vocational or Teacher Training Colleges.

Since 1974, however, only selected primary and middle schools have been allowed to practice the Dzobo Committee Report recommendations. 'Africanization' of the Ghanaian education system, therefore, may be said to be underway even if it is in a small way. These early activities are very crucial to what may subsequently happen, for educational considerations are, after all, tied closely with political decisions. But while 'Africanization' of the school curriculum is being slowly achieved, thousands of Ghana's youth are still in effect being educated for frustration in the traditional system.

The crucial issue which the context of the Ghanaian scene raises for this study is that whatever education is provided for rural youth, their chances of self-improvement by way of further studies or employment, will be marginal unless there is a wider framework for improving rural conditions through rural development. Emphases on practical subjects in the school curricula, therefore, bias school-leavers' attitudes towards labour-intensive strategies which may be useful in the setting up and operation of rural small-scale industries.

One of the tasks of this study is to find out how far school-leavers' attitudes are favourable to rural industrial development.

In the next chapter, is examined Ghana's RSSI in a theoretical framework.

CHAPTER FIVE

GHANA'S RURAL SMALL-SCALE INDUSTRIES:  
A THEORETICAL FRAMEWORK FOR ISSUES TO  
BE EXAMINED

5:0:0 Theoretical Questions to be Examined

In this section, a review is undertaken of some important and relevant theoretical literature related to the major concepts and factors giving a character to inter-relationship of issues being examined by this thesis. In other words, this section aims at answering questions such as: What do we already know about theories of development which relate to the immediate area of this thesis? How do the key concepts relate to Ghana's rural education and small-scale industrialisation? How do these theories assist us in the understanding of the problem being investigated as stated under Sections 2:0:0 and 2:0:1 of this thesis?

Some of the major issues which this study aims to examine are: Is there any relationship between formal education attainment of RSSI workers and widespread establishment of rural industries in Ghana? How does formal education attainment of workers influence workers' attitudes to work in this sector? Do RSSI workers think that the school syllabus and what is learnt at school are relevant to their work in the RSSI sector? Do RSSI workers think that their attitudes are influenced by teachers and the school system as a whole?

These questions focus the process of examination on relationships and issues which this thesis attempts to investigate. In addition they assisted in the research design and, later, in the

discussion and interpretation of research results.

5:0:1 Human Capital Development: Theories of Schooling .

At the beginning of 1960, the UN declared the 1960s as the 'First Development Decade' for the newly independent nations of the Third World. At that time, and probably up to the present, many African leaders were of the opinion that European education was the keystone for rapid economic development and modernization. The process of economic development and modernization, as it was perceived by African leaders, found expression at the Addis Ababa Conference of 1961<sup>1</sup> which was organized by UNESCO for Ministers of Education of independent African nations. At that conference, there was widespread agreement among African leaders about the need to revise school curricula in their respective countries. They especially emphasised the need for the revised curricula to be made relevant to the development of human resources to support sectors such as agriculture and industry.

To explore possible reasons as to why the formal system of education was focused upon by the leaders of African countries in their human resource development venture of 1960s and 1970s it would be worthwhile to take a closer look at some of the prevailing theories about schooling. John Simmons,<sup>2</sup> evaluating past debates on the relationships between education and human capital formation, concludes that two distinct theories have so far emerged:

(i) The Human Capital or Incrementalist Theory .

Briefly, this theory states that 'an investment in education increases labour's productivity by embodying in that labour

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1. U.N. Commission for Africa, Conference of African States on the Development of Education in Africa, UNESCO/ED/181, Addis Ababa, 1961

2. Simmons, J., 'An Overview of the Policy Issues in the 1980s', in Simmons, J., (Editor), The Education Dilemma, Pergamon Press, Oxford, 1980, p.24.

increased skills and knowledge'.<sup>1</sup>

(ii) The Structural Theory.

This theory holds that educational systems are best understood in terms 'of their position in maintaining the status quo by reproducing the social order'.<sup>2</sup>

Structuralists argue that, while basically agreeing with the Incrementalists that schooling does increase the productive capacity of workers, many of the inefficiencies and obvious inadequacies of educational systems such as high drop out rates, functional illiteracy among primary and secondary school leavers, educated unemployment and the repeated failures of educational reforms are, in fact, quite rational. This rationality could, best, be understood in terms of the role schools play in the reproduction of the society and in the integration of schooled youth into the labour force of both developed and developing countries.

This argument could be reduced to five main propositions. The first proposition could be stated as: educational policy could not be viewed as isolated from the context of an overall social policy. That is, to change or improve an educational system, requires a reform not only of education but also of the political and, probably, economic structures as well. Incrementalists differ in this respect because they view schooling as a technical process and, therefore, argue that any educational reform is possible through the strengthening of planning methods such as improving teacher training or raising teachers' salaries and provision of more teaching materials in classrooms without necessarily effecting basic political and economic changes. Structuralists, on the other hand, contend that such planning techniques depend, by and large,

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1. Ibid. p.24

2. Ibid. p.24.

on political and economic decisions which must be in accord with the reproduction of the social system concerned. Bowles and Gintis,<sup>1</sup> for instance, reinforce the Structuralists' approach in an American context, by stating that:

We take our stand ... maintaining that the range of effective educational policy in the United States is severely limited by the role of schooling in the production of an adequate labour force in a hierarchically controlled and class-stratified production system. Capitalism, not technology or human nature, is the limiting factor.

The second Structuralist proposition could be stated as: the basic structure of social relations of the economy and its institutions such as the degrees of inequality, the forms of authority or the extent of subordination and centralisation of responsibility are likely to be reproduced in the way the schools operate. In Ghana, for example, Foster observes that high professionalism of parental occupations characterises access of children to higher education.<sup>2</sup> This observation, of course, suggests better occupational opportunities for children of professional classes at the expense of children whose parents are unskilled or semi-skilled.

The third proposition is that the basic role of schooling is to produce a work force, not to develop, qualitatively, the capabilities of individuals. Structuralists argue that what appear to be apparent returns to investment in human capital are due more to the screening effects of schools through examination and certification rather than to the development of individual talent. This proposition has been re-iterated by Ronald Dore, when he says, especially about developing countries:

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1. Bowles, S., and Gintis, H., Schooling in Capitalist America, Routledge and Kegan Paul, London, 1976, p.20.

2. Foster, P., (1972), op. cit., p.242.

And the learning and reproducing is all just a means to an end - the end of getting a certificate which is a passport to a coveted job, a status, an income. If education is learning to do a job, qualification is a matter of learning in order to get a job.<sup>1</sup>

This 'percolative' function of schools in the context of societal reproduction has two main effects. First, it reduces learning to a mere ritualistic exercise; and learning ceases to be an experience which is meant for acquiring knowledge for its own sake, or even acquiring knowledge for its utilitarian value in the sense that it could be applied to problem solving. Secondly, the students who manage to 'percolate' through the system are immodestly imbued with a high sense of superiority, of personal status through academic achievement. They therefore expect certain privileges to be accorded them from society instead of returning their services to the society. This state of affairs is rampant in many newly independent countries of the Third World where a limited elite stepped into the shoes of their colonial masters after independence.

Such was the case in Ghana in the 1950s; and the consequences were elitist arrogance and inefficiency. A case in point is the one cited under Section 3:0:3 of this thesis, where the policy of Ghanaianization prevented incompetent but qualified African officials from dismissal. A detailed discussion of this percolative characteristic of African school systems, however, is beyond the scope of this thesis. But it will suffice to point out here that Maslow, a psychologist of great standing, had long identified the difference between self-actualising activities and activities which merely fulfil, what he termed, 'lower level deficiency needs' in

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1. Dore, R., The Diploma Disease, Unwin Education Books, London, 1976, p.8.

lives of human beings. In self-actualising activity, for instance, Maslow says of such persons that:<sup>1</sup>

The appetites become intensified and heightened. They grow upon themselves and instead of wanting less and less, such a person wants more and more of, for instance, education ... Growth is, in itself, a rewarding and exciting process, for example, the fulfilling of yearnings and ambitions, like that of being a good doctor, the acquisition of admired skills, like playing the violin or being a good carpenter; the steady increase of understanding about people, or about the universe, or about oneself: the development of creativeness in whatever field or, most important, simply the ambition to be a good human being.

But of a 'deficiency-motivated' person, whose needs may only be satisfied from outside, he says:

... cannot be said to be governing himself, or in control of his own fate. He must be beholden to the sources of supply of needed gratifications ... he must adapt and adjust by being flexible and responsive and by changing himself to fit the external situation. He is the dependent variable:<sup>2</sup> the environment is the fixed independent variable.

The distinction here is a clear one to people familiar with Third World school systems where rote-learning for examinations distorts the educational process and, eventually, creates 'qualified' but inefficient workers.

The fourth proposition which could be deduced from the Structural Theory of Schooling is that the school system is used by self-interest-politicians to win support from middle and upper income parents regardless of costs in terms of social inaccessibility and inefficiency in manpower allocation. At the same time, the school system is used to over-supply both skilled and unskilled labour in order that the surplus job seekers would keep the labour

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1. Maslow, A., 'Deficiency Motivation and Growth Motivation', in McClelland, D.C., and Steele, R.S., Human Motivation: A Book of Readings, General Learning Press, New York, 1974, p..241.

2. Ibid... pp. 242-3



force in line. Incrementalist theory tends to view the role of schools differently. In its view, the basic function of schools is to generate skills among the pool of unskilled labour in society. It sees, as a problem, schools being unable to cope with rapid generation of skilled human resources.

Finally, the Structuralists argue that education policy does not determine advantages or disadvantages between various social objectives. Instead, it is suggested that political and economic forces shape sectorial reforms and prosperity. The main point here is that basic changes have to be made in the power relations of different interest groups and the structure of economic mechanisms before the dysfunctions of the school system will disappear.

The two theories of schooling discussed above are normally used to describe the effects of formal education on individuals and the economy in a selected ecological and geographical setting. Although Blaug recently reviewed these theories and concluded that incrementalist or human capital theory is now in 'crisis' and that its basic arguments are 'increasingly unconvincing', it appears that African leaders were and, still are, much influenced by the human capital theory in formulating education policies concerning manpower generation.<sup>1</sup> The widespread belief in the human capital theory of leaders in Ghana is clearly stated by Armah as:

The C.P.P. (Convention People's Party) government believed that measures to improve education and health were an investment in human resources.

The faith expressed in the human capital theory of education as a panacea for solving all ills of backwardness in Third World

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1. Blaug, M., 'The Empirical Status of Human Capital Theory: A Slight Jaundiced Survey', in Journal of Economic Literature, September, 1976.

2. Armah, K., Ghana: Nkrumah's Legacy, Rex Collings Ltd., London 1974, p.72.

countries, rightly or wrongly, derives from a genuine desire by Third World leaders to develop. Unfortunately, it appears that the most immediate model of development which becomes obvious to them is the one usually pursued by their metropolitan masters: the Western economic model. Turning to this model, Third World leaders discern the proliferation of scientific and technological discoveries, the progress in economic theory and the growth of economies have caused a rise in the quality of living standards. At the base of this type of development, they reason, lies the power of human resources. Although this kind of reasoning appears to be plausible, it is in fact illusory since it absolves questions about issues concerning creation of non-farm jobs which require high levels of capital investment. The scarcity of severely limited capital in Third World countries constrains the number of modern industrial jobs that can be created, because investment costs for such jobs are high.

A probable soft option out of a situation such as this for African leaders seems to be a policy which seeks to increase the use of labour relative to capital; and schools seem to be assigned the role of creating the pool of 'educated' workers required for such a policy. Consequently, Third World leaders appear to be little disturbed by critics of the human capital theory as they seem to envisage a quick accession to development through the perfection of human capital which, <sup>in</sup> numerical terms, they possess in abundance.

To understand the conceptual framework of Third World leaders, especially in the case of Ghana, it might be appropriate to review the main arguments advanced by supporters of the human capital theory. Schultz,<sup>1</sup> the man described by Blaug<sup>2</sup> as the 'father' of

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1. Schultz, T.W., 'Investment in Man: An Economist's View', in Social Service Review, June, 1959.

2. Blaug, M., Economics of Education: A Selected Annotated Bibliography, Vol. 3, Pergamon Press, London, 1970, p.15.

the concept of human capital, for example, argues that there is an alternative method for calculating a nation's wealth besides the traditional economists view of only using accumulated data on past investment indices of non-human capital goods, of land and machinery. He asserts that a nation's capital stock is incomplete without the inclusion of human capital. He argues that:

Although it is obvious that people acquire useful skills and knowledge, it is not obvious that these skills and knowledge are a form of capital, that this capital is in substantial part a product of deliberate investment, ... and that its growth may well be the most distinctive feature of the economic system.<sup>1</sup>

Other studies done by Denison,<sup>2</sup> Miller,<sup>3</sup> Houthakker<sup>4</sup> and Becker<sup>5</sup> in the United States of America showed that education: "seemed to account for about a fifth of the growth of the United States economy from 1929 to 1957".<sup>6</sup> Complementary evidence from the United States, although of a different sort, dealing with earnings and schooling, done by Friedman and Kuznets<sup>7</sup> and Mincer,<sup>8</sup> provide still another type of supporting evidence. But it must be acknowledged that it is difficult to obtain data on earnings

1. Schultz, T.W., Investment in Human Capital, The Free Press, New York, 1971, p.24.

2. Denison, E.F., 'The Sources of Economic Growth in the United States and the Alternatives Before Us', in The American Economic Review, Vol. 57, May, 1967.

3. Miller, H.P., 'Annual and Lifetime Income in Relation to Education: 1939-1959', in The American Economic Review, Vol. 50 December, 1960.

4. Houthakker, H.S., 'Education and Income' in The Review of Economics and Statistics, Vol. 41, February, 1959.

5. Becker, G.S., 'Underinvestment in College Education', in The American Economic Review, Vol. 50, May, 1960.

6. Schultz, T.W., (1971), op. cit. p.138.

7. Friedman, M., and Kuznets, S., Income from Independent Professional Practice, National Bureau of Economic Research, New York, 1945, Passim.

8. Mincer, J., 'Investment in Human Capital and Personal Income Distribution', in The Journal of Political Economy, Vol. 66, August, 1958.

and schooling for many countries, especially of the Third World and for this reason, it becomes difficult to generalise this assertion. However, Gounden's<sup>1</sup> study conducted in the same area for India, Carnoy's<sup>2</sup> done in Mexico and Bowles's<sup>3</sup> done in Nigeria all show that there is a relationship between personal earnings and schooling.

A very significant point worth noting is that even critics of the human capital theory do not entirely disagree with the concepts advanced by the theory. The critics of the theory could fall under three categories:

(i) Those who question the statistical and analytical methods adopted by structuralists in analysing and interpreting data in support of the theory. Under this category fall Bowman,<sup>4</sup> Balogh and Streeten,<sup>5</sup> and Sen.<sup>6</sup> Basically, these three papers take issue with the analytical structure and the variables employed by Structuralists in connection with calculating human capital. It should be acknowledged, for example, that although Bowman criticised the analytical and statistical framework for

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1. Gounden, A.M.N., 'Education and Economic Development', Kurukshetra University Unpublished Doctoral Thesis, India, 1965, quoted in Schultz, T.W. (1971)

2. Carnoy, M., 'The Cost and Return to Schooling in Mexico', University of Chicago Doctoral Dissertation, 1964 (Unpublished).

3. Bowles, S.S., 'The Efficient Allocation of Resources in Education: A Planning Model with Applications to Northern Nigeria', Harvard University Unpublished Doctoral Thesis, 1967.

4. Bowman, M.J., 'Human Capital: Concepts and Measures', in Mushkin, S.J., (Edit.) Economics of Higher Education, Govt. Printing Office, Washington, 1961.

5. Balogh, T., and Streeten, P.P., 'The Coefficient of Ignorance', in Bulletin of the Oxford University Institute of Economics and Statistics, May 1963.

6. Sen, A.K., 'Economic Approaches to Education and Manpower Planning', in Indian Economic Review, April, 1966.

supporting the human capital theory in 1961, she later wrote a convincing paper in its defence.<sup>1</sup>

(ii) Those who do not necessarily disagree with the theory but are concerned about inadequacies of the level of data used. This group caution the enthusiasm and application of this theory on a universal scale until such a time that adequate data has accumulated for both developed and developing countries on the subject to warrant a definite theory to be posited. Under this category are Blaug<sup>2</sup> and Lumsden.<sup>3</sup>

(iii) Those who argue that the variables employed in defining human capital are incomplete and that the concept could better be expressed in terms of the 'Rate of Return on Investment'.<sup>4</sup> Rate of returns on investment implies an all-inclusive concept of capital which embraces all factors connecting capital accumulation and investment in so far as they describe economic growth or decay. In this sense, 'human beings',<sup>5</sup> in themselves, are capital separate from 'education capital': such as structures, equipment and inventories. Johnson,<sup>6</sup> for instance, argues that when 'education capital' is applied to human beings, a new capital emerges in the form of 'technical change' or 'advance in knowledge', or what some economists prefer to call the 'residual factor', which

1. Bowman, J.M., 'The Costing of Human Resource Development' in Robinson, A.E.G. and Vaizey, J. (Editors), Economics of Education, Macmillan, London, 1966, pp.421-450.

2. Blaug, M., 'The Relationship Between Economic Development and Education or Literacy', in School Review, Vol. 74, 1978.

3. Lumsden, K.G., (Edit.), Efficiency in Universities, Elsevier, Amsterdam, 1975.

4. Solow, R.M., Capital Theory and the Rate of Return, North Holland Publishing Co., Amsterdam, 1963, p.16.

5. See Johnson, H.G., 'The Political Economy of Opulence', in The Canadian Journal of Economics and Political Science, November, 1960 p.562, where he states: 'The labourer is himself a produced means of production, an item of capital equipment'.

6. See Johnson, H.G., in Vaizey, J., (Edit.) The Residual Factor and Economic Growth, OECD, Paris, 1964, pp. 319-327. See also Vaizey, J., The Economics of Education, Faber and Faber, London, 1962, Passim.

in itself induces quality in to the production function or causes changes in the quality of labour.

Some exponents of the incomplete human capital theory in addition to Solow and Johnson, are Jorgenson<sup>1</sup> and Griliches.<sup>2</sup> The issues raised by these researchers, as in the human capital theory itself, are inconclusive and the search for answers seems to have hardly begun. But the 'last word', in the context of human capital theory and development of African economies and, especially with Ghana's economic development, rests with Hinchliffe.<sup>3</sup>

5:0:2 Rate of Return to Education in Ghana: Hinchliffe's Studies.

The challenge of this thesis is to observe, investigate, evaluate and describe prevalent characteristics and notable variables that can be identified with representative rural-small-scale industrial workers of Southern Ghana. This chapter sets out to put the problem of study into a theoretical framework which would assist in explaining variables such as factors controlling establishment of schools in the context of Ghana Government policies on education in relation to industrialisation. It has been suggested above under Section 5:0:1 that the policies of education pursued by leaders in Ghana seem to have been influenced by the structuralist-theory, and specifically on the rate of return to investment in

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1. Jorgenson, D.W., 'The Embodiment Hypothesis', in The Journal of Political Economy, Vol. 74, February, 1966.

2. Griliches, Z., 'Research Expenditures, Education and the Aggregate Agricultural Production Function', in The American Economic Review, Vol. 56, December, 1964. Also see, Griliches, Z., and Jorgenson, D.W., 'Sources of Measured Productivity Change: Capital Input', in The American Economic Review, Vol. 56, May 1966.

3. Hinchliffe, K., 'The Rate of Return to Education in Ghana' in Economic Bulletin of Ghana, June, 1971. Hinchliffe also did some work on Ghana and Nigeria: 'Educational Planning Techniques for Developing Countries with Special Reference to Ghana and Nigeria', Unpublished M. Phil. Thesis, University of Leicester, 1969. Apart from these two studies, the study of Bowles (1967), already mentioned in this chapter constitute the present range of studies done on this field of return to education in West Africa.

education in Ghana, have been conducted by Hinchliffe.<sup>1</sup> The pros and cons of the mathematical models and arguments advanced in Hinchliffe's studies will not be discussed here, instead, the reader is referred to the rich literature available on the subject such as the earlier works by Solow<sup>2</sup> and Schultz,<sup>3</sup> and latter works by Griliches,<sup>4</sup> Hines<sup>5</sup> and Psacharopoulos.<sup>6</sup>

Hinchliffe asserts that casual observation and statistical data from Ghana indicate that people with more education (higher qualifications) earn higher wages relative to people with less education (lower qualifications) in modern sector jobs. To illustrate this assertion, for example, in order for a secondary school leaver to enjoy this extra pay benefit over a middle school leaver, a certain amount of money would have to be invested in higher education for the secondary school leaver (see Ghana's Education System Structure under Section 1:0:1, Fig. 1.) The amount invested in secondary education would include direct expenses such as tuition fees and stationery as well as indirect costs in the form of foregone earnings while studying. Higher qualifications, therefore, are like buying promises to earn more annually in the future at the expense of certain present nominal costs. In the United States of America, for instance, this particular type of

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1. Hinchliffe, K. (1969 and 1971), ibid.
  2. Solow, R.M., (1963), op. cit.
  3. Schultz, T.W., 'The Rate of Return in Allocating Investment Resources to Education', in Journal of Human Resources, Summer, 1967.
  4. Griliches, Z., 'Notes on the Role of Education in Production Functions and Growth Accounting' in Hansen, W.L., Education, Income and Human Capital, National Bureau of Economic Research, New York, 1970.
  5. Hines, F., Tweeten, L., and Redfern, M., 'Social and Private Rates of Return to Investment in Schooling by Race-Sex Groups and Regions', in Journal of Human Resources, Vol. 3, 1970.
  6. Psacharopoulos, G., (Assisted by Hinchliffe, K.), Returns to Education: An International Comparison, Elsevier Scientific Publishing Co., London, 1973, especially Chapters 1, 2, 3, and 4.

investment in a college graduate has been shown to yield 20% more earnings annually over a high school graduate.<sup>1</sup> The rate of 20% more earning power enhanced by a college graduate is known as the internal rate of return to investment in education. Rates of return to investment in other levels of education are calculated in the same way.

In Ghana, by using government 1967 pay scales for secondary grammar, sixth form and university graduates and weighted average earnings in wage farming, construction and the mining industry for primary and middle school leavers, Hinchliffe calculated that 'social rates of return to investment in education' at the three levels mentioned above (i.e. Primary and Middle School; Secondary and Sixthform; and University) were 18%, 13% and 16.5% respectively.<sup>2</sup> In calculating the social rates of return to education, it was assumed that part of the costs incurred by individuals during the period of educating themselves is borne by the government through taxes raised from the population as a whole. To distinguish this type of return from one which assumes that costs of education are entirely borne by the individuals who realise the benefits of higher education, Hinchliffe further estimated what he termed 'private' rates of return to education. In Ghana; Hinchliffe estimated 24.5%, 17% and 37% respectively for the three levels of education already referred to.<sup>3</sup>

The implication of Hinchliffe's social and private rates of return to education for Ghana Government's education policy is obvious: it re-emphasises the view that investment in human capital

1. Ibid. p.2.

2. Ibid. p.58.

3. Ibid. p.58. The 'private' rate of return is similar to what in the case of the United States, was termed 'internal rate of return'.



development via schooling improves the material wellbeing of individuals and consequently enhances a probable higher standard of living for individuals who are able to take advantage of schooling. In this sense, the Government's education policy would be more likely to be directed towards investment in the provision of more schools at all levels. But in answering questions about what level of education is the most profitable, if invested in, for the individual and the nation, Hinchliffe's calculations seem to suggest that the first-cycle education has the highest potential. It is not surprising therefore that since 1951, the Government of Ghana had instituted a universal primary education programme usually referred to as the Accelerated Development Plan for Education (ADPE) which was supposed to provide a compulsory six-year basic education for all children of school-age in 1980s. It must be pointed out that this programme has not been fully realised up to the present. Ghana's inability to fully realise its 1951 ADPE policy may be due to some weaknesses intrinsic to the human capital development theory. Factors such as non-formal education and earnings which are unaccounted for in the relevant earnings-versus-level-of-education relationship.<sup>1</sup> Nevertheless, Psacharopoulos concludes that:

If by nothing else, the rate of return measure has won the race by popular demand! Of course, all authors have been aware of the weakness of the approach, but they have not considered that these weaknesses were enough to invalidate their results.<sup>2</sup>

Another important issue that has engaged the attention of

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1. See Hirshleifer, J., 'On the Theory of Optimal Investment Decision', in Journal of Political Economy, August, 1958, and Ramsey, J.B., 'The Marginal Efficiency of Capital, the Internal Rate of Return, and Net Present Value: An Analysis of Investment Criteria', in Journal of Political Economy, September, 1970.

2. Psacharopoulos, G. (1973), op. cit., p.19.

education planners in both developed and, particularly, developing countries is the relation between national economic growth rates and provision of educational opportunity.

Although no specific study has been conducted on Ghana in this field, Zymelman states that:

Harbison and Myers,<sup>1</sup> for example, report good correlation coefficients between Gross National Product (GNP) per capita and different levels of enrolments. Lewis<sup>2</sup> found relationships between secondary education and development, Peaslee<sup>3</sup> found that a threshold of 10% of primary-school enrolments, as a proportion of total population, is needed to achieve any significant rate of growth ... All of these studies and similar ones relating expenditures of education and economic growth show a relationship between increases in educational expenditures or enrolments and economic growth.<sup>4</sup>

And he concludes that:

Economists, educationists and politicians have used this statistical relationship as supporting evidence for policies designed to increase expenditures in formal education in developing and developed countries.<sup>5</sup>

He argues, like Blaug,<sup>6</sup> however, that educational attainments of the labour force may be only a dependent variable, in which case, the independent variables may be the occupational structure of the labour force and education of workers in specific occupations.

Subsequently, it must be recognised that qualifications are traditionally used, especially in Third World countries such as

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1. Harbison, F., and Myers, C.A., Education, Manpower and Economic Growth. McGraw-Hill, New York, 1964.
  2. Lewis, W.A., 'Secondary Education and Economic Structure', in Social and Economic Studies University of West Indies, Vol. xiii, Jamaica, June, 1964.
  3. Peaslee, A.L. 'Primary School Enrolments and Economic Growth', in Comparative Education Review, February, 1967.
  4. Zymelman, M., 'Labour, Education and Development', in Adams, D., Education and National Development, Routledge and Kegan Paul, London, 1971, p.109.
  5. Ibid. p.109
  6. Blaug, M. (School Review, Vol. 74, 1978), op. cit.

Ghana, as an index for occupational choice. Consequently both educationists and economists in such countries tend to stress the importance of formal education in policies relevant to worker acquisition of skills more than <sup>non-</sup>formal educational influence. In a Third World context, the reasons for stressing formal means of imparting skills to workers may be many; but the foremost reason seems to be that only limited opportunities exist in on-the-job training schemes since modern sector jobs are a new phenomena. For this reason, although acquisition of skills through formal means may appear to be relatively long and expensive, this avenue remains a more defined process and easier to replicate than other alternative methods; and as Zymelman observes:

Educational planners who think of education in terms of schools and of the place of work in terms of production, under the assumption that theoretical knowledge is better imparted in formal schools, and work habits, industrial behaviour and acquaintance with specific machinery and tasks are provided better in places of work, might find it useful to combine these separate concepts ... This marriage is not easy. Employers lack the will and the capacity to transform their productive units to include educational functions.<sup>1</sup>

It appears, therefore, that until industrial employers in the Third World develop capacities to transform their productive units to include aspects of education and training, schools may remain an important factor in policies meant to develop human capital.

In addition to theories of schooling, other theories of development seem to play important roles in Ghana's policy statements concerning school reforms and employment of school-leavers in relation to human capital development. In the following section, some of the development theories will be examined.

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1. Adams, D., (1971), op. cit., pp.114-5.

5:0:3 An Examination of Selected Development Theories in Relation to Rural Small-Scale Industrial Development in Ghana.

In every society, people live in a cultural framework that gives a particular meaning to patterns of thought and behaviour that are characteristic to the society and distinguish it from members of other societies. For example, in Western countries, for at least two centuries, the prevalent ethos of the pursuit of private interest and maximal material gain has guided the forces of a free competitive market and this has been considered to be the foundations of national prosperity. Under these circumstances all men tend to want material goods and, therefore, nurse material self-interest and self-assertion.

The implications of cultural biases are, to say the least, very important to the understanding of dilemmas that confront social scientists that are called upon to solve developmental problems, especially of different cultures. Perceptions of social scientists during investigations are themselves culturally determined activities. Classical and neo-classical economic theories of development, pioneered in Western capitalist economies, in many cases, have been applied to Third World countries such as Ghana without much consideration for their consequent implications. It is in this light that the examination of the selected development theories discussed in this section be viewed in relation to Ghana's education policies and rural small-scale industrial development.

Throughout the Third World, for example, economies are primarily subsistence and agrarian in nature and a great proportion of the population live under conditions which are far from dignifying. Economic and social deprivations, inhuman degradation in the forms of exploitation, oppression and injustice and natural physical

catastrophies such as droughts, floods and earthquakes abound.

Among these deplorable conditions, there are minorities who sharply stand out in terms of affluence. When we talk about development in relation to Third World countries such as Ghana, therefore, it becomes pertinent to question specific structures that need reform in order to ensure a non egalitarian distribution of wealth to the majority of the population. One of such structures appears to be the prevailing economic system that Ghana adopts.

Although it is acknowledged that development appears to be a universal process, its foremost objective should be about how nations are able to cope with the 'human condition'. In other words, development should be about the economic, the socio-political and the psychological needs of the citizens of a country in a way such as to make these conditions bearable as well as make living a dignified experience. Lerner, for instance, argues that if development can be seen as a process of social change in which economic development is just a factor, then 'nothing less than the ultimate reshaping and resharing of all social values, such as power, respect, rectitude, affection, well-being, skill and enlightenment'<sup>1</sup> must be the priority aim of planners for all citizens in the country.

Planners in Ghana seem to acknowledge the fact that economic underdevelopment in the country is the result of undeveloped traditional tools and skills of individual subsistence-workers<sup>2</sup> rather than the lack of imported modern machinery. Nonetheless it appears that grappling with issues concerning the development

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1. Lerner, D., 'Social Aspects of Modernization', in Sills, D.L., International Encyclopedia of Social Sciences, Vol. 10, New York, 1968, p.387.

2. Armah's quoted argument under Section 5:0:1 of this thesis evidences the fact that, at least, political leaders have been aware of the necessity to develop human capital in Ghana preceeding industrialisation and modernization.

of individual human qualities in the use of modern machines and their understanding of what constitutes an exchange market-economy is a difficult task. But these are especially necessary processes which must be learnt if the adopted industrialization strategies are to succeed.

These, therefore, are some of the basic issues to which Ghanaian planners should address themselves. For as Seidman observes:

Developed countries are characterized by the extended specialization of production and the exchange of goods between production units, permitting the introduction and development of advanced technological and scientific methods in every branch of the economy ... In some countries, for example Ghana, about forty per cent of the rural population was engaged in production of cash crops which were sold to urban populations or in overseas markets. A very high proportion of the African populations living in rural areas, however, continued to live primarily in an essentially subsistence-agricultural economy ... This is not because the subsistence farmer lacks skills. On the contrary, the typical African farmer and his family know how to do many jobs ... All these tasks involve a considerable degree of skill. But the lack of tools and the necessity for each individual to learn many<sup>1</sup> skills results in a very low level of productivity.

Seidman's observation raises a very crucial issue for the way in which international Western economic processes affect Ghana's economy. It appears that prevailing local conditions in Ghana allow accommodation of Western international economies in a dependency posture. To be able to critically assess the effects of dependency in Ghana's development, let us first look at the definition of dependency and its nature in the context of national development in a global system.

#### 5:0:3.1 Dependency and the Nature of Dependency.

In the late 1960s and early 1970s, there evolved a school of

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1. Seidman, A., An Economic Textbook for Africa, Methuen and Co. Ltd., London, 1969, pp.16-17.

thought whose ideas became known as: The Dependency Theory of Development.<sup>1</sup> Basically, this theory owes its assumptions to Marx and Lenin's views on international capitalism as they affected colonies and less industrialized countries. The theory surveys the effects of exploitation of Third World countries by industrialized countries and attempts to assign reasons as to why the Third World fails to develop fully.

A curious observation made by the writer in reading literature on the Dependency Theory must be pointed out here before any further discussion will make sense. Almost the entire literature on dependency tends to underscore the 'WHYS' of Third World underdevelopment. It is the view of the writer that a more constructive approach to dependency and the Third World should have been underscoring of 'HOWS', of how to get out of the dependency trap. Having pointed out this one-sided treatment of dependency, let us now define the theory. Barbara Stallings states the theory simply as:

It (The Dependency Theory) postulates that development is part of the global historical process of development, and that development and underdevelopment are two faces of the same universal historical process. Both processes occur simultaneously, and they are linked functionally; that is they interact and mutually influence each other. The concrete geographical expression of the relationship can be observed in two great dualisms: on the one hand, the division of the world between advanced, developed, industrialized, centre states and underdeveloped, backward, poor, peripheral, dependent states; and on the other hand, the division within states in regions, social

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1. For detailed and further expansive reading, see the following titles: Fann, K.T., and Hodges, D., (Edits.), Readings in U.S. Imperialism, Porter Sargeant, Boston, 1971; Rhodes, R., Imperialism and Development, Monthly Review Press, New York, 1970; Sniger, M., Growth, Equality and the Mexican Experience, University of Texas Press, Austin, 1969; Seidman, A., 'Old Motives, New Methods' in Allen, C., and Johnson, R.W., (Edits.), African Perspectives, C.U.P. London, 1970; Robson, P., and Lury, D.A., (Edits.), The Economies of Africa, Northwestern University Press, Evanston, 1969; Stallings, B., Economic Dependency in Africa and Latin America, Sage Publications, London, 1972.

groups, and activities which are modern and advanced and regions, groups and activities which are backward, primitive and dependent.<sup>1</sup>

This definition suggests that in order to understand what is happening in the Third World today, one has to examine three fundamental relationships which, on the one hand, are constantly changing between the nations involved, but on the other hand are responsible for this state of affairs.

The first of such relationships is concerned with the international symbioses between advanced countries and underdeveloped countries. The second relationship involves social and spatial disparities within the underdeveloped countries themselves: intranational relationships. Finally, the third relationship concerns political, economic and cultural relationships that operate both internationally and intranationally.

By the nature of the definition of the dependency theory, however, it appears that emphases are laid on political and economic relationships between advanced and underdeveloped countries more than cultural, regional and intranational relationships. This means, to some extent, that advanced countries benefit more from the relationships; because for the past and for the present they have dominated political and economic decisions of less developed countries in several forms. For example, most of the under-developed countries were colonies, and their formative political decisions were therefore made directly from metropolitan centres. Also, in trade terms, the advanced countries dominate the less developed countries via the sophisticated industrialized economic capacities characteristic of developed countries. The benefits of trade that

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1. Stallings, B., op. cit., pp.1-2.



accrue are disproportionately reaped by advanced countries clearly having an advantage.<sup>1</sup>

This argument becomes clearer if one specific case is examined. For this purpose, let us use the case of the dependence of Ghana (that is the conditions of underdevelopment in Ghana) and the interdependence of Britain (that is the developed conditions of Britain). These conditions arise, in the first place, because the majority of Ghana's exports and imports depended on one country - Britain. Britain's trade with Ghana on the other hand has always constituted only a small fraction of its trade pattern and capacity. The success or failure of British trade, therefore, does not depend on what changes occur in Ghana. Ghana's trade, on the other hand depends on events and policies in Britain. This gives rise to a situation in which Britain can afford to relinquish trade with Ghana without adverse effects but Ghana cannot do the same without seriously crippling its economy.

These kinds of relationships abound among many developing countries and their European or North American counterparts. And any time a developing country attempts a structural re-definition of this relationship, international market forces tend to work against it. President Nyerere of Tanzania gives perspective to this state of affairs:

Ten years after the Arusha Declaration, Tanzania is certainly neither socialist, nor self-reliant. The nature of exploitation has changed, but it has not been altogether eliminated. There are still great inequalities between citizens. Our democracy is imperfect. A life of poverty is still the experience of the majority of our citizens. Too many of our people still suffer from the indignities of preventable disease and ignorance, and the aged and

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1. The same argument is put forward by Walter Rodney in his book: How Europe Underdeveloped Africa, Bogle-L'Ouverture, London, 1972; especially chapter three.

disabled do not all live in decency or even security, despite the clear statement in the Declaration that they have a right to support. Further, our nation is still economically dependent upon the vagaries of weather, and upon economic and political decisions taken by other peoples without our participation or consent. And this is the reciprocal situation; Tanzania is still a dependent nation, not an independent one.<sup>1</sup>

This description of the Tanzanian scene would apply similarly to almost all developing countries.

Developing countries are therefore kept within the framework of dependency relationships. It is in the interest of the developed countries to maintain this pattern. Dove, writing on community development in developing countries, says, at the national level:

In very poor countries rural people have little time or resources to devote to investment in development programmes ... Very few programmes for the development of the welfare of the poor is wide spread but educate them and they begin to challenge the status quo, ... Development programmes which aim at radical improvement are rightly feared as subversive of the social order by the rich and powerful; only watered-down ameliorative programmes are sanctioned.<sup>2</sup>

This assertion is true intranationally as well as internationally. An essential element in dependency theory is the recognition of the complicity of local elites, even governments, in the maintenance of the structure. Consequently, many developing countries contribute to the maintenance of their dependency on the one advanced country they are familiar with, despite the fact that they thereby deepen their dependence on it. This obviously pushes into the future the time when they might become truly independent:

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1. This is part of a speech titled: The Arusha Declaration: Ten Years After, delivered by Julius Nyerere in 1977 in Dar-es-Salaam before the ruling party Conference.

2. Dove, L.A., 'The Teacher and the Rural Community in Developing Countries', in Compare, Vol. 10, No. 1, 1980, p.23.

Dependency is undoubtedly here to stay. The basic point it makes - that the interplay between the internal Latin American structures and international structures is the critical starting point for an understanding of the process of development in Latin America - is of vital importance.<sup>1</sup>

This statement is true for Latin America as it is for Africa and some parts of Asia. The most maligning aspect of dependency, however, seems to be the enthusiasm with which educational patterns in developing countries appear to follow it.

### 5:0:3.2 Dependency and Ghana's Development.

The dependency posture of Ghana is characterised by some features which appear to be commonly shared by many Third World countries in varying degrees of presence.<sup>2</sup> These features could be grouped under four main categories: political, economic, geographical and social features. Let us examine how Ghana attempts to contain them.

(i) Political Features. Ghana, as a former colony under an industrialized nation, Britain, had acquired a reactive posture over time in response to the subjective situations in which it found itself. This latent national identity inadvertently created and fostered by Britain, formed a basis for the achievement of independent political status. Full political independence was achieved through organised nationalist agitations which, on occasions, culminated in protracted armed-struggles and economic boycotts. At the time Ghana attained independence, it was an uncommon occurrence for a metropolitan power to grant political

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1. Quoted from: Brock, C., 'Education in Latin America: Aspects and Issues in the Mid-Twentieth Century', in International Journal of Educational Development, Vol. 1, No. 1, 1981, p.53, originally quoted in Oxaal, I., Barnett, T., and Booth, D., (Edits.), Beyond the Sociology of Development, Routledge and Kegan Paul, London, 1975, p.25.

2. A good reference work on these features for developing countries, in general, is Bauer, P.T., Dissent on Development, Weidenfeld and Nicolson, London, 1971.

independence to a colony without a struggle of some sort. The consequence of this, in the case of Ghana, was the anxiety with which it set out to replace Western political and economic structures bequeathed to it by socialist structures. The thrust of these transformations were reflected in many sectors of development including the education system. In 1951, for example, an Accelerated Development Plan for Education was introduced (See Section 4:0:1.1, Table 4,) and in 1963<sup>1</sup> a Seven-Year Development Plan was implemented. Under this plan:

Our aim is to establish in Ghana a strong and progressive society in which no one will have any anxiety about the basic means of life, about work, food and shelter; where poverty and illiteracy no longer exist and disease is brought under control; and where our educational facilities provide all children of Ghana with the best possible opportunities for the development of their potentialities.<sup>2</sup>

Expenditure on education was therefore increased from £G17.0 million spent during 1951-59 period to £G64.0 during 1963-69 period.<sup>3</sup> During the 1963-69 period, school enrolments were to follow a pattern as shown in Table 4A, and some structural changes such as replacing the four-year middle school by a two-year continuation school and the five-year secondary school by a four-year secondary school were also to be instituted. These educational strategies induced by political considerations were designed to give the country a better stand in the task of altering its dependency stance; a stance which required educated and skilled personnel to establish an industrial society based on science and technology for its minimisation.

Although current studies<sup>4</sup> and personal experience have shown

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1. Office of the Planning Commission, Seven-Year Development Plan: A Brief Outline, Govt. Printer, Accra, 1963.
  2. Ibid., p.i. (Foreword by President Kwame Nkrumah).
  3. Ibid., p.28. (£G1 = £1 at 1960 exchange rates).
  4. See, for instance, Howard, R., Colonialism and Underdevelopment in Ghana, Croom Helm Ltd., London, 1978.

TABLE 4A

Ghana: Growth in School Enrolments: 1963 and 1969

Level of Education	1963	1969
Primary - Middle	1,200,000	2,200,000
Secondary	23,000	78,000
Teacher Training	6,000	21,000
Technical	4,000	6,000
Clerical Training	100	5,000
Universities	2,000	5,000

Source: Office of the Planning Commission, Seven-Year Development Plan: A Brief Outline, Govt. Printer, Accra, 1963, p.23.

that Ghanaian political and economic policies have failed with respect to dependency, it must be pointed out, as Killick<sup>1</sup> argues, that failure was not due to the ill-conceived nature of policies.

On the contrary, failure was due to:

(a) Inability by policy makers to balance expenditures on the large already-existing agricultural sector against the newly established large scale industrial sector. Funds which should have been applied to the agricultural export sector were almost totally transferred to finance the establishment and maintenance of new industries which, in many cases, were over-manned, unproductive and under state control.<sup>2</sup>

(b) High levels of external borrowing which were mismanaged by self-interest political 'kleptocrats' as in (a) and consequently, increased the international balance of payment crises. Although it may be difficult to argue conclusively that Ghana's failure could be seen as beneficial to capitalist processes, it is, certainly, in no way harmful to them.

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1. Killick, T., Development Economics in Action: A Study of Economic Policies in Ghana, Heinemann, London, 1978.

2. Wood, A.W., 'The Education and Training of Out-Of-School Youth in Twelve African Countries', (Unpublished PhD Thesis, London University, 1970), pp.76-92, mentioned Ghana Young Pioneers and Ghana Workers' Brigade as two of such enterprises.

(ii) Economic Features. The economy of a developing country is dependent usually on one of the European or North American countries, or their old 'white' colonies such as Australia or New Zealand. The economy of Ghana, until recently, was dominated by that of Britain. Ghana imported eighty per cent of its goods from Britain and exported over sixty per cent of its raw materials to the same country. To move away from this dependency situation, Ghana, after independence sought other trading partners in the developed world and joined international economic organisations such as Economic Organisation of West African States.

In addition to export-import dependency, export earnings of most developing countries are reliant on one major commodity. Ghana, for instance, still has a monoculture export economy which is almost entirely dependent on cocoa. About sixty per cent of its foreign cash earnings comes from cocoa. To counteract this state of affairs, Ghana introduced in its 1963 Development Plan a range of new cash-crop development such as rubber plantations, cotton, pine-apple and oil-palm plantations. The introduction of this policy brought pressure on the education sector in the sense that demand was placed on it to generate literate farmers capable of understanding skills required to sustain modern agriculture production methods. It was realised by planners in Ghana during this period that industrialisation as a means of economic development was a recent phenomenon and that indigenous technology was primitive and ineffective. Many Ghanaians were therefore sent abroad, especially to Britain, to improve their skills in modern mechanical and technological applications to agriculture and industry.

In Ghana, like in many developing countries, per capita incomes and gross national products were usually very low and imports

were found to outweigh exports causing difficulties in balance of payments on the international market. Consequently, aid, that is foreign finance, became a very important factor for development. As it was argued under Section 4:0:1.1, planners in Ghana became aware of the potential that a development of the rural small-scale industrial sector possessed if Ghana were to need less foreign aid to finance its development and industrial projects. Of course, as it was emphasised, the development of the rural small-scale industrial sector demanded unqualified support from the rural education sector for its success in the context of quality human capital formation.

(iii) Environmental Features. Most of the developing countries, Ghana included, are found in tropical or sub-tropical zones. In this belt of the world, climatic factors such as temperature, rainfall, humidity and air flow tend to exhibit extremes, and degrees of unreliability which are rare in temperate areas. During the rainy season, for example, precipitations are heavy, causing overflowing and leaching of valuable minerals from the soil. In the dry season on the other hand, little or no rains fall at all causing drought, dessication and loss of both animal and plant life. Average temperatures throughout the year are high and soils are often immature or only partially formed, hence the use of mechanical ploughing equipment becomes difficult. High temperatures encourage the easy spread of diseases. Again, this Zone has a larger share of natural physical catastrophies such as earthquakes, and even more predictable problems such as the almost daily visitation of thunderstorms.

Although the effect of climate on economic development is not very clear, Keynes believed that:

Material backwardness is heavily concentrated in extreme climates, and especially in the tropics. This would suggest, prima facie, that prolonged residence there, especially when it involves domicile over centuries or millennia, affect adversely the determination of material progress.

Prediction and the control of some natural catastrophies are now acknowledged as possible although advanced technological skills, which are lacking in Ghana, are called for. And planners in Ghana appear to believe that formal schooling is a pre-requisite to the acquisition of such skills in the sense that they tend to consider education as a panacea for solving all development problems.

(iv) Social Features. Child mortality rates and death rates are high in Ghana. Life expectancy, on the other hand is low, and although programmes such as family planning and building of rural clinics have been vigorously persued over the past two decades, the situation is far from corrected. A probable reason for this failure may be due to the fact that majority of the populations are illiterate, live under rural conditions and are therefore resistant to change. One important factor that characterises rural societies is the inadequacy of communication facilities and consequently the extended family forms the basis on which society derives its coherence.

Another important social feature of the Ghanaian society is the relatively little attention paid to both scientific and social science research. The principal rationale of researches such as these is the understanding of existing social forces in relation to available human and physical resources which can be mobilised during the process of changing existing political, economic and

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1. Keynes, J.M., (1974), op. cit., p.245.



social structures or for evolving new structures without denying aspects of Ghana's historical experience. The importance of research in Ghana becomes paramount if it is recognised, as Davidson puts it, that:

Africa's real problems are those of a period of major transition from systems of development viable in the pre-colonial past to other systems, similarly viable, which can face challenges of the future. No transition on such a scale can be short or easy ... the difficulties are vastly increased by the contrary interests of the international system which still encloses the continent, if with a degree, of over-all control that varies in time and place. The crisis which thus arises is, therefore, one of institutions. <sup>1</sup> Those of the present offer little save confusion.

The confusion in the search for new structures can greatly be clarified through research. It is against this background that dependency theory should be viewed in relation to this thesis.

#### 5:0:4 The Late-Development Theory.

In the last decade, a comprehensive view has been taken of development in a global context and this has relevance to this thesis. Let us therefore examine the relevance of the 'late development effect' to the situation in Ghana.

'The late development effect' is really not a theory in the very strict sense. It is a set of hypotheses postulated in the mid-seventies mainly by academics at the Institute of Development Studies in Sussex University. Before this time, however, there has been some work done in this field by a historian called Gerschenkron.<sup>2</sup> But his work was mainly in the field of state intervention in the economy and large size manufacturing units

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1. Davidson, B., Can Africa Survive? Arguments Against Growth Without Development, Heinemann, London, 1974, p.6.

2. For further reading on Gerschenkron's study see Goonatilake, S., 'The Late Development Effect: Some Basic Difficulties in the Theory', in IDS Bulletin, Vol. 6, No. 3, February, 1975.

in a few late developing countries. His was not a general theory. The pioneer of the Late-Development Effect (LDE) theory is Professor Ronald Dore.<sup>1</sup> For the sake of simplicity we shall refer to the hypotheses that Dore put forward as the Late-Development Theory (LDT).

The basic assumptions underlying the LDT are: that development is a historical universal event to which every nation at one time in history aspires; that first development starters such as Britain do not depend on educational qualifications for selection of workers into jobs as late development starters do; that the important place accorded certification makes it more a ritualistic process than a means of acquiring relevant learning as even 'learning for learning sake'; and that escalation in demand for diplomas is a consequence of the late developers' view of the important place certification occupies in government planning.

For Dore to arrive at these hypotheses, he mainly studied Japanese industry, plus a few other developing countries. Dore states his conclusions as:

Other things being equal, ... the later the point in world history that a country starts on a modernisation drive:

- (i) the more widely education certificates are used for occupational selection;
- (ii) the faster the rate of qualification inflation, and
- (iii) the more examination-oriented schooling becomes at the expense of genuine education.<sup>2</sup>

He goes on to elaborate that:

But the late development effect is clear. Certificates undoubtedly counted for more in Sri Lanka in the 1950s than for, say Japan in the

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1. Professor Ronald Dore first postulated his hypotheses in 1972 and later expanded their application to different aspects of development in chapter six of his book: The Diploma Disease: Education, Qualification and Development, Unwin Education Books, London, 1980, first published, 1976, p.72.

2. Ibid., p.72.

1910s; more for Kenya in the 1960s than for Sri Lanka in the 1950s. It is easy enough to explain why. Part of it is the later developer's need to catch up fast - by importing knowledge and skills in formal education packages. The most important part is the general tendency of the late developer to import the latest technology from the metropolitan<sup>1</sup> models - social as well as machine technology.

Dore's explanation for a real situation of LDT appears not to be very convincing. The late developers, such as Ghana import technology and skills, albeit at a very high price, not because they want to 'catch up fast'. They do so because that is an easy way to survive in a global economy whose course has been already charted in that direction and dominated by industrialized countries. In Ghana, for instance, planners are aware of the fact that an alternative approach to development would meet with resistance from the powerful and more stable developed nations. Besides, the late developers do not have the means, political and economic, to persuade or, if need be, force the developed nations to new ways of attacking development. Even the Oil Producing and Exporting Countries (OPEC), with their sudden rise to economic wealth and power in the early 1970s, were still dependent upon the developed countries for their technology and expertise.

In Ghana, as in most Third World countries, both education and industry are imported institutions. Because industry is a new institution, there are no existing indigenous criteria for occupational selection. The late developers, such as Ghana, are therefore faced with the problem of devising new criteria for occupational selection. Under the circumstances, educational qualifications seem to be the easiest way out. Inflation in educational qualifications is a phenomenon whereby the people in

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1. Ibid., p.72.

the late developing countries, such as Ghana, have been able to identify correctly the criteria used by government agencies in occupational selection and therefore they demand more of it. Importation of knowledge and skills in formal educational packages appears to have the significance of satisfying the demand of the people. This seems to be contrary to the view of 'catching up fast'. One important point that must be noted is that occupational vacancies in Ghana do not expand at the rate they are demanded. And since qualification is the recognised criteria for selection into occupations, the higher one's qualifications are, the better chance one has to secure a post. This again appears to lead to qualification inflation.

The fact that industry, which creates jobs in the modern sector, and education, which supplies the work force, are both imported institutions means that any improvements planned for them require importation of updated and improved packages. Importation of the latest technology and social engineering methods into late developers' countries, therefore, appears not to be a tendency to 'catch up fast' but a means to improve occupational function and the quality of labour. The increased entrepreneurial activity by advanced nations in respect of exporting expertise seems a reaction to their correct perception of the dependent and conformist attitudes of developing countries.

These criticisms, however, do not appear to be serious enough as to render Dore's theory invalid. On the contrary, they help to explain the phenomenon observed.

In conclusion, it would be useful to draw some parallels between LDT and Dependency Theory which was discussed earlier (Sections 5:0:3.1 and 5:0:3.2). Whereas LDT attempts to explain development in terms of universal historical relationships with

no time limitation, the Dependency Theory seems to be applicable to developing countries only between the period occupying colonialism and neo-colonialism. It cannot be applied to post neo-colonial periods and situations. In other words, as soon as African and Latin American countries develop to Japan's standard of today, the theory ceases to be valid. Again the LTD is applicable to any country irrespective of its stage of development. In this sense the LDT appears to be a much more powerful tool of analysing stages of development in any country than the Dependency Theory. The LDT with its extended versions which cover every aspect of development, in the writer's opinion, should be given more attention by all people interested in development planning. It is a departure from the usual economic theories which Dalton points out as dominating major analyses of development:

From Ricardo to Keynes, economics was devoted exclusively to analysing the structure, performance and problems of a dozen industrial capitalist countries in Western Europe and North America. Even today these remain by far the principal focus of economics.

The LDT's departure from the usual economic analysis should be welcomed. It appears to have vital implications for both educational and industrial development analysis in the Third World.

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1. Dalton, G., Economic Systems and Society, Penguin, London, 1974. p.197.

PART   THREE

Part Three consists of Chapters Six, Seven and Eight.

In Chapter Six, the methodology adopted for the investigation of the problem and the analytical strategies used on the collected survey data have been outlined.

The analysis results have been given in Chapters Seven and Eight.

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CHAPTER SIX

THE PRESENT STUDY: METHODOLOGY

6:0:0 Purpose of Study

The general purpose of this study is:

- (i) To examine the role which education and formal skill-training play in labour recruitment for the rural small-scale industrial (SSI) sector.
- (ii) To examine attitudes of workers in rural SSI to the school curricula as they relate to small-scale industrial occupations.
- (iii) To examine attitudes of workers to self-esteem in RSSI occupations.
- (iv) To examine attitudes of rural teachers on the relevance of school curricula to rural SSI work.
- (v) To examine attitudes of rural teachers to occupational esteem in rural SSI.

In particular, this study is designed to attempt to answer questions relating to issues such as:

- (i) What levels of education are more predominant among workers and entrepreneurs in rural SSI?
- (ii) Do workers in the rural SSI sector view education and skill-training which they have had as relevant to work in rural SSI in Ghana?
- (iii) Do workers in rural SSI view their education standards as adequate in providing them with the self-esteem necessary to make them stay in small-scale industrial occupations for a long time, probably for life?
- (iv) What do rural teachers think of occupations in the rural SSI sector for educated school-leavers in relation to occupational esteem in the Ghanaian society?

Answers to questions such as these are necessary if planners are to make realistic decisions concerning effective planning and maintenance of the rural small-scale industrial sector which has been identified currently as very important for the economic development of Ghana.

In Chapter Four (section 4:0:1.1) it has been pointed out that the government of Ghana reviewed its industrialization policies in 1974, and the rural SSI sector has been strongly identified as urgently needing encouragement if dependency (Section 5:0:3.1) is to be minimised. It has also been shown in Chapter Four that improvement of the quality of labour in the industrial sector requires good educational planning especially at the primary and middle school levels. In Chapter Five (Sections 5:0:1 and 5:0:1.1) it has been shown that available evidence suggests that the rate of return to education in Ghana is highest for first cycle institutions. The review of Ghana's industrialisation policies in 1974 could be said to be the first major review of policies in this sector since Lewis's survey in 1951.<sup>1</sup> Up to 1974, Ghana's industrialisation policies emphasised the establishment and maintenance of large-size, urban-oriented and machine-intensive industries. In 1974, however, the Government decided that the rural SSI sector should be accorded priority in national economic development. This turn of affairs may be attributed to three factors.

First, realisation by the Ghana Government that labour-intensive industries are less expensive to establish and maintain than machine-intensive large-size industries. Second, in the face of mounting foreign exchange and deficit international payment difficulties, it was suggested by planners that rural small-scale

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1. Lewis, A.W., (1953), op. cit. (See Section. 2:0:0)



industries which require a minimum of imported raw materials and inputs should be encouraged more than large-size industries which rely mostly on imported raw materials and machines. The newly framed policy, it was thought, would save Ghana large amounts of foreign exchange earnings. Third, it was suggested that rural SSI, with their labour-intensive methods of production, would go a long way to give employment to large numbers of school leavers who, under the former policies, were unemployed.

The purpose of this study, therefore, is to find answers to some of the issues which planners might be facing in an attempt to organise an effective rural small-scale industrial sector in Ghana. To attempt a survey of RSSI, we need to identify the variables related to the problem.

#### 6:0:1 Types of Variables Used in this Study.

Peil, Mitchell and Rimmer assert that:

A variable is a trait or characteristic which changes from one situation to another. Concepts are studied empirically as variables. Research is focused on the relationships between variables, the sources and effects of these relationships, changes or the reasons for lack of change ... Variables or properties can be examined at several levels. They may be used in propositions referring to individuals or to collectivities. An individual has an age; so does an association, which is composed of individual members. The properties of individuals as members of groups, may be absolute, relational, comparative or contextual.<sup>1</sup>

Furthermore, Peil et. al. explain that:

Contextual variables are used to apply<sup>2</sup> collective characteristics to individual members.

In this sense, therefore, two kinds of variables were used in this study in the context of rural Ghana. They were those used in the RSSI workers' questionnaire and those employed in the teachers' questionnaire.

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1. Peil, M., et. al. (1982) op. cit., p.5.

2. Ibid. p.5.

### 6:0:1.1 Variables of Workers' Questionnaires.

Two sets of questionnaires were constructed for workers in rural small-scale industries in Ghana. They are included in this thesis as Appendix 1 and Appendix 2. For the sake of simplicity, Appendix 1 titled: WORKER-ATTITUDES AND VALUES TO RELEVANCE OF EDUCATION AND TRAINING PROGRAMMES FOR RURAL INDUSTRIES (or WORKER-ATTITUDE SCALE, WAS), will be referred to henceforth as WAS and Appendix 2 titled: ENTREPRENEUR INTERVIEW SCHEDULE will be referred to as EIS.

The WAS was responded to by both workers and entrepreneurs in rural SSI of Southern Ghana but the EIS was responded to by entrepreneurs in rural SSI only. Entrepreneurs in this study may be defined as Ghanaians who own or hold shares in an establishment of rural SSI.

The variables used for WAS and EIS were modelled after those used by Toplis<sup>1</sup> and are shown as in Table 5. Variables were divided into two categories: INDEPENDENT or EXPERIMENTAL variables and DEPENDENT variables. Independent variables are also called 'Personal Factors'; variables such as physiological, psychological and biographical attributes. In this study, for WAS and EIS, both the dependent and the independent variables have been shown in Table 6 which is an adaptation of Table 5. Items included in WAS and EIS were framed on the pattern of those found in Peil's<sup>2</sup> and Foster's<sup>3</sup> studies. The format of the questionnaires and methods of administration were adapted from the SRA<sup>4</sup> package and Peil et. al.<sup>5</sup>

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1. Toplis, J.W., (1970), op. cit., pp.110-113.
  2. Peil, M., (1972), op. cit., pp.238-244 (See Appendix titled: The Interview Schedule.)
  3. Foster, P., (1971) op. cit., pp.305-310 (See Appendix titled: Study of Ghanaian Secondary Schools).
  4. See the Package titled: The SRA Attitude Survey, Chicago, (1972), op. cit., passim.
  5. Peil, M., et. al. (1982), op. cit. passim.

## TABLE 5

STUDYING PEOPLE AT WORK

## OUTLINE OF A SYSTEM FOR STUDYING PEOPLE AT WORK

## 1. SITUATIONAL FACTORS

## (a) The organization and its environment

- the organization
- financial control
  - commercial relationships
  - history (including mergers and take-overs)
  - divisions, departments, etc.
  - raw materials, components, processes
  - markets
  - aims, objectives, plans and policies
- geographical and social environment
- location of sites
  - factors affecting location (water, transport, indigenous materials, development grant, etc.)
  - topography of the site(s) (size, entrances, and relative positions of the buildings)
  - other industries in the area
  - catchment areas for employees (level of employment, transport, health, housing and schools)
  - local attitudes, customs and traditions.

## (b) Management, supervision, trade unions

- the board, council, etc.
- executive, advisory
- management structure
- number of management levels
  - use of specialist and service departments
  - degree of centralization of control
- organizational change and development management responsibilities
- apparent, e.g. list of duties, methods of work
  - implicit, e.g. responsibility for policy, people, property, whether decisions are short or long-term, etc.
- management facilities and procedures
- production planning and control
  - stores
  - allocation of people to jobs within departments, mobility
  - safety
  - maintenance
  - quality control and inspection
  - waste
- trade unions
- name(s) of union(s)
  - number of members
  - whether recognized by management or not
  - agreed procedures
  - facilities made available by management
  - disputes at site
  - union policies at site, locally, nationally

(Continued)

## TABLE 5 (contd.)

other systems for employee representation  
 suggestion scheme  
 communications within and between groups
 

- upwards, downwards
- between people of the same level
- between people with similar responsibilities

## (c) The work and immediate work environment

machines, tools and equipment  
 design or nature of the product and its components  
 type of work; objectives and responsibilities (apparent, Implicit)  
 variety of tasks, length of work cycles, speed of working
 

- physical load
- psychological load (e.g. decision making, vigilance)
- standards
- differences in work methods
- supporting facilities (e.g. internal transport, post)
- existence of records of individual output or other behaviour

working posture  
 site amenities
 

- standing, sitting, stooping, walking etc.
- car parks
- changing rooms, toilets, washrooms, showers
- canteens
- first aid and medical facilities
- sports, social and recreational facilities
- are amenities available to all or are some people precluded, e.g. shift workers?

physical conditions
 

- place of work - office, factory, indoors outdoors, etc.
- layout and space
- lighting - natural and artificial
- temperature - average, variations
- humidity
- dust, gases, smells
- air movement and ventilation
- noise and vibration
- cleanliness
- state of repair
- sources of danger and means of protection

social conditions
 

- opportunities for contact with colleagues
- supervision and employee representatives
- relationships between individuals
  - between informal groups
  - between sections and departments
- prevalent attitudes, opinions and rumours

## (d) Hours and pay

duration of work contract - temporary, permanent  
 hours of work - full time, part time, shift, flexible, etc.  
 overtime, fluctuations in the availability of work  
 absence, holidays, etc.  
 method of recording hours worked  
 pay reviews and negotiations  
 pay and salary scales  
 method of determining basic rates of pay  
 additional payments
 

- payment by results

(continued)

TABLE 5 (contd).

- overtime and shifts
- responsibilities
- danger and dirt money
- long service awards
- qualifications
- increments, bonuses, profit-sharing

sick and holiday pay,  
the method of distribution of pay  
comparison of pay/hours inside and outside the organization

## (e) Personnel and personnel procedures

number of employees - past, present and expected  
organization of the work force

- size of departments
- distribution of age, skill, etc.

manpower planning  
recruitment, selection and medical examination  
contracts of employment, assistance with removal expenses etc.  
induction and job training  
allocation  
assessment and grading  
development and counselling  
opportunities for transfer and promotion  
disciplinary procedures  
welfare facilities for present and past employees  
retirement, pensions  
job security, redundancy

## 2. INDIVIDUAL CHARACTERISTICS

## (a) Physiological attributes

age, sex, state of health  
height, weight, physique, appearance

## (b) Physiological needs

air	food and drink	rest/sleep
water	warmth/clothing	elimination

## (c) Psychological attributes

intelligence and special aptitudes  
experience  
personality

## (d) Psychological needs

security  
social contact, love, esteem  
recognition, responsibility, scope, challenge, advancement, achievement  
self-fulfilment

## (e) Biographical characteristics

early circumstances, occupation of parents  
schools attended, examinations passed  
higher education, professional and other qualifications  
occupational attainments  
interests  
circumstances.

(continued)



TABLE 6

GHANA: VARIABLES USED IN THE STUDY OF  
RURAL SMALL-SCALE INDUSTRIES

CATEGORY 1: INDEPENDENT VARIABLES				
VARIABLES	PART OF QUESTIONNAIRE ITEM IS LOCATED		ITEM NUMBER	
	W.A.S.	E.I.S.	W.A.S.	E.I.S.
<b>Physiological Attributes</b>				
Sex	1		1	
Age	1		2	
Region of Origin/Ethnicity	1		3	
Marital Status	1		4	
<b>Psychological Attributes/ Needs</b>				
	W.A.S.	E.I.S.	W.A.S.	E.I.S.
Experience at Work	3,3,3,3		3,9,30,35	
Work Experience	1,1,3,3	1	7,8,9,24	10
State of Health	3,3,3		17,30,35	
Esteem/Self Image	1,3		14,3	
Means of Advancement	1,1,3	1	8,19,24	9
Job Satisfaction	1,1		14,18	
<b>Biographical Characteristics</b>				
Occupation of Parents	1,1		12,17	
Standard of Education	1	1	6	10
Further Training	3	1	24	10
Interest in Rural SSI	1,3		18,35	
CATEGORY 2: DEPENDENT VARIABLES				
<b>Organization and Environment</b>				
Transport Facilities	2,2,2		1,10,12	
Organization Change	2,3,3,3	1	3,5,14,37	7
Organization Development	1,2,3,3 3,3,3,3	1	13,12,1,14 18,20,32,37	7
Employee Suggestion Scheme	3	1	5	8

TABLE 6 (Contd).

	W.A.S.	E.I.S.	W.A.S.	E.I.S.
Communication Between Groups	2,3,3,3		6,5,10,14	
Name and Location of Organization	2	1,1	2	1,2
Products manufactured	3,3	1	16,20	3
Date of Establishment		1		4
Task variety in SSI	3,3		14,27	
<b>Attitudinal Attributes</b>				
Prevalent Attitudes to SSI	) 2,2,2		5,7,8	
Work and Education	) 2,3,3,3		9,2,10,14	
	) 3		19	
Prevalent Opinions about SSI Work	) 1,1,1,2		10,13,16,4	
	) 2,2,2,3,3		5,7,8,1,4-8	
	) 3,3,3		10-16,18-23	
			25-29	
Rumours	2,3		11,36	
Pay	1,2,3		15,10,36	
Absenteeism	1		9	
Comparison to other Organizations	3,3,3		7,22,36	
<b>Personnel/Personnel Procedure</b>				
Number of Employees/ Employers		1,1		5,6
Recruitment Methods	1,1		5,11	
Induction and On-Job- Training	1,2,2,3		5,3,6,8	9
	3,3		32,33	
Mobility in Jobs	2,3,3		9,14,32	
Opportunity for Promotion	2,2,3,3		4,8,1,25	
Relevance of School Work	3,3,3,3,3		11,15,26,31, 34	
Disciplinary Procedure	1,3		9,12	
<b>General Behaviour Measures</b>				
Relation with others	) 2,3,3		6,2,10	
	) 3,3		12,19	
Morale in Industry	2,2,3,3,3		9,12,1,2,19	
Disputes and Management	1,3,3,3		9,5,12,19	
Further Comments		1		11

Note: The variable categories presented here are the operational definitions for the variables used in this Study. Peil observes that:



To use concepts in research, and turn them into measurable variables, they must be operationalized so that everyone concerned knows exactly what is meant. An operational definition must provide a precise list of characteristics to be looked for, so there can be no question of what falls into this category and what does not ... A dependent variable in one study can be an independent variable in another.<sup>1</sup>

.....

#### 6:0:1.2 Rationale Behind Selecting Categories of Variables

Hayman argues that:

For the most part, it is not the nature of the variables per se which makes them independent, dependent, or intervening. The classification is determined, rather, by the way the variables are employed. A variable is often independent in one context and dependent in another.<sup>2</sup>

Two categories of variables were used in this study although variables may fall under three categories: Independent, Dependent, and Intervening. In this study, only two categories were used because the study seeks cause-effect relationships on the one hand and, on the other hand, the effect of the cause-effect relationships. Variables of physiological, psychological and biographical nature were defined as constituting independent variables. Other variables such as attitudinal, organizational and situational attributes were defined as dependent variables. However, the eventual analysis which may interest this study will use workers' 'educational standard' variable as the independent variable against any other variable in order to solicit information on cause-effect relationships that exist between the other attributes and the factor of formal education. It should be recalled that this study is about the role of education in rural industries.

#### 6:0:1.3 Variables of Rural Teachers' Questionnaire

The rural teachers' questionnaire, titled: TEACHERS' ATTITUDE

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1. Peil, M., et. al., (1982), op. cit., pp.6-7
  2. Hayman, J.L., Jr., Research in Education, Bell and Howell Co., Columbus, Ohio, 1968, p.40.

SCALE, or TAS, is included in this thesis as Appendix 3. TAS variables also fall under two categories; INDEPENDENT and DEPENDENT. Table 7 shows variable-categories and where corresponding items in the questionnaire, TAS, are located.

#### 6:0:2 Designing the Measuring Instruments

This study was planned to be a two-pronged investigation. The first part was designed to study the structure, educational attainments, attitudes of workers in rural small-scale industries to work and relevance of formal school syllabus to work in rural SSI in southern Ghana. The second part was designed to study the structure, educational attainments of rural teachers, attitudes of rural teachers to the relevance of formal school curricula to RSSI work and also attitudes of rural teachers to people who take up occupations in the rural SSI sector.

All the questionnaires were framed in English due to the numerous linguistic backgrounds from which rural workers and teachers come. English, therefore, becomes the nearest to a lingua-franca. Considering the fact that English is a second language to Ghanaians, questions were phrased in simple and clear English so that they would be understood by respondents. The advantage envisaged in this arrangement was uniformity in question phraseology, meaning and responses. Questions were framed in as simple a language as possible to avoid multiple meaning or complete misunderstanding because only a modest competence in usage and expression was expected of some workers in rural SSIs. However, where local expressions were deemed to be more meaningful, they were adopted in preference to standard English versions. For example, "Troto" was used in preference to passenger-lorry. From the writer's knowledge of Ghana and from suggestions received from a-pretest-of-

TABLE 7

GHANA: VARIABLES USED IN THE STUDY OF  
RURAL TEACHERS. (TAS)

CATEGORY 1: INDEPENDENT VARIABLES		
VARIABLES	PART OF QUESTIONNAIRE ITEM IS LOCATED	ITEM NUMBER
Physiological Attributes		
Sex	1	1
Marital Status	1	2
Age	1	3
Region or Origin/Ethnicity	1	9
Psychological/Biographical		
Educational Qualification	1	4
Teaching Experience	1	6
Competence	3	3
Promotions	2,3	9,5
Further Studies	4,4	2,3
Interest in Teaching	2	6
Teaching Satisfaction	2,2	6,15
CATEGORY 2: DEPENDENT VARIABLES		
School location	1	7
Type of School Teaching	1	5
Number of Students in Class	1	8
Teacher Relation with Students	3	1
Teacher Relation with Rural Community	3,3	2,4
Teacher Relation with Colleagues	4,4	1,5
Teacher Knowledge about Rural SSI	4	8
Teacher Attitude to Work in Rural SSI	2,2	8,12
Teacher Attitude to School Syllabus	2,2,2	5,11,14
Teacher Opinion about Relevance of School Syllabus to Rural SSI Work	2,4	10,9
Rural-Urban Origin of Students	4	6
Teacher Opinion about Working in . Rural SSI	2,2,2	3,4,7
Teacher Attitude to Teaching	2,2,2,4,4	1,2,13,5,10
Teacher Knowledge about Parental Occupations of Students	4	7

Note: See Peil, M., et. al. (1982), pp.6-7 as quoted under Table 6.

WAS respondents, questions which had doubts about being truthfully answered because of local taboos, were reframed in a way such as to remove elements of cultural biases from them or were totally rejected.

The first half of 1980 was used by the writer to make a full investigation of characteristics and attitudes of RSSI workers in Ghana. The situation was studied to unearth the main problems that would be encountered during subsequent fieldwork in Ghana. In this regard, it was decided that the questionnaires would be tested on Ghanaian students attending English Universities and Colleges and, in some cases, on their families resident in Britain too. This procedure is quite acceptable, for as Peil et. al. point out:

The task is to find a question or a set of questions, which will provide the most valid and reliable measure of each variable. Try out questions on friends and people like those who will be in the sample and see what answers you get. (This is known as pretesting: it should be done for the schedule as a whole as well as for individual questions.) If you have to explain what a question means, or add other questions<sup>1</sup> to get a full answer, the question is not adequate.

Questionnaires were used as measuring instruments. Twenty Ghanaians took part in the pilot or pretesting exercise. This number consisted of ten persons who have had teaching experience in Ghana schools, five were civil servants in the Ministry of Industries and the remaining five were housewives who had relatives working in rural SSI in southern Ghana. Fourteen men and six women responded to the pretest. The pretesting sample was drawn from London (8 persons), Manchester (6 persons), and Hull (6 persons). Results of the pretest study conducted during the first half of 1980

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1. Peil, M., et. al., (1982), op. cit., p.116.

are not reported here. But as a result of the pretest, some adjustments were made mainly to WAS and EIS questionnaires.

#### 6:0:3 Evaluation of Questionnaires.

As a result of the pretest, the teachers' questionnaire (TAS) schedule remained almost unaltered. Ambiguously worded and culturally undesirable questions in the workers' questionnaire schedules (WAS and EIS), however, were abandoned. The workers' questionnaire (WAS) schedule originally consisted of 77 items. After the pretest, 9 items were rejected and 10 more were replaced by more appropriate ones suggested by the pretest respondents.

The entrepreneurs' interview schedule (EIS) originally consisted of 9 items. Pretest respondents suggested addition of two more items covering areas such as entrepreneurs' experience and training as well as further comments.

#### 6:0:4 The Structure of WAS Questionnaire (Appendix 1).

WAS consists of 68 items which are divided into three parts. Part One consists of 19 items. The aim of this part is to extract psychological, physiological and biographical information about its respondents. Part two consists of 12 items rated on a Yes-No scale. Part three consists of 37 items rated on a five-point scale. Although items in the WAS schedule were originally framed to solicit responses related to specific individual variables, they are now mixed in their arrangement to avoid monotony. Variable-Item distribution of WAS is therefore shown in Table 6. Dividing WAS Items into three parts was done in order to:

- (i) Avoid possible confusion between factual, general information, attitudinal or opinion questions.
- (ii) Allow some of the items to be rated on point-scales.
- (iii) Facilitate grouping of items rated on same point-scales.

All items in WAS were framed as statements for which point-scale answers were provided for respondents. The advantage in this approach is that it allows for easy classification of responses and respondents are able to select the nearest response to their situation. The disadvantage of this approach is that responses cannot be viewed as being specific to individual conditions. But this is compensated for by the fact that this study is about discerning general groups and relationships between variables. For example, this study is not looking for specific ages of respondents. It is looking for age-groups of respondents.

6:0:5 The Structure of EIS Questionnaire (Appendix 2) .

This questionnaire schedule consists of 11 items meant to be responded to by entrepreneurs or managers of rural SSI only. Like WAS, items were framed as statements, but unlike WAS, entrepreneurs were allowed to give short sentence responses. This is because specific responses such as number of employees and date of establishment of industry were required from entrepreneurs in connection with their various enterprises. In addition, entrepreneurs were allowed to add any further comments which they deemed important but had not been included in the items of the questionnaire (EIS) schedule.

6:0:6 The Structure of TAS (Appendix 3) .

There are 39 items in TAS. TAS is divided into four parts: Part One consists of 9 items; Part Two consists of 15 items; Part Three consists of 5 items; and Part Four consists of 10 items. The distribution of items against their respective variable categories is given in Table 7. All items in TAS were framed as statements. Items in Part One were provided with point-scale responses and respondents were to choose the response which was more applicable to their individual situations. Items in Part Two were rated on a five-point scale; items in Part Three were rated on a four-point scale;

and items in Part Four were rated on a Yes-No scale. The advantages and disadvantages of this approach are the same as those stated for WAS in Section 6:0:4.

#### 6:0:7 Sampling Procedures.

In planning this study, one of the crucial concerns of the writer was how to select rural SSI employing up to 19 persons which would be representative of rural SSI in this sector for southern Ghana (See Section 1:0:3: Adapted Definition of Rural Small-Scale Industry for the Purpose of this Thesis). Another major concern was how to select teachers in rural schools so that they would be representative of rural teachers in southern Ghana having some knowledge about rural industries.

##### 6:0:7.1 Defining the Population of Rural SSI Workers.

In defining the population of rural SSI workers, use was made of the adapted definition given to rural SSI in Section 1:0:3 of this thesis. In this sense, the population of industrial workers in which this thesis is interested would be defined as: all people working in the private sector under Ghanaian owned rural industries, employing up to 19 persons; using at least 60 per cent of local raw materials and labour-intensive or intermediate technology in their production processes (See Plate 1); their organizations sited in areas that have genuine rural characteristics.

A rural area, for the purpose of this thesis, has been defined (Section 1:0:7), as a geographical area that lacks many or all of the basic amenities such as piped water, health services, adequate roads, postal services, spacious and structurally sound houses, electricity and good sanitation systems. Obviously, Accra-Tema metropolitan area falls outside this definition.

The inclusion of Alajo, a suburban of Accra-Tema conurbation, in this study, therefore, becomes very significant. It is an attempt to underscore two important observations:

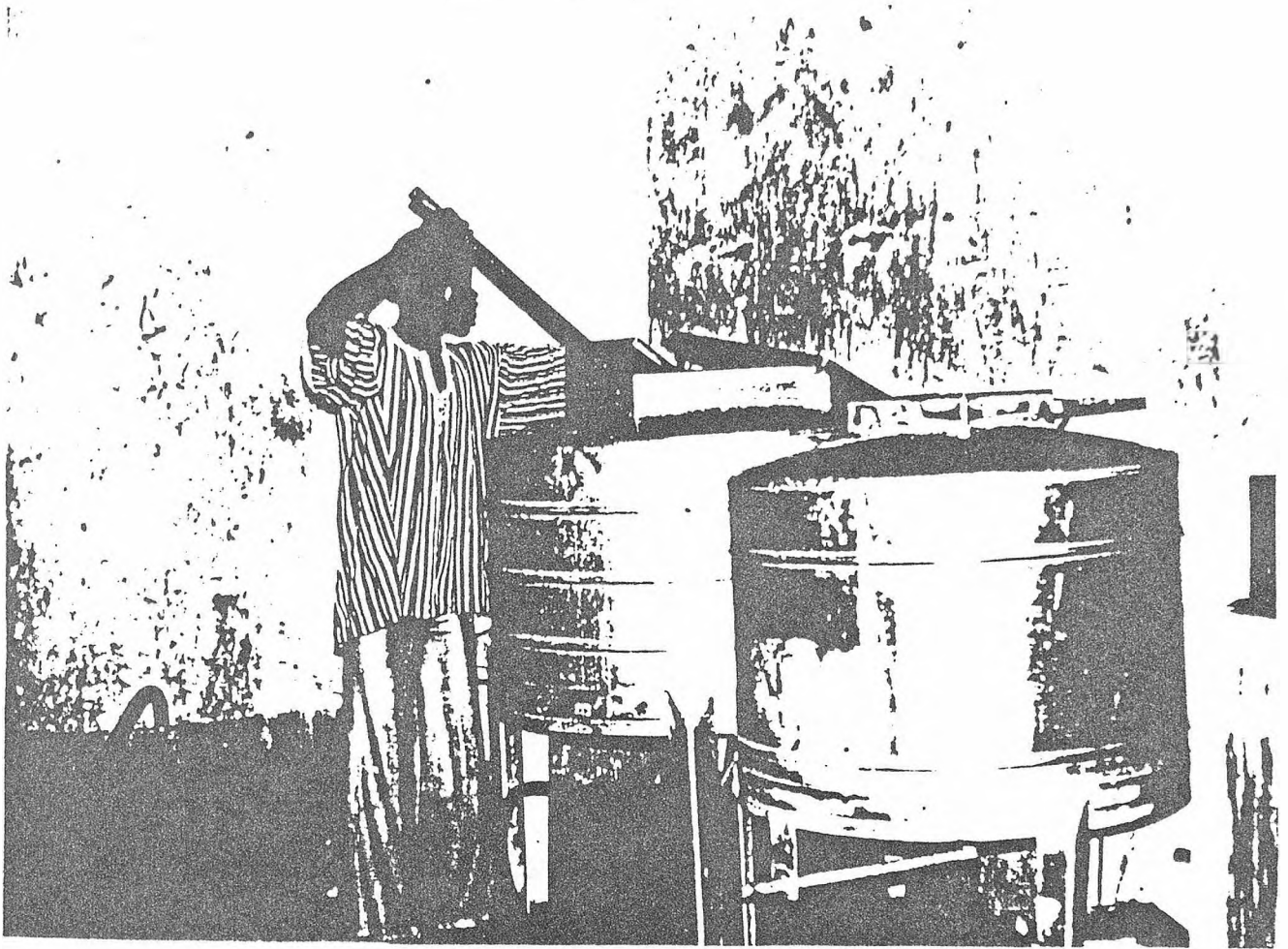


PLATE ONE: Machinery used in fermentation and distilling gin in a gin-factory. This has been improved upon in subsequent years as the factory grew and improvements were undertaken in the manufacturing processes. See Plate Two for the improvements.

Source: Fieldwork photograph - Goku Industries, Akuse, Ghana (Photograph taken in 1969, donated by the courtesy of the Manager).



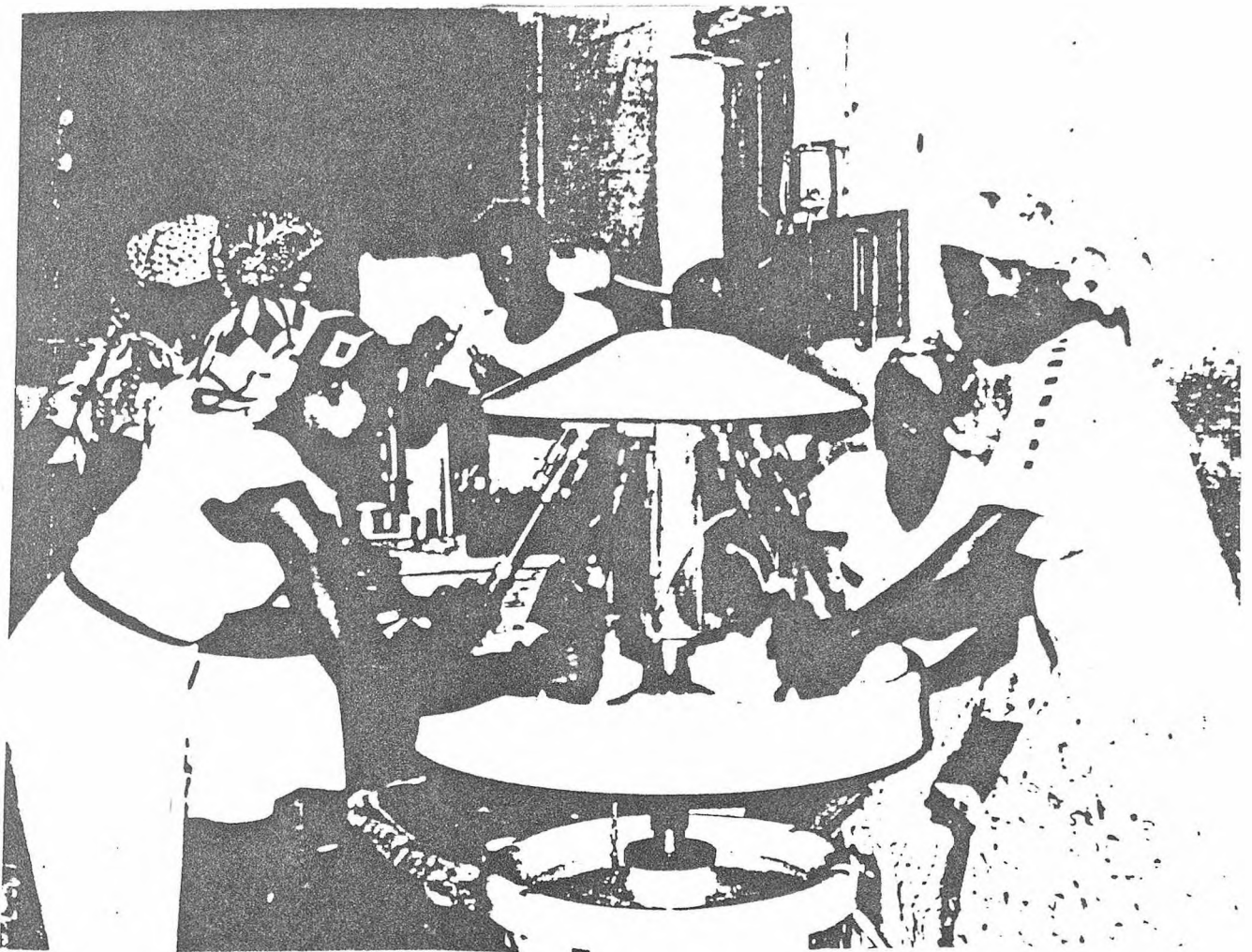


PLATE TWO: An improved method on fermentation and distilling of gin (as shown in Plate One). In the background is a small laboratory for quality control. Although this equipment is not vastly mechanized by advanced technological standards, it shows improvement on the prototype.

Source: Fieldwork photograph taken by the author (Goku Industries, Akuse, 1980).

(i) That some of the suburban satellites of Accra-Tema, such as Alajo and Akwetema, have social and economic realities far removed from those characteristic of the nucleus settlement to which they are peripheral appendages.

(ii) That as far as industrialization in Ghana is concerned, it appears that the public sector has many advantages over the private sector. It was observed by the writer that while the public sector industries, even those sited in rural areas, were provided with some basic amenities such as piped water and diesel-powered generators of electricity, private small-scale industries sited near metropolitan areas, such as in the case of Alajo, lacked those basic amenities. Another case in point is the Ghana Industrial Holding Corporation's<sup>1</sup> industries sited at remote places such as Esiam and Asutuware. They are provided with piped water and diesel-powered electricity generating plants. On the other hand, Gildonk Woodworks Ltd., the rural small-scale industry in Alajo of suburban Accra included in the survey, has none of the basic amenities provided for GIHOC rural industries.

#### 6:0:7.2 Defining the Population of Rural Teachers.

The population of rural teachers would be defined as: all teachers teaching in any educational institution located in a rural village or town in which a RSSI had been selected for survey.

#### 6:0:7.3 Defining the Sample Size for Rural SSI.

In determining the sample size of rural SSI workers, the writer tried to use as large a sample as possible so as to make it representative of the sectoral population.

It must be pointed out here, however, that the writer found difficulty in locating all possible rural small-scale industries

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1. The Ghana Industrial Holding Corporation (GIHOC) is a Government parastatal organization.

because no official or non-official register or record existed to go by. Although the exact population of workers in RSSI in southern Ghana in 1971 was given in official records as being 4,528 (See Table 1), there was no register or record showing where and how this population or samples of it could be located.

The writer therefore based the selection of RSSI surveyed for this study on information and suggestions offered by officials of GIHOC. The information supplied by GIHOC officials is shown on Map 2. It was suggested by these officials that private RSSI were, to a great measure, dependent on rural GIHOC industries (especially in the area of transportation) and therefore they were sited close to where GIHOC industries were located, at least, in southern Ghana.

In this sense, the technique used for the selection of the RSSI sample could be said to be a mixture of cluster and stratified sampling.

Harper defines cluster sampling as:

In this technique the country is divided into small areas; much as with the multi-stage method. The interviewers are sent to the areas with instructions to interview every person they can find who fits the definition given (e.g. fair-haired mothers. This sort of sampling could be applied where surveys of (say) home workshops, or oak trees, were required. It should be carefully distinguished from multi-stage sampling, where the object is to cut down costs. Generally, cluster sampling is used when it is the only way a sample can be found.<sup>1</sup>

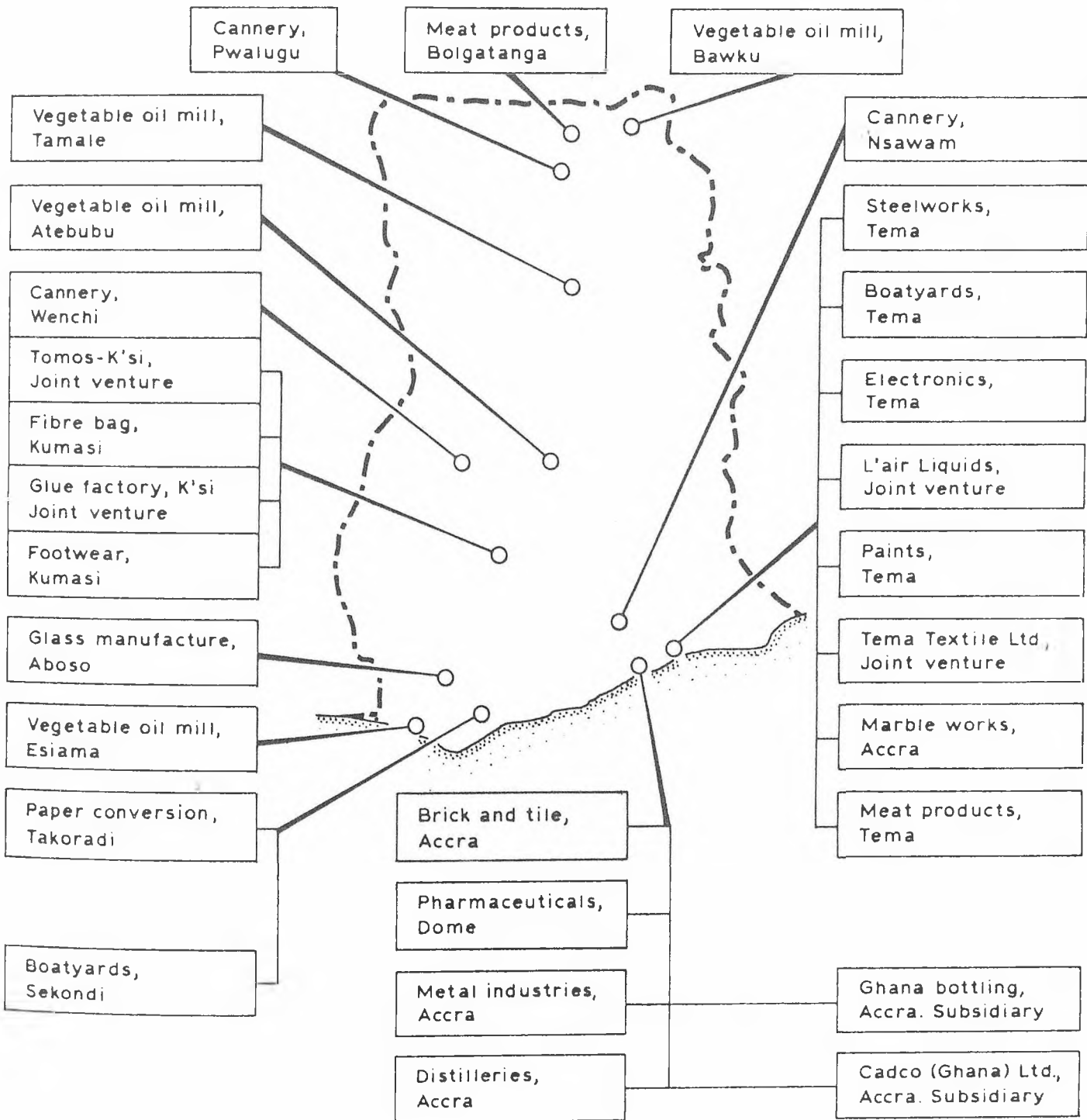
He goes on to define stratified sampling as:

Stratified sampling is better than purely random methods and must therefore be distinguished from the others. In order to use it, one has to know what groups comprise the total population, and in what proportions ... The technique involves the following steps:

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1. Harper, W.H., Statistics, Macdonald and Evans, London, 1965, p.23

Map 2. GHANA: Locations of major industries by Ghana Industrial Holding Corp'n



Source : The Ghanaian Times, Wednesday, May 24th., 1978, p 5.

Note : Small-scale industries are normally sited near their large-scale counter parts. See Map.3.

- (a) Decide on the total sample size (say 1,000)
- (b) Divide this into sub-samples with the same proportions as the groups in the population (say 300 and 700).
- (c) Select at random from each strata the appropriate sub-sample (say 300 pipe and 700 cigarette smokers).
- (d) Add the sub-sample results together to obtain the figures for the overall sample.<sup>1</sup>

Some limitations of this approach could be that rural SSI which were sited far away from GIHOC industries were lost to the survey. Nonetheless, it could be argued that in absence of any rural SSI registers, this method, at least, guided in the location of possible sites of rural SSI. In addition, considering the fact that southern Ghana is not geographically as vast as political units such as Nigeria or Zaire, and for the fact that physical mobility in southern Ghana is quite high, it could be assumed that GIHOC sub-offices were well informed on locations of rural SSI in the southern Ghana area.

In 1975, there was an attempt by the Ministry of Industries in Ghana to compile a directory for all rural industrial enterprises which had submitted applications to it for registration.<sup>2</sup> This directory, as fieldwork later showed, was far from complete or reliable. Many of the enterprises listed in the directory were no longer in existence and most of the enterprises surveyed through the recommendation of GIHOC were not in the register. However, this register was used in conjunction with GIHOC recommendations to arrive at the final sample used for this study. It is the view of the writer that the compilation of an up-to-date directory for rural SSI in Ghana would be a task for another researcher with potentially valuable outcome for the nation.

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1. Ibid., p.24.

2. Ghana Ministry of Industries, Directory of Approved Industrial Enterprises, Ghana Publishing Corporation, Accra, Dec. 31, 1975.

6:0:8 Sample-Size of Rural SSI Studied.

Taking a sample for rural SSI in southern Ghana for this study was not simply a matter of taking the nearest workers in rural SSI. The fieldwork started in June, 1980 and was completed in March, 1981. Over 2,300 miles were covered in the field during which 21 separate enterprises were surveyed and 234 workers, including 16 entrepreneurs or owners of enterprises, responded to the WAS questionnaire. Table 8 shows composition of type of enterprise surveyed and their regional locations in southern Ghana and Table 9 shows regional representation of workers surveyed.

For the purposes of this Study, the sample size of 234 was considered as fairly adequate and representative<sup>1</sup> bearing in mind that:

sample size is far less important than sample representativeness ... no data are sounder than the representativeness of the sample from which they were obtained no matter how large the sample.<sup>2</sup>

Peil, for instance, states that in Ghana:

Only 9% of the working population (233,947 people) were engaged in manufacturing. The majority of these are self-employed, small-scale craftsmen (and women) ... Participation in manufacturing in the conventional sense is limited to less than a quarter of the total (i.e. 58487).<sup>3</sup>

The population of 58487 given for workers in manufacturing industries of Ghana (1960) included those in urban large-size firms and urban SSI as well as those in rural small-scale industries.

It is estimated by the writer, therefore, that the population for rural SSI in southern Ghana would be about 4,500 in 1980 (See Sections 1:0:5 and 2:0:1, especially Table 1). For this reason, the present sample

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1. In a similar study conducted by Peil, M., (1972) op. cit. pp.24-32 on Ghanaian urban SSI for the whole country, a sample size of 994 was used in a total population of 13,083.

2. Fox, D.J., The Research Process in Education, Holt, Rinehart and Winston Inc., New York, 1969, p.347.

3. Peil, M., (1972), op. cit., p.1.

TABLE 8

Number of Rural SSI in sample by Region and Type of Products Specialised In.

Type of Industrial Activity Surveyed	Region					Total
	CR	ER	GA	VR	WR	
Woorwork (Sculpture)	0	1	0	0	0	1
Woodwork (Furniture)	0	0	1	0	0	1
Woodwork (Boat Building)	1	0	0	0	0	1
Sugar Cane (Plantation and crushing)	0	2	0	0	0	2
Sugar Cane (Crushing and distilleries)	0	2	0	0	0	2
Other Distilleries	0	1	0	0	0	1
Fruit Canning	1	1	0	0	0	2
Bricks and Tiles	1	0	0	1	1	3
Coconut Oil	0	0	0	1	1	2
Kente Weaving	0	0	0	2	0	2
Metalwork (Iron Smelting)	0	0	0	1	0	1
Iron Smithing	0	0	0	1	0	1
Total	4	7	1	7	2	21

Note on abbreviations used:

- CR - Central Region
- ER - Eastern Region
- GA - Greater Accra Region
- VR - Volta Region
- WR - Western Region

In analysing the data, these industries were regrouped into six major industrial types. This was to simplify analysis into common production activity types.

TABLE 9

Regional Representation of Rural Workers Surveyed in Southern Ghana

Region	No. of Workers Surveyed	Percentage
Central	76	32.5
Eastern	42	17.9
Greater Accra	7	2.9
Volta	80	34.2
Western	29	12.4
Total	234	99.9*

\* Not 100 per cent due to correction of column percentages to one decimal place.

size of 234 for RSSI was considered to be sufficiently large and representative as to justify proceeding to subsequent analysis and deductions to be made. A stratified-cluster statistical technique was adopted in determining the sample in order to increase precision for the study. Hayman, for instance, argues that:

Greater precision is sometimes needed when one is dealing in areas where differences are likely to be small. If differences are gross, as when one teaching method is greatly superior to another or variables are very highly correlated, relatively small samples can be used because great precision is not needed.<sup>1</sup>

In this study, the writer considers both the dependent and independent variables used in the case of rural SSI workers to be mutually related and therefore the sample size of 234 quite adequate and representative of the near 5,000 rural SSI population.

The 234 sample for rural SSI included a sub-sample of 21 entrepreneurs or owners of rural SSI or their representatives who responded to EIS. The 21 sub-sample of rural SSI sample that responded to EIS consisted of 16 proper entrepreneurs and 5 representatives of absent entrepreneurs. Three of the 5 absent entrepreneurs were said to be "away on company business", one was said to be "sick" and one was said to be "away on a Local Council assignment". The 5 representatives of the absent entrepreneurs were all senior workers in their organizations who acted as second-in-command for entrepreneurs. But due to the personal nature of items 10 and 11 on EIS, they responded to items 1 to 9 only and items 10 and 11 were treated as missing items during analysis. Table 10 shows representation of type of industry surveyed and type of entrepreneurs that responded to the EIS.

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1. Hayman, J.L., (1968), op. cit., p.41.



TABLE 10

Representation of Entrepreneurs by type of  
Industry Surveyed.

Type of Industry	Regional Location	No. of Industries Surveyed	Type of Entrepreneur
Woodwork (Sculpture)	E	1	1
Woodwork (Furniture)	GA	1	1
Woodwork (Boat Building)	C	1	1
Sugar Cane (Plantation and Crushing)	E	2	1,1R
Sugar Cane (Crushing and Distilleries)	E	2	2R
Other Distilleries	E	1	1
Other Distilleries	W	1	1
Fruit Canning	C	1	1R
Fruit Canning	E	1	1
Pottery and Ceramics	C	1	1
Pottery and Ceramics	V	1	1
Bricks and Tiles	V	1	1
Coconut Oil	W	1	1
Coconut Oil	V	1	1
Kente Weaving	V	2	1,1R
Metal Work (Iron Smelting)	V	1	1
Iron Smithing	V	1	1
Bricks and Tiles.	C	1	1
Total	-	21	16,5R

Note on abbreviations used:

- C - Central Region
  - E - Eastern Region
  - GA - Greater Accra Region
  - V - Volta Region
  - W - Western Region
  - R - Representative of Entrepreneur
- .....

#### 6:0:9 Defining Sample-Size of Rural Teachers

Before a decision was made with regard to the number of rural teachers who would be invited to participate in this study teacher-population figures for the villages and towns selected for the industrial study were collected from District Education Offices of the respective villages and towns. It was elucidated that 463 teachers formed the population at the time of the survey. But as there was no register of teachers for schools in these villages and towns,

as many schools as possible were visited and TAS questionnaires were administered to teachers who were present. In all 302 teachers responded to the TAS questionnaire and therefore formed the sample size. Table 11 shows representation of rural teachers who responded to TAS questionnaire by region.

It was not possible to select predetermined numbers of individual teachers according to sex, age or level of education since there was no register or list from which to locate individuals within the population figures supplied by the District Education Offices. Consequently the teachers' population was stratified along the most conspicuous and easily identifiable variables: namely geographical; that is, a teacher must be teaching, at the time of the survey, in the locality of a selected rural small-scale industry. The rural teacher must also be teaching in an institution of learning under the Ministry of Education. This was important because population figures collected from the District Education Offices did not include private or unregistered schools.

TABLE 11

Representation of Rural Teachers Who Responded to TAS by Region.

Region	Population of Rural Teachers	Sample Size of RT.
Central	107	77
Eastern	116	96
Greater Accra	43	21
Volta	160	93
Western	37	15
Total	463	302

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6:1:0 Administering Questionnaires.

The months of June, 1980 to March, 1981 were spent in Ghana by the writer undertaking field work. Several weeks of June, 1980 were used in contacting and discussing this study and its fieldwork strategy with the "local supervisor" appointed by the Ghana Scholarships Secretariat, the sponsors of this study. Dr. George Botchie of the Department of Geography and of the Institute of Statistical, Social and Economic Research, University of Ghana, was the local supervisor appointed.<sup>1</sup> His recommendations about feasibility and potential that this study held for future policies in the area of education and rural small-scale industries had two effects: it persuaded the sponsors to advance money to pay for two fieldwork assistants;<sup>2</sup> and it allowed recruitment of the right calibre of assistants for fieldwork purposes.

At the beginning of June, 1980, the writer had consulted some friends who were then lecturing in Ghanaian colleges and Universities who provided four names of possible candidature for fieldwork assistantship. The two assistants selected were chosen on the consideration of educational background, pleasant personality, ability to perceive the problem being studied and interest in the area of study. In addition, fluency in more than one Ghanaian language was considered an advantage.

Several weeks in June, 1980, were used to orientate the assistants in the form of explaining questionnaires, rationale behind the study, characteristics of the samples and the strategy planned

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1. The writer is very grateful to Dr. George Botchie for the personal interest he took in this study, for the suggestions offered towards the conduction of the fieldwork and for recommending this study as an important area worthy of study with a lot of potential.

2. Messrs. Kwesi Asigbey and Q. Agyabu were recruited as fieldwork assistants from a possible list of four people. Asigbey had just completed a degree in planning and Agyabu had just completed 'A' Levels at the General Certificate of Education. The writer is grateful to them.

for administering questionnaires. To acquaint them with questionnaires, the assistants were requested to respond to the questionnaires personally. Each questionnaire schedule (that is WAS, EIS and TAS) was discussed in detail after it had been responded to. This kind of training for the assistants was considered important by the writer to avoid what Peil describes as:

Surveys are often carried out by people with little training or experience, who assume that they are as qualified as anyone else to ask questions ... Beginners can collect useful information through surveys, but they should learn as much as they can about the task before attempting it.<sup>1</sup>

Fieldwork assistants were specifically instructed not to suggest responses, in their enthusiasm, to respondents on any item which respondents might appear to be hesitant.

To alleviate any suspicions about the purpose of the survey on the part of entrepreneurs and teachers, certain routine procedures were adopted:

- (i) Heads of organizations were approached and letters of introduction from Ghana Scholarships Secretariat and Hull University were presented to them.
- (ii) The writer explained to the heads that the exercise was purely academic and that anonymity would be guaranteed. This was viewed by the writer as necessary, especially in the case of some rural SSI which did not register with the Ministry of Industries. It appeared that such enterprises were opposed to any surveys that might expose them to taxation and to government prosecution for operating without registration. We shall come back to this point in the next chapter.
- (iii) Permission was sought to administer questionnaires.

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1. Peil, M., et. al. (1982), op. cit., p.97.

It was remarkable to note the amount of goodwill that came from heads once their fears were dispersed. Usually, the heads brought employees in batches, an average of five persons at a time, to an area such as a dining hall or an office with tables and chairs to fill in the schedules. This arrangement was quite convenient. It allowed the writer and the assistants the opportunity to attend respondents on individual basis in cases of difficulty to understand specific items and at the same time allowed production or teaching to go on by other employees. First, a general explanation as to what was to be done was given to the group. The writer and assistants then attended individual queries. The writer and assistants therefore worked as a team. At the end of each session, the completed questionnaire schedules were checked for oversights and omissions on the part of respondents. The completed schedules were then parcelled and stored away. They were brought back to Hull University where they were coded and analysed.

#### 6:1:1 Coding and Scoring Questionnaire Items

Fieldwork data collected in Ghana on both rural SSI and rural teachers' samples were coded for statistical analysis using the Hull University Computer Centre. A numerical system of coding was used to represent workers' and teachers' responses:

##### (i) Rural SSI Workers: WAS (Appendix 1)

Part One of WAS was coded as follows:

<u>Item</u>	<u>Response Coding</u>
1. Sex:	Male = 1 Female = 2
2. Age:	Under 15 years = 1 15 - 20 years = 2 21 - 25 years = 3 26 - 30 years = 4 Over 30 years = 5

This numerical coding system was applied to all the 19 items in this part of WAS.

Part Two of WAS consisted of "Yes" or "No" items and they were coded as follows:

<u>Item</u>	<u>Response Coding</u>	
	Yes	No
1. I go to work by Trotro	1	2
2. My work place is less than half an hour's walking distance from where I live	1	2

All the 12 items in Part Two of WAS were coded in a similar way.

Part Three items of WAS were rated on a five-point scale. Each of the responses represented one number starting from 5 to 1. For example, item 1 was rated as follows:

<u>Item</u>	<u>Response Coding</u>
1. It is not difficult to get promotion in this industry	Strongly agree = 5
	Agree = 4
	Not sure = 3
	Disagree = 2
	Strongly disagree = 1

All the 37 items in Part Three were rated in a similar way.

(ii) Rural Entrepreneurs: EIS (Appendix 2)

Due to the specific nature and limited number of items involved in this questionnaire, it was possible to tabulate its responses directly without computer analysis.

(iii) Rural Teachers: TAS (Appendix 3)

Items in Part One of TAS were coded as items in part one of WAS. Items in Part Two of TAS were coded as items in Part Three of WAS. However, items in Part Three of TAS were coded on a four-point scale as follows:

<u>Item</u>	<u>Response Coding</u>
1. Some of my pupils complain to me about other teachers on the staff.	Often = 4
	Sometimes = 3
	Very
	Occasionally = 2
	Never = 1

Items in Part Four of TAS were coded as items in Part Two of WAS.

### 6:1:2 Statistical Methods Used in Analysis of Data.

The choice of statistical techniques which were applied in this study was influenced by the type of research questions posited and the type of data obtained from the research instruments completed by the respondents. In this study, the research questions posed could be grouped under two main categories: descriptive questions and associative questions. Descriptive questions were meant to identify, basically, characteristics of individuals or groups of individuals or sub-groups of individuals or a phenomenon. The object of descriptive questions, as Hayman says:

is to assess and describe certain characteristics of a particular situation at one or more points in time. Often these are points of time in an on-going, real-life setting.<sup>1</sup>

Age structure, educational standard structure and ethnic structure, for instance are some of the characteristics of rural SSI which this study attempts to identify and describe.

Associative questions on the other hand,

focus on the pattern or the degree of association or covariation between two or more variables.<sup>2</sup>

Relevance of school syllabus to work in rural SSI is a point in question for associative questions in this study.

Both the descriptive and associative nature of questions in this study permitted the use of descriptive and inferential statistical techniques. For descriptive questions, frequency and percentage distribution of responses on every item were computed in order to describe the total sample as well as various sample groups. In order to determine the nature of relationships between some of

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1. Hayman, J.L., (1968), op. cit., p.57

2. Booth, T.A., "Research and Policy Making in Local Authority Social Services", in Public Administration, Vol. 57, 1979, p.179.

the descriptive and associative variables, factor analysis and cross tabulations were run on the matrices derived from these types of variables.

The SPSS programmes were used in the analysis of data and as much as possible, sophisticated statistical measures were avoided. One of the major concerns of this study was to present the data in such a way as to make them meaningful and basically comprehensible to the directed audience of entrepreneurs, workers and government administrators who are connected with rural SSI in Ghana, many of whom might not be statistically inclined. It is the opinion of the writer that acceptability of a research report to a focus audience depends on the method used in communicating the research results and the perceived utilitarian value which the focus audience discerns from the report. This belief is amplified by McIntosh, for instance, when she writes:

Very often it (statistical information) is presented in ways which are not easily comprehensible to non-numerate decision makers. The use of elaborate statistical tests may be designed to impress fellow academics. It is likely to be a barrier<sup>1</sup> to the majority of the decision makers.

The writer therefore decided to present the data of this study in forms such as would give the non-specialist reader some understanding of the role which education plays in supporting rural SSI in southern Ghana.

In the next chapter, the descriptive results of the fieldwork data will be given.

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1. McIntosh, N.E., "Barriers to Implementing Research in Higher Education" in Studies in Higher Education, Vol.4, No. 1 1979, p.81



CHAPTER SEVEN

RESEARCH RESULTS : DESCRIPTIVE STATISTICS  
AND REPRESENTATION OF INDUSTRIAL TYPES

7:0:0 General Characteristics of the RSSI sample

The three questionnaire schedules<sup>1</sup> used for this study were separately analysed. This chapter is concerned mainly with descriptive statistics; and its aim is to give an overall picture of the characteristics such as structural, environmental and situational attributes of the rural small-scale industrial sample. But in order not to interrupt the pattern of presentation of information to the reader, some interpretations have been added to the statistical tables. The comments are based on the writer's knowledge and experience of southern Ghana. These personal interpretations, therefore, should not be viewed as inferential in themselves, but rather as contextual information.

It must be pointed out at this stage that in all social science research, the object is to interpret observed behaviour of individuals or groups of individuals, often, on the basis of empirical evidence. However, there always exists room for differences of opinion on interpretation of data on social factors under study, even where such opinions are based on statistical evidence. In this chapter, where opinion has to be inferred or assumed on the strength of personal acquaintance with southern Ghana conditions, the possibility of disagreement is even expected to be greater.

For descriptive purposes, frequency distribution tables in this chapter have been computed on every item in order to describe the total sample as well as the various sub-sample groups. This involved the calculation of frequency-responses as well as percentage-

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1. Refer to Appendices 1, 2 and 3.

responses at every level of the respondents' perception.

Because there is no inherent ordering in the nominal data for items such as Sex, Marital Status and Region of Origin, statistical tendency measures such as arithmetic means, standard deviations and medians have been uniformly omitted at this descriptive stage for all items.

#### 7:0:1 Descriptive Statistics

Descriptive statistics of fieldwork data is given in sections 7:0:1.1 to 7:0:4.4 largely in the form of tables. Some of the tables have added comments but some of the tables are self explanatory and therefore have no additional comments.

##### 7:0:1.1 Analysis of WAS Part One Responses.<sup>1</sup>

TABLE 12

Composition of RSSI Sample By Sex

Sex	Frequency	Percentage
Male	193	82.5
Female	41	17.5
Total	234	100.0

Comment:

The relatively low percentage of women in RSSI sector sample could be due to numerous factors, the most important of which may be:

(i) a general view in Ghana that rural industries require high inputs of manual labour. It appears the society disapproves of women taking part in strenuous activities, even if for career purposes.

(ii) that Ghanaian women have a tradition of going into retail trading than into RSSI, which in any case, is a recent employment

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1. Unless otherwise stated, the sample population, N = 234, for all the tables in this chapter.

avenue for them.

TABLE 13

Age Structure in the RSSI Sample

Age Group	Frequency	Percentage
Under 15 years	3	1.3
15 - 20 years	55	23.5
21 - 25 years	59	25.2
26 - 30 years	42	17.9
Over 30 years	75	32.1
Total	234	100.0

Comment:

Age 25 appears to be a dividing line in the age-structural pattern of RSSI sample: 50% of workers fall above age 25 while another 50% are either 25 or below.

The high percentage of over 30-year people (32.1%) in RSSI sample is very significant. More ex-civil servants are entering this sector of the economy. This group of people have relatively high educational qualifications; this means they had spent longer periods in the education system and are therefore expected to be older than fresh school leavers.

TABLE 14

Composition By Ethnic Origin (Region of Origin)  
Among the RSSI Sample.

Region of Origin	Frequency	Percentage
Accra	7	3.0
Ashanti	7	3.0
Brong Ahafo	2	0.9
Central	63	26.9
Eastern	34	14.5
Northern	1	0.4
Upper	2	0.9
Volta	94	40.2
West	21	9.0
Immigrant	3	1.3
Total	234	100.1*

\* This column adds up to more than 100% due to the addition of correction of row percentages to one decimal place.

Comment:

This survey was conducted in southern Ghana, consisting of Accra, Central, Eastern, Volta and Western regions only. The analysis of ethnic data shows that apart from respondents from the selected regions, employees from other regions (intra-migrant workers) and some non-Ghanaian (migrant workers) were present in the sample. Ethnicity among the RSSI sample, therefore, appears to be intra-nationally and inter-nationally mixed.

TABLE 15

Marital Status Among Rural SSI Workers' Sample

Marital Status	Frequency	Percentage
Married	127	54.3
Single	87	37.2
Engaged	16	6.8
Divorced/Widowed	4	1.7
Total	234	100.0

TABLE 16

Distribution of Standard of Education Among Rural SSI Workers' Sample

Standard of Education <sup>1</sup>	Frequency	Percentage	
No Schooling	7	3.0	) Lower Education
Primary Schooling	15	6.4	
Middle Schooling	104	44.4	
Secondary Schooling	43	18.4	) Higher Education
Technical/Vocational/Commercial	59	25.2	
Teacher Training	6	2.6	
Total	234	100.0	

1. Number of years of schooling are shown as below:  
 Primary = 6 years of schooling. Middle = 10 years of schooling  
 Secondary = 11-17 years of schooling. Technical/Vocational/Commercial = 12-17 years of schooling. Teacher Training = 14-17 years of schooling.

Comment:

Later, in Chapter Eight, the categories of schooling will be re-grouped as: Lower Education (No Schooling, Primary and Middle) and Higher Education (Secondary, Technical/Vocational/Commercial and Teacher Training.)

TABLE 17

Different Methods by Which Workers Learn  
About Jobs in RSSI Sector

Item: I learnt about my present job through:

Different Methods	Frequency	Percentage
Newspaper Advert	32	13.7
Friends	129	55.1
Going Round	21	9.0
Family Connections	52	22.2
Total	234	100.0

Comment:

Sample analysis shows that learning about jobs through friends is the most significant means by which workers acquired information on employment possibilities. This appears to confirm what generally occurs in Ghana: Not every one buys newspapers, especially in rural Ghana. Newspapers are, therefore, passed from hand to hand in friendship circles.

Family connections also appear to feature significantly in learning about jobs. This may be due to the extended-family relation system still practiced in Ghana.

TABLE 18

Duration of Working With A Particular Enterprise

Item: I have worked here for:

Duration	Frequency	Percentage
Under 1 year	47	20.1
1 - 2 years	69	29.5
3 - 5 years	55	23.5
Over 5 years	63	26.9
Total	234	100.0

TABLE 19

Number of Jobs Held By Individual Workers Since Leaving School

Item: After leaving school, this is my:

No. of Jobs	Frequency	Percentage
First Job	110	47.0
Second Job	69	29.5
Third or More Jobs	55	23.5
Total	234	100.0

.....

TABLE 20

Methods of Punishing Lateness To Work

Item: Lateness to work is punishable by:

Methods of Punishment	Frequency	Percentage
Sacking	4	1.7
A Warning	160	68.4
Loss of Pay	70	29.9
Total	234	100.0

Comment:

Sample data analysis shows that a warning is a more popular means of redressing lateness to work among RSSI workers.

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TABLE 21

The Kind of Job Workers Would Like for Their Children  
if They Had the Opportunity

Item: If you had the opportunity, what kind of job would you like for your child:

Job Types	Frequency	Percentage
Farming	47	20.1
Factory Work	26	11.1
Medical Professions	71	30.3
Business	44	18.8
Government Work	23	9.8
Teaching	13	5.6
Forces Personnel	10	4.2
	234	99.9*

\* This column does not add up to 100 per cent due to rounding up of initial percentages to one decimal place. The sample shows that if workers had the opportunity, medical professions would be what they would like most for their children.

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TABLE 22

Methods by Which Workers are Selected  
into Rural SSI

Item: Before I was employed, I was:

Selection Methods	Frequency	Percentage
Interviewed	154	65.8
Tested	41	17.5
Other: Family Connection or None of the above	39	16.7
Total	234	100.0

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TABLE 23

Occupations of Workers' FathersItem: Which category best describes your father's occupations:

Fathers' Occupational Group	Frequency	Percentage
Business	30	12.8
Teaching	12	5.1
Farmer	127	54.3
Government Worker	37	15.8
Industrial Worker	22	9.4
Medical Worker	3	1.3
Forces Personnel	3	1.3
Total	234	100.0

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TABLE 24

Occupations of Workers' MothersItem: Which category best describes Mother's occupation:

Mothers' Occupational Groups	Frequency	Percentage
Teacher	10	4.3
Farmer	88	37.6
Trader	125	53.4
Factory Worker	0	0.0
Medical Worker	5	2.1
Government Worker	6	2.6
Forces Personnel	0	0.0
Total	234	100.0

Comment:

Sample data analysis suggests that the majority of workers' Mothers are traders (see also comment under Table 12).

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TABLE 25

Workers' Opinion About Job Creating Agents

Item: Who in your opinion, should be responsible for creating jobs:

Job Creators	Frequency	Percentage
Government	131	56.0
Private Individuals	55	23.5
Banks	7	3.0
Schools	8	3.4
Businessmen	33	14.1
Total	234	100.0

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TABLE 26

Indication of Workers' Pride of Their Enterprises

Item: Are you proud of your company:

Index of Company Pride	Frequency	Percentage
A little	52	22.2
Very much	166	70.9
Not at all	16	6.8
Total	234	99.9 *

\* This column does not add up to 100 per cent due to rounding up of row-percentages to one decimal point.

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TABLE 27

Workers' Opinion About Their Pay in Rural  
SSI

Item: My pay in this job is:

Reaction to Pay	Frequency	Percentage
More than the work I do	12	5.1
Just O.K.	109	46.6
Less than the work I do	113	48.3
Total	234	100.0

.....

TABLE 28

Workers' Aspirations For Their Children

Item: If you were to choose for your child, which one of these would you select:

Choice of Aspiration	Frequency	Percentage
Money	1	0.4
Good education	186	79.5
A secure job with average pay	44	18.8
An easy job with less pay	1	0.4
Playing Lotto	0	0.0
A risky job with high pay	2	0.9
Total	234	100.0

Comment:

Sample data analysis seems to suggest that rural workers hold education in very high esteem: 79.5% of workers would choose 'good education' for their children.

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TABLE 29

Reasons For Working In Rural SSIItem: I work here mainly because:

Reasons for Working	Frequency	Percentage
I have to work	36	15.4
The pay is good	22	9.4
I do not want to stay idle	67	28.6
I like the job	99	42.3
This is the only job I could find	10	4.3
Total	234	100.0

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TABLE 30

Number of Promotions Since Workers Joined  
Their Respective Enterprises.Item: Since I joined this company, I have had:

No. of Promotions <sup>1</sup>	Frequency	Percentage
One promotion	155	66.2
Two promotions	51	21.8
Three or more promotions	28	12.0
Total	234	100.0

1. Here one promotion means "being employed", two promotions means "one promotion after being employed" and three or more promotions means "two or more promotions after employment".

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7:0:1.2 Analysis of WAS Part Two Responses: Situational Characteristics

TABLE 31

Responses to 12 Items Relating to Situational Factors in Rural SSI

Item	Total %	Responses			
		Yes		No	
		Frequency	%	Frequency	%
1. I go to work by Trotro	100	200	85.5	34	14.5
2. My work place is less than half an hour's walking distance from where I live	100	100	42.7	134	57.3
3. This company has some in-service training schemes for its workers.	100	98	41.9	136	58.1
4. I am expecting promotion at work in the near future	100	20	8.5	214	91.5
5. I cannot advise a friend or a relative to come and work here.	100	141	60.3	93	39.7
6. My supervisor explains company policies to me.	100	60	25.6	174	74.4
7. Many workers here take part in some kind of private study	100	116	49.6	118	50.4
8. None of my workmates got promotion recently	100	136	58.1	98	41.9
9. I am looking for a new job.	100	160	68.4	74	31.6
10. I have my own vehicle by means of which I go to work.	100	20	8.5	214	91.5
11. Some of my workmates are looking for new jobs.	100	104	44.4	130	55.6
12. This company provides transport facilities to and from work for its employees	100	91	38.9	143	61.1

7:0:1.3 Analysis of WAS Part Three Responses: Opinions and Attitudes.

TABLE 32

Responses to 37 Items About Workers' Attitudes and Opinions About Rural Small-Scale Industries.

Item	Responses <sup>1</sup>				
	SD	D	NS	A	SA
1. It is not difficult to get promotion in this industry	54 23.1	57 24.4	37 15.8	39 16.7	47 20.1
2. The people I work with help each other at work	3 1.3	15 6.4	18 7.7	111 47.4	87 37.2
3. I see myself as very low in the company set-up	83 35.5	51 21.8	27 11.5	33 14.1	40 17.1
4. High quality work is produced only by machines	60 25.6	37 15.8	33 14.1	43 18.4	61 26.1
5. It is difficult to try new ideas here, the supervisor is always watching.	47 20.1	53 22.6	39 16.7	51 21.8	44 18.8
6. Problems experienced at work were never mentioned at school.	32 13.7	58 24.8	33 14.1	54 23.1	57 24.4 *
7. Working in a large city is not as good as working in a small town.	36 15.4	58 24.8	36 15.4	43 18.4	61 26.1 *
8. The training programmes by the company are not relevant to my work	78 33.3	71 30.3	20 8.5	33 14.1	32 13.7 *
9. I can easily change job without further training.	32 13.7	38 16.2	31 13.2	66 28.2	67 28.6 *
10. Some people I work with act as if they own this place.	43 18.4	44 18.8	21 9.0	52 22.2	74 31.6
11. My school education is quite relevant to my job.	36 15.4	41 17.5	19 8.1	79 33.8	59 25.2
12. My supervisor is fair to all workers.	17 7.3	14 6.0	25 10.7	72 30.8	106 45.3 *
13. New and advanced machines are what this industry needs.	14 6.0	13 5.6	18 7.7	54 23.1	135 57.7 *

	SD	D	NS	A	SA
14. My supervisor does not care about the way I do my work	104 44.4	66 28.2	23 9.8	18 7.7	23 9.8 *
15. My class teacher wanted me to go on to higher education	22 9.4	21 9.0	20 8.5	64 27.4	107 45.7
16. There is no point in using my hands to work if machines could be found to do the same work.	35 15.0	32 13.7	21 9.0	67 28.6	79 33.8 *
17. My health has shown improvement recently.	18 7.7	28 12.0	23 9.8	101 43.2	64 27.4 *
18. The management here encourages private study	50 21.4	38 16.2	30 12.8	55 23.5	61 26.1
19. I cannot talk freely with my supervisor if I have a problem.	87 37.2	53 22.6	15 6.4	59 25.2	20 8.5 *
20. New machines will help to produce more goods.	9 3.8	14 6.0	21 9.0	55 23.5	135 57.7
21. No matter what we do in this country, we will never catch up with overseas industry.	61 26.1	38 16.2	39 16.7	37 15.8	59 25.2
22. Office work is more respectable than factory work.	52 22.2	49 20.9	49 20.9	40 17.1	44 18.8
23. My working conditions are better than those of my parents.	36 15.4	48 20.5	29 12.4	56 23.9	65 27.8
24. The experience I gain on the job from my day to day work is much more useful to me than the company training programmes.	24 10.3	27 11.5	31 13.2	79 33.8	73 31.2
25. Through private study I can get a better job than my present one.	25 10.7	31 13.2	22 9.4	72 30.8	84 35.9
26. My school work was not related to my present work.	38 16.2	65 27.8	23 9.8	62 26.5	46 19.7
27. I work at the same task the whole day.	35 15.0	65 27.8	35 15.0	49 20.9	50 21.4 *
28. Things were easier for my parents than they are for me.	27 11.5	22 9.4	32 13.7	59 25.2	94 40.2
29. Machines manufactured overseas are better than the ones made here.	12 5.1	25 10.7	33 14.1	71 30.3	93 39.7 *

TABLE 32 (Contd).

	SD	D	NS	A	SA
30. I am not overworked but I feel tired after my day's work.	43 18.4	46 19.7	17 7.3	82 35.0	46 19.7 *
31. My teacher at school was concerned about what I was going to do after I finished school.	29 12.4	45 19.2	43 18.4	65 27.8	52 22.2
32. The company needs more training schemes if the employees are to work better.	12 5.1	24 10.3	13 5.6	80 34.2	105 44.9 *
33. I have plenty of freedom to use my own ideas at work.	13 5.6	52 22.2	48 20.5	60 25.6	61 26.1
34. Many things I learnt at school were related to job satisfaction.	26 11.1	44 18.8	28 12.0	80 34.2	56 23.9
35. I easily feel bored with my work these days.	49 20.9	61 26.1	31 13.2	50 21.4	43 18.4
36. The pay here is better than the pay in other industries.	48 20.5	42 17.9	49 20.9	40 17.1	55 23.5 *
37. We are encouraged to develop simple tools suitable for our work at the industry.	34 14.5	40 17.1	18 7.7	66 28.2	76 32.5

\* Percentages in this row do not add up to 100% due to corrections made to one decimal place.

1. Two numbers are given under each response. The first one stands for frequency of responses and the second one stands for percentage of responses to (N = 234).

Note on Abbreviations Used:

SD = Strongly Disagree  
D = Disagree  
NS = Not Sure or Don't Know  
A = Agree  
SA = Strongly Agree.

7:0:2 Analysis of EIS Responses

TABLE 33

Name of Industry and Location Item: (1,2)	Type of Products (3)	Date Est. (4)	No. of Employees (5)	Share Holders (6)	Operational Difficulties (7)	Suggestions for Improvement (8)	Training Schemes Preferred (9)	Entrepreneur Qualifications (10)	Further Comments (11)
1A Dan's Wood Carving, Aburi, ER	Wood Carving	1977	10	1	b,g	i	App	MSLC, 6-Years App.	RINEE
2A Gildonk Woodworks, Alajo, GA	Furniture	1974	7	2	b,g	i,v	App, YMCA	MSLC, 3-Years App	None
3A Yartel Boat Building Co., Elmina, CR	Fishing Boats	1971	19	1	a,e,h	i,ii,iii,v	IST, NVTI	HND, 10-Years Exp, Ex-Civil, MDPI	SNP
4B Asutsuare Sugar Estate, * Asutsuare, ER	Sugar Cane and Sugar Cane Juice	1963	8	2	b,c,g	i,v	AT, OT	MSLC, AT, 5-Years Exp.	None
5B Akorley Sugar Cane Crushers, Akorley, ER	Sugar Cane and Sugar Cane Juice	1971	4	2	b,c,g	i,v	AT, App.	Dip, Ex-Civil	None
6B Somanya Distilleries, * Somanya, ER	Alcohol	1970	4	1	a,f,g	i,iv,v	IST	MSLC, AT, 6-Years Exp.	None
7B Goku Distilleries, Akuse, ER	Alcohol	1967	6	1	a,b,e	i,iv,v	IST, MDPI	Dip, Ex-Civil,	None
8B Adoagir Distilleries, * Adoagir, ER	Alcohol	1962	3	1	a,c,g	i,v	App.	MSLC, 3-Years App.	None
9B Cape Coast Citrus Ltd., Anomabu, CR	Lime Juice and Lime Oil	1974	19	4	a,e	i,iii,iv	MDPI	Dip, 8-Years Exp.	None
10B Nsawam Cannery Ltd, Nsawam, ER	Alcohol, Beverages, Canned Fruits and Vegetables	1967	7	1	a,e,g	i,iv,v	App., MDPI	Dip, Ex-Civil, MDPI	None
11C Ziga Pottery and Ceramics, Kolenu, VR	Water Coolers and Glazed Wares	1951	11	1	a,b,c,d,g	i,ii,iii,v	IST, App.	Dip, OT, 29-Years Exp.	RINEE
12C Saltpond Pottery and Ceramics, Saltpond CR.	Water Coolers and Glazed Wares	1974	19	3	a,b,c,d	i,ii,iii	IST, App.	Cert "A", Ex-Civil, NVTI	SNP
13D Biriwa Bricks and Tiles Ltd. Biriwa, CR.	Bricks and Roofing Tiles	1964	19	1	a,c,d	i,ii,v	IST, NVTI	Dip, Ex-Civil	SNP



TABLE 33 (Contd).

(1,2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
14D Dayi Bricks and Tiles Ltd. Gbefi, VR	Bricks and Roofing Tiles	1980	1	1	a,b,c,g	i	App	ACCA, Ex-Civil	None
15D Kikam Bricks and Tiles Ltd. Kikam, WR	Bricks and Roofing Tiles	1974	10	1	a,b,c,d,g	i,v	App, NVTI, YMCA	MSLC, 6-Years Exp.	RINEE
16B Essiama Oil Mills Co. Essiama, WR	Edible Oil, Soap and Copra Cake	1960	19	1	a,c,e,g	i,iv,v	MDPI, OT	B.A., 10-Years Exp, Ex-Civil	None
17B Anloga Oil Mills Ltd. Anloga, VR	Edible Oil, Soap and Copra Cake	1963	8	1	b,c,f,g	i,iv,v	App, IST	Primary School 12-Years Exp.	None
18E Gobah Kente Weaving Industry, Dzelukope, VR	Kente Cloth, Fugu and Stoles	1933	17	2	a,b,c,e	i,ii,iii,v	App.	Cert "A", 16- Exp., Ex-Civil	RINEE
19E Dzotra Kente Weaving Industry, Agbozume, VR	Kente Cloth, Fugu and Stoles	1963	13	2	a,b,c,e	i,v	App.	MSLC, 10-Years Exp.	SNP
20F Akpafu Iron Works, Akpafu, VR	Pig Iron and Wrought Iron	1800s	19	1	b,c,d,i	i,ii,v	App, OT.	HND, Ex-Civil	SNP, RINEE
21F Akpafu Black Smiths Association, Akpafu, VR	Cutlasses, Hoes, Knives and Guns	1800s	11	3	b,c,d,i	i,iii,v	NVTI, App.	MSLC, 15-Years Exp.	RINEE

Notes on Abbreviations Used:

- (n) = Item number on EIS Questionnaire Schedule.  
 \* = EIS responded to by a representative of the actual entrepreneur.  
 ER = Eastern Region  
 CR = Central Region  
 GA = Greater Accra Region  
 VR = Volta Region  
 WR = Western Region

The 21 Industries surveyed were regrouped into six major categories; and the letters A-F stand for:

- A = Woodwork  
 B = Alcohol, Beverages and Canning Products  
 C = Pottery and Ceramics  
 D = Bricks and Tiles  
 E = Textiles  
 F = Iron Works

Responses given to item 7 of EIS are shown as follows:

- a = High wages for employees and high cost of raw materials. (The writer was informed that the minimum wage was increased from ₵2.00 per day to ₵12.00 per day as from June 1980 by Government directive).

b = No official sources of finance to aid mechanization and expansion.

c = Farming/fishing community. Hence during farming/fishing season, workers leave to go and farm/fish.

d = Exposure of employees to naked fire. Safety equipment required.

e = Lack of raw materials and of spare parts for machines on the local market.

f = Lack of land to expand factory space.

g = Difficulty in obtaining appropriate transport facilities, to evacuate finished products to market centres.

h = Limited foreign exchange quotas for importation of diesel motors, to power fishing boats.

i = Government or big companies have expressed no interest in project. Investment therefore has remained at an individual rural level.

Responses given to item 8 of EIS are shown as follows:

i = Government should set up Rural Industrial Banks to assist entrepreneurs with investment in machinery and in hiring of specialist labour.

ii = Specialist consultancy centres should be set up by the Ministry of Industries to give advice to entrepreneurs on specialized units.

## TABLE 33 (Contd).

- iii = Research results concerning new locations of raw materials and equipment should be made accessible by government agencies and institutions to entrepreneurs.
- iv = Storage facilities should be provided by the Ministry of Industries so that raw materials would be available throughout the year instead of the present seasonal availability.
- v = Spare parts of machines and simple tools should be adequately supplied on the local market by the government.

Responses to item 9 of EIS are shown as follows:

- App = Apprenticeship Training On-The-Job.
- IST = In-Service-Training in a Technical or Vocational Institute.
- AT = Basic Agricultural Training at Kwadaso Agricultural College.
- OT = Overseas training in the selected interest area.
- MDPI = Managerial training for senior employees at the Management Development and Productivity Institute, Accra.
- NVTI = Skills-Training Programmes at the National Vocational Training Institute at Accra and Biriwa.
- YMCA = Employee skills-training at the Young Men's Christian Association Vocational School at Accra.

Responses to item 10 of EIS are shown as follows:

- MSLC = Middle School Leaving Certificate. This is the terminal certificate obtained at the end of ten years of schooling.
- n-Years App. = n-years of apprenticeship in the chosen trade.
- n-Years Exp. = n-years of experience working in the chosen trade.
- Ex-Civil = An ex-civil servant.
- HND = High National Diploma.
- BA/BSc = A degree in Arts or Science.
- Cert "A" = Teachers' Certificate "A".
- Dip. = A College Diploma in a chosen area.
- ACCA = Professional Chartered Accountants' qualification.

Responses to item 11 of EIS are shown as follows:

- RINEE = Rural industries need every encouragement from the government in order to minimise youth migration to cities.
- SNP = The Government should come out with a serious national policy on rural industries.
- None = No response.

7:0:3 Representation of Industrial Types in the Sample of RSSI of Southern Ghana.

In order to explain Table 33, it is reasonable to refer back to Table 8. In Table 8, it was mentioned that the 21 industries surveyed were later regrouped into six main industrial types. This was necessary for two reasons: (a) The number of employees or respondents was very small in some of the industries surveyed. Such small numbers, analitically, produced insignificant results; it was therefore important to regroup the industries. (b) Many of the industries surveyed used identical raw materials, manufactured identical goods and, in some cases, used identical production methods. In regrouping the industries, a general criterion was followed: the product of the industry. Industries producing similar goods were grouped under one of the six reclassified groups. In Table 33, the letters A,B,C,D,E and F are used to show industrial regroupings. Table 34, however, shows percentage of sample which accounts for each of the regrouped industries.

TABLE 34

Composition of Sample by the Main Six Industrial Types

Type of Industry	Designated letter in Table 33	Frequency	Percentage
1. Woodworks	A	36	15.4
2. Food (Alcohol, Beverage, Oil)	B	78	33.3
3. Pottery and Ceramics	C	30	12.8
4. Bricks and Tiles	D	30	12.8
5. Textiles	E	30	12.8
6. Ironworks	F	30	12.8
Totals	-	234	99.9*

\* Not 100% due to correction of column percentages to one decimal place.

### 7:0:3.1 Industrial Locations

Map 3 shows the locations of rural small-scale industries surveyed as listed under Table 33. It must be pointed out that although 21 industries were surveyed, only 20 locations appear on Map 3. This is because two industries, both connected with iron extraction and working, were surveyed at one location: Akpafu. On Map 3, (2) has been put in parenthesis against the name Akpafu to indicate that two industries were surveyed at this particular location. The letters ER, CR, GA, VR and WR stand for the regions as shown in Table 33.

### 7:0:3.2 Basic Operational Characteristics of the Six Industrial Groups Surveyed

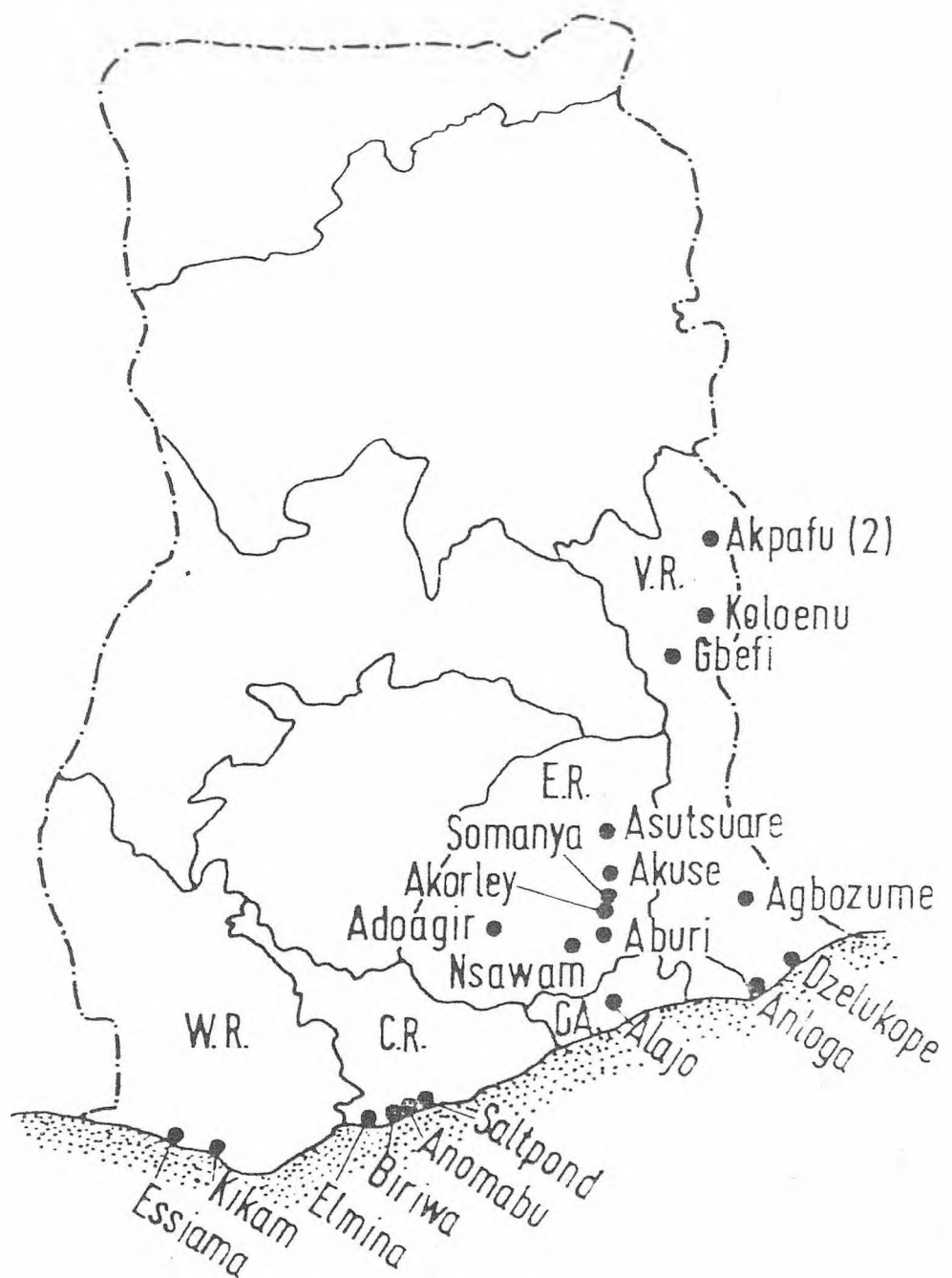
Table 33 has shown the 21 industries which were surveyed. These 21 industries were later reclassified into six major industrial types (Table 34) according to type of product an industry manufactured.

The first basic characteristic of each of the six industrial groups, therefore, was the type of product that the group specialised in. Some other conspicuous operational characteristics were the type of raw materials used in the production processes and the type of equipment employed during production. Whereas Tables 33 and 34 indicated raw materials and types of products associated with the industries, little could be deduced about the type of equipment used in the industries. The aim of this section, therefore, is to give a brief account of the equipment characteristics of the six industrial types surveyed. Let us start with the woodwork industry.

#### (i) The Woodwork Industry

Three types of the Woodwork industry were surveyed: Wood Carving; Furniture; and Boat Building. These three types of

Map 3. GHANA: Location of small-scale industries studied



industry in the woodwork sector used some common basic tools such as saws, hammers, clamps, vices, planes and spraying machines. In the furniture and carving industries, manual versions of the tools mentioned above were predominant while, due to the size of work involved in boat building, modern motor-powered versions of the tools mentioned above are nowadays preferred. In addition to the tools mentioned above, it was noted by the writer that the carving industry used other specialised tools which were used for scooping intricate shapes out of wooden blocks. Plate 3, for example shows a professional wood carver at work using one of such specialised tools.

Another more significant observation made by the writer during fieldwork in Ghana was the interdependence of the rural industrial sector on other intra and international industries. In Plate 3, for instance, the carver is wearing a shirt probably manufactured in Taiwan or Hong Kong. Similarly, some of the tools used in the rural industrial sector industries of Ghana were noted to be manufactured elsewhere. We have discussed this kind of relationships in fuller detail earlier under Dependency Theories.

(ii) Food Industries

Four categories of the food industry were surveyed: Sugar Cane Farming and Crushing of Sugar Cane; Distilling of Sugar Cane Juice into Alcohol; Fruit and Fruit Juice Cannery and Copra Oil Production.

The two sugar cane farms surveyed used tractor machines to till the land and to plant sugar cane. Harvesting of the sugar cane was done by hand but diesel powered motors were used in crushing the sugar cane to extract its juice. The juice obtained was then sold to distillers.



PLATE THREE: This is a master craftsman carving a traditional stool. His tools and work requirements differ considerably from that of a carpenter.

In this picture one can note an interesting relationship between rural and international economies. This rural craftsman used part of his earnings to purchase the shirt he was wearing, which, most probably, was manufactured in Taiwan or Hong Kong.

Source: This picture was originally a post-card.

Three distilleries were surveyed and they fell into two groups: those that used simple distillation equipment made out of drums and pipe-tubing and those that used advanced distilling plants manufactured overseas. Goku Industries belonged to the latter group while Adoagir Distilleries and Somanya Distilleries belonged to the former group. The type of equipment used by Goku Industries is shown in Plates 1 and 2.

Two canning industries were surveyed and both used similar equipments. The fruits were picked and washed by hand. Canning was however done by machines which packed, sterilized and sealed the cans automatically. The cans used were manufactured in Ghana by Tema Steel Works. The labels fixed to the cans were printed in Ghana and they were affixed to the cans by hand. Another case of interdependence.

Two Copra Oil industries were surveyed and both used traditional methods in the extraction of oil. Copra was grated either by hand or by diesel powered grating mills and the oil was extracted by heating and sieving the grated copra.

(iii) Pottery and Ceramics Industry;

Two industries were surveyed in this sector. Both used similar tools. The potter's wheel was the basic equipment used in these industries. The potter's wheel was manually operated. The finished products were then fired in kilns of the type shown in Fig. 3. Firewood was used as fuel.

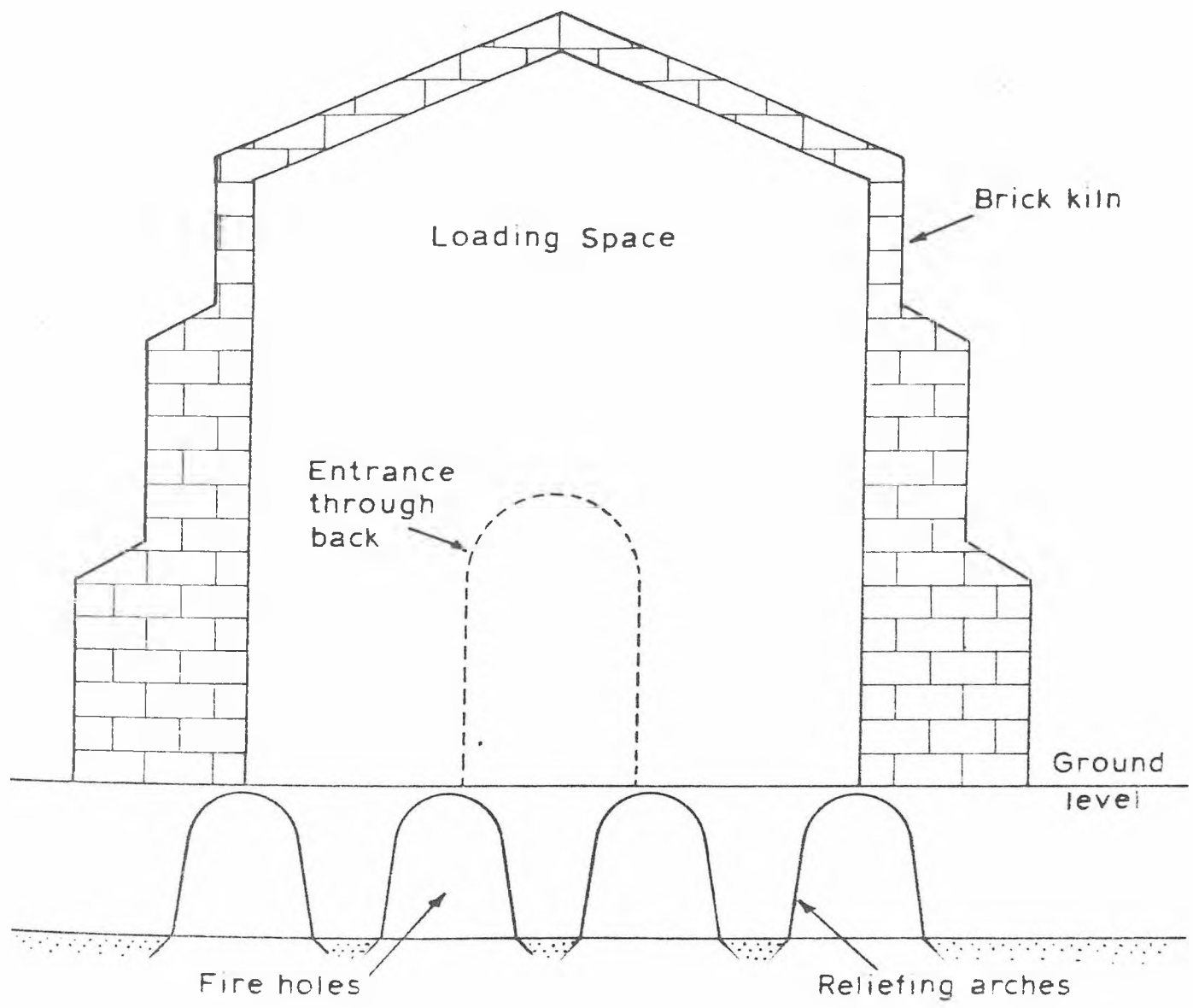
(iv) Bricks and Tiles Industry:

Three industries were surveyed in this sector and all of them used similar equipment. The bricks and tiles were made manually from wooden frames. The finished products were then fired in kilns of the type shown in Figure 3. Here also firewood was used as



Fig. 3. A typical kiln used in firing clay works.

Note : Different sizes of kilns are used for varying purposes in ceramic works



Source : Sketch from fieldwork

the source of fuel.

(v) Textiles Industry

Two industries were surveyed in this sector and both used traditional looms (Plate 4) to produce 'Kente' stripes (Plate 5) which were then sewn together by hand to produce a kente cloth (Plate 6). Nowadays, however, sewing machines are being used in sewing the kente stripes together. This has been found to be quicker and more efficient.

(vi) Iron Industry

In this sector, two industries were surveyed. The first industry specialised in mining iron ore and extracting iron. The second industry specialised in iron smithing.

The iron ore was mined manually in shallow surface-type shafts. The extraction was done in kilns of the type shown in Figure 4.<sup>1</sup> After the extraction the iron produced was sold to iron smiths.

The equipment used by iron smiths were hammer, anvil and bellows (Figure 5). In the processes of extraction and smithing of iron, charcoal was the source of fuel.

7:0:4 Analysis of Rural Teachers' Responses To the TAS

In this section analysis of rural-teacher sample responses are given.

7:0:4.1 Analysis of TAS Part One Responses: General Characteristics of the Sample (N = 302)<sup>2</sup>

TABLE 35.

Composition of Sample by Sex.

Sex	Frequency	Percentage
Male	172	57.0
Female	130	43.0
Total	302	100.0

1. For further information on mining, extraction and chemical composition of iron produced, see Dogbe, S.A., Extraction of Iron From Its Ore Using Local Raw Materials, Industrial Research Institute Accra, 1976.

2. The Sample population for Rural Teachers (RT) is (N = 302) for all tables in this section unless otherwise stated.

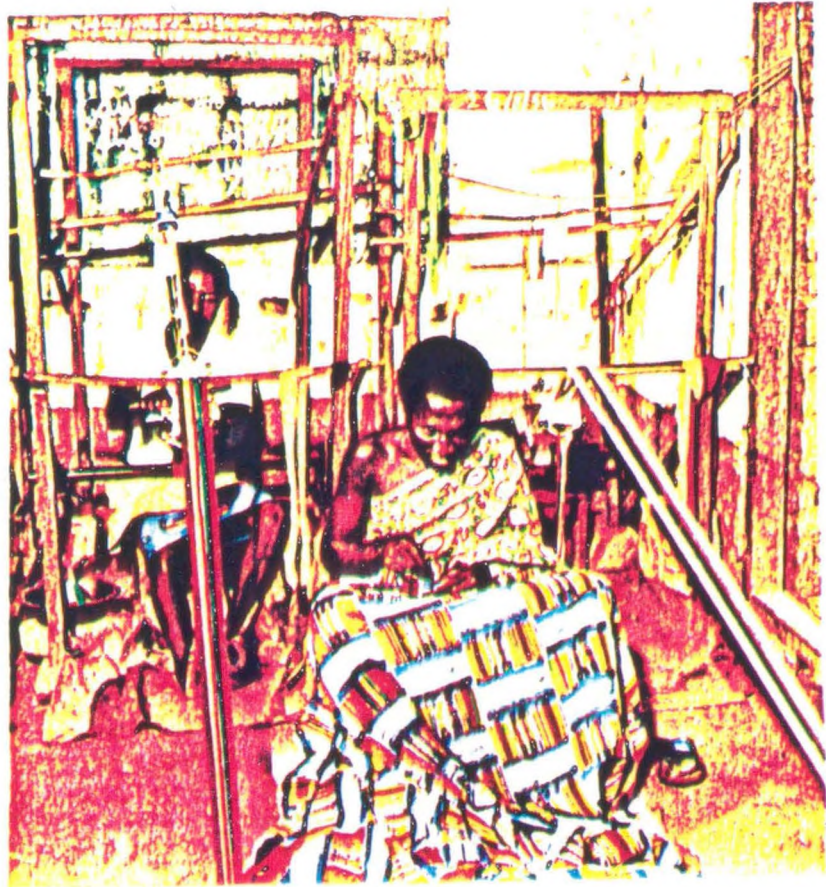


PLATE FOUR: Sewing 'Kente' stripes together by hand. In this picture a needle is being used to sew Kente stripes together to form a man's wear of cloth. Nowadays, sewing machines are used for this purpose.

In the background are looms and a weaver is busy weaving another cloth.

Source: Fieldwork Photograph (S. Fiah, 1980).

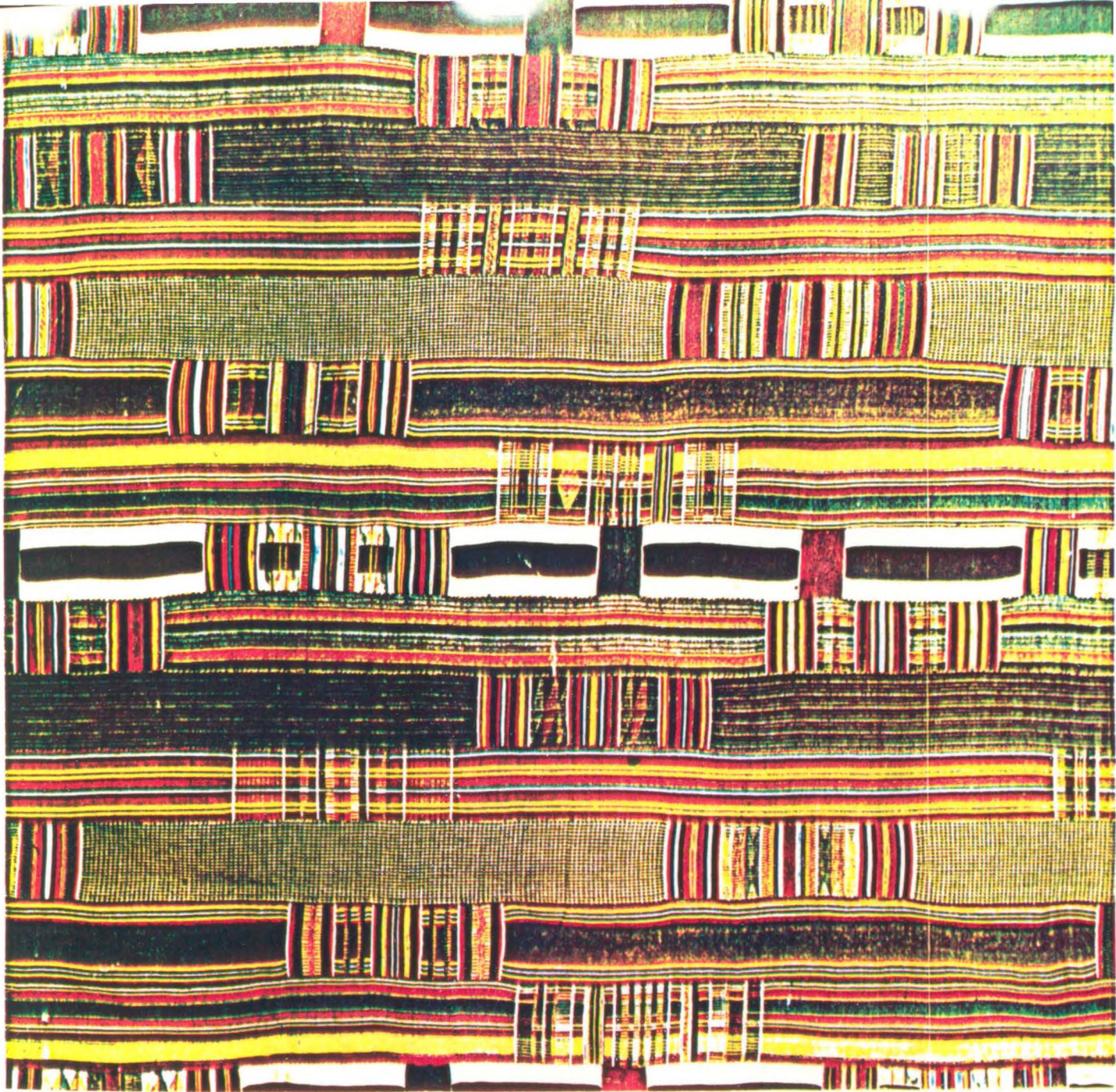


PLATE FIVE: A typical 'kene' Cloth, ('Woko warea bisa')<sup>1</sup>

1. The name of this cloth means: Understand your woman before you marry her.

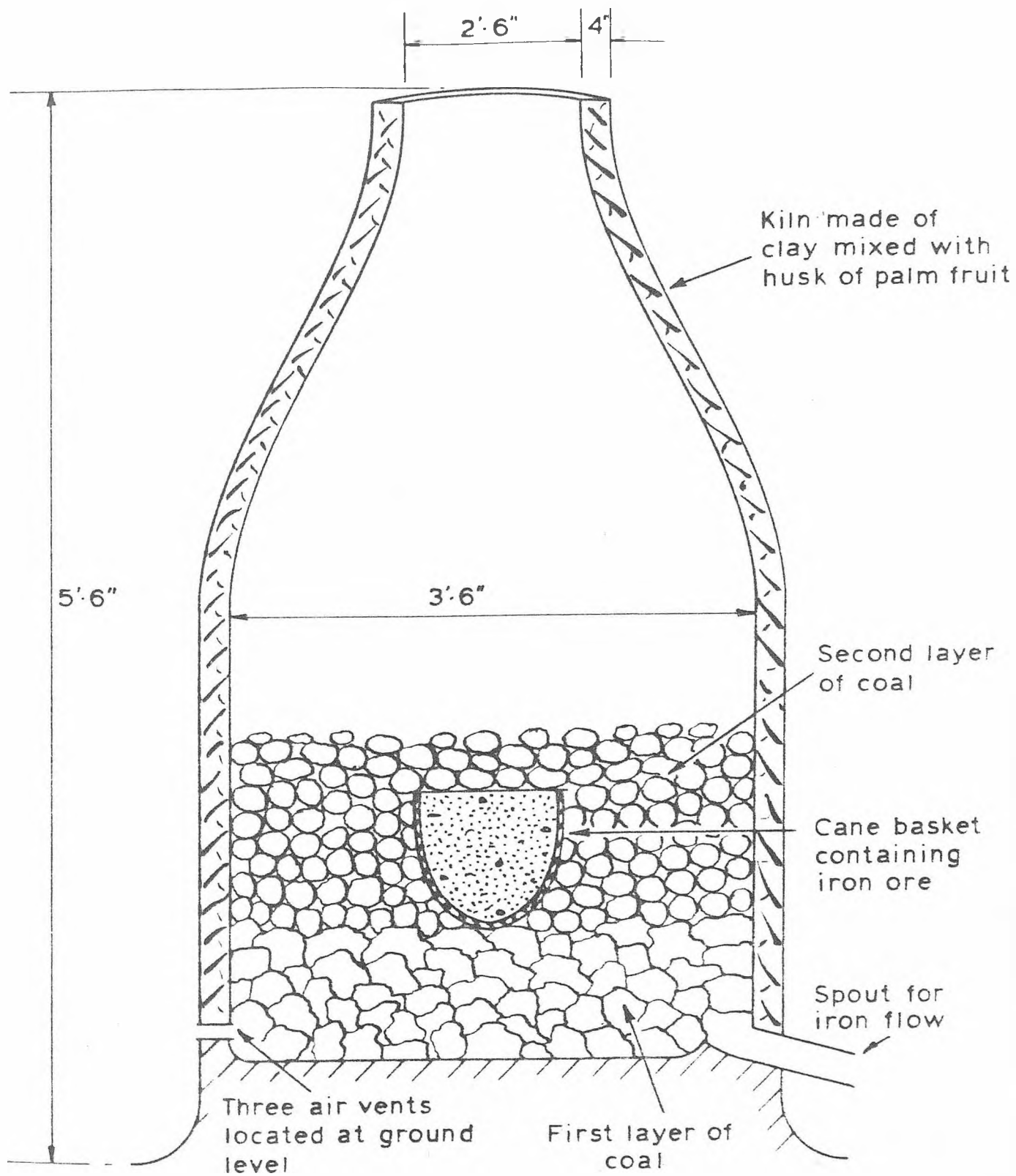
Source: Fieldwork Photograph (S. Fiah, 1980).



PLATE SIX: Uses of Kente: Here is a 19 year-old girl seen in Kente at her engagement party.

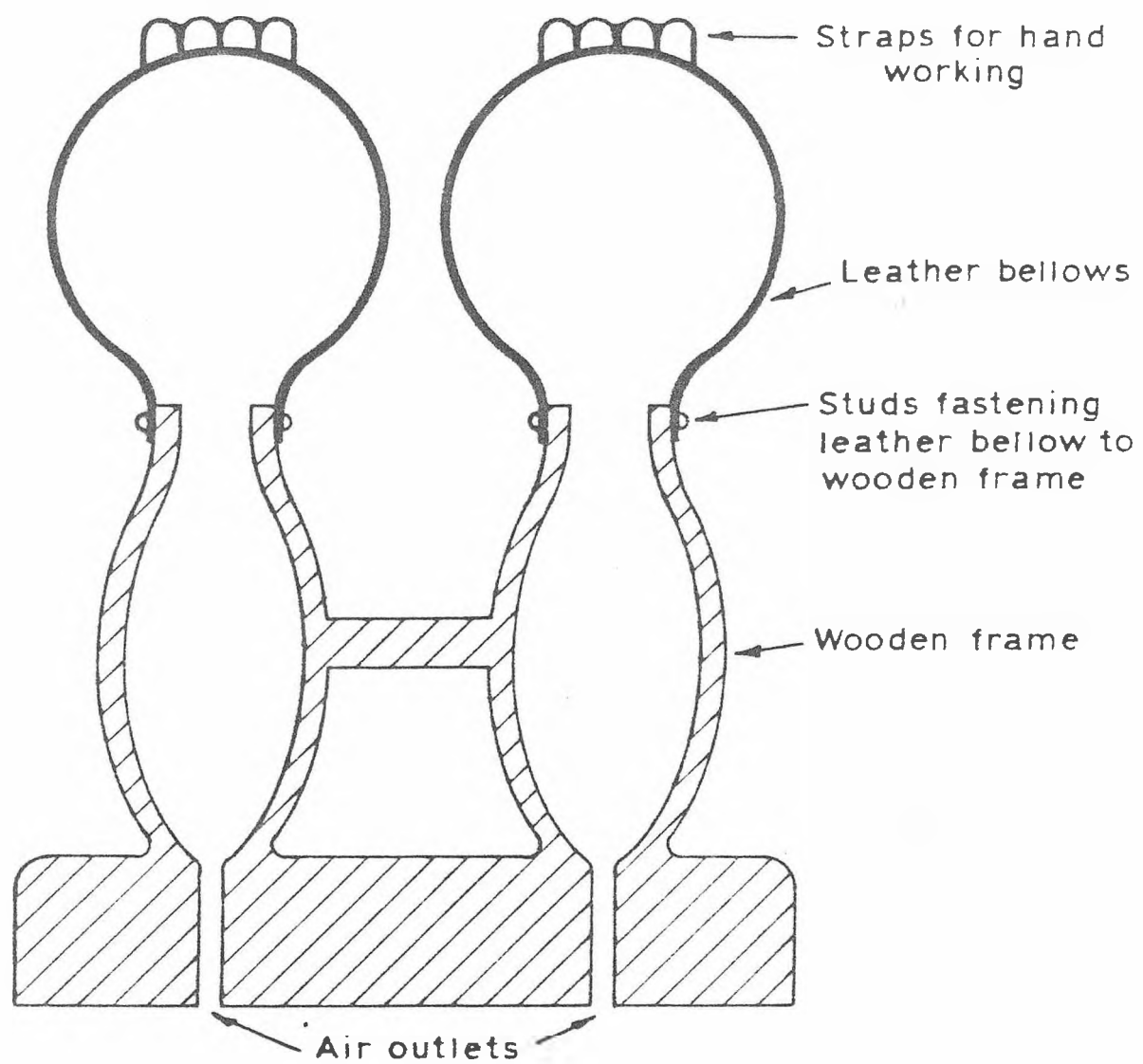
Source: Fieldwork Photograph (S. Fiah, 1980).

Fig. 4. Kiln for iron extraction at Akpafu



Source : Sketch from fieldwork

Fig. 5 Bellows used by blacksmiths in working the extracted iron (at Akpafu) into various tools and implements



Source : Sketch from fieldwork

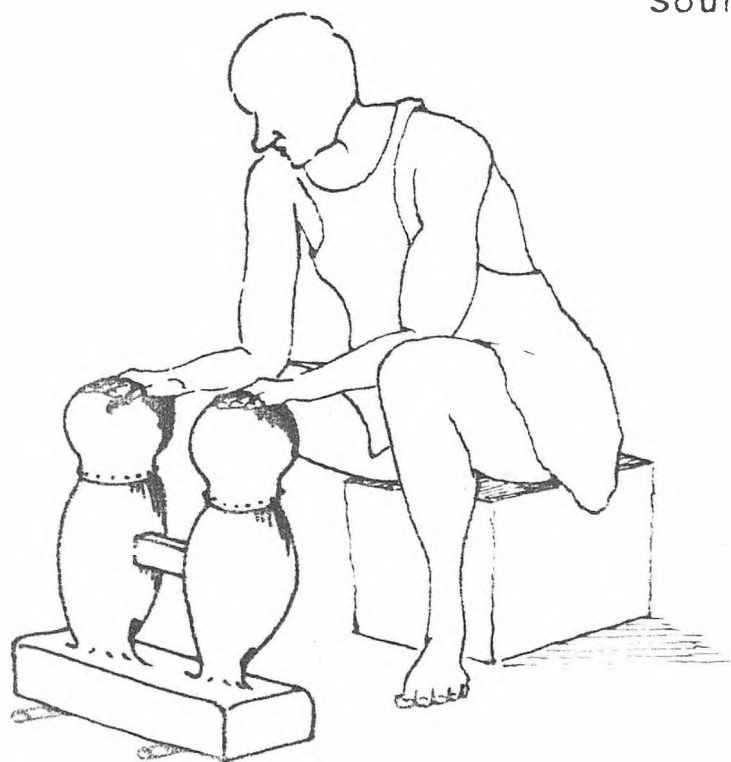


TABLE 36

Composition of Sample by Marital Status.

Marital Status	Frequency	Percentage
Married	238	78.8
Single	51	16.9
Divorced	8	2.6
Widowed	5	1.7
Total	302	100.0

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TABLE 37

Age Structure of Sample

Age Structure	Frequency	Percentage
Under 20 years	0	0.0
20 - 25 years	56	18.5
26 - 35 years	140	46.4
36 - 40 years	44	14.6
Above 40 years	62	20.5
Total	302	100.0

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TABLE 38

Distribution of Educational Qualification among Rural Teachers' Sample.

Educational Qualification	Frequency	Percentage
4 - year Cert. "A"	160	53.0
Cert. "B"	3	1.0
Post-Sec. Cert. "A"	67	22.2
Specialist/diplomate	14	4.6
Secondary Untrained	32	10.6
Middle Untrained	17	5.6
Blind or Deaf or Resource - Community Person	9	3.0
Total	302	100.0

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TABLE 39

Type of Rural Schools by Number of Teachers.

Type of Rural Schools	Frequency (RT)	Percentage
Primary School	138	45.7
Middle School	106	35.1
Continuation School	48	15.9
Junior Secondary	10	3.3
Total	302	100.0

TABLE 40

Teaching Experience Among Rural Teachers' Sample.

Teaching Experience	Frequency (RT)	Percentage
Under 1 Year	20	6.6
1 - 2 years	28	9.3
3 - 5 years	49	16.2
6 - 10 years	86	28.5
Above 10 years	119	39.4
Total	302	100.0

TABLE 41

Teachers' Opinion About Rural/Urban Location of School

Rural/Urban Location	Frequency (RT)	Percentage
Rural	122	40.4
Urban/Municipal	180	59.6
Total	302	100.0

Comment:

Majority of rural teachers appear to think that schools in which they teach were located in urban settings (59.6%). This seeming contradiction may be due to the fact that, for many purposes,

the definition of rural/urban community is arbitrarily determined in terms of population figures. See, for example, Section 1:0:3.3 where difficulties in defining a community type are given.

TABLE 42

Sizes of Classes Taught by Rural Teachers

Class Size	Frequency (RT)	Percentage
Under 20 pupils	7	2.3
20 - 35 pupils	94	31.1
36 - 45 pupils	97	32.1
Above 45 pupils	104	34.4
Total	302	99.9*

\* This column does not total up to 100% due to correction of row percentages to one decimal place.

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TABLE 43

Ethnic Composition of Rural Teachers' Sample.

Region/Ethnic Group	Frequency (RT)	Percentage
GA	8	2.6
AS	3	1.0
BA	3	1.0
CR	63	20.9
ER	86	28.5
NR	0	0.0
UR	1	0.3
VR	123	40.7
WR	15	5.0
IMM	0	0.0
Total	302	100.0

Note on Abbreviations Used:

GA = Greater Accra Region  
 AS = Ashanti Region  
 BA = Brong Ahafo Region  
 CR = Central Region  
 ER = Eastern Region  
 NR = Northern Region  
 UR = Upper Region  
 VR = Volta Region  
 WR = Western Region  
 IMM = Immigrant (Migrant Teachers)

7:0:4.2 Analysis of TAS Part Two Responses

In this section, rural teachers' views about relevance of school curriculum to skills required in rural industries are analysed.

TABLE 44

Responses to 15 Items by Rural Teachers Relating to Their Views About Situational Factors.

Item	Responses <sup>1</sup> (N = 302)				
	SD	D	NS	A	SA
1. To help the children learn easily, I teach sometimes outside class hours	23 7.6	70 23.2	13 4.3	149 49.3	47 15.6
2. My teaching would be better if I had more materials and equipment	1 0.3	7 2.3	6 2.0	79 26.2	209 69.2
3. Pupils who go direct from school into employment have better prospects for advancement	41 13.6	77 25.5	84 27.8	70 23.2	30 9.9
4. The teacher who is familiar with what goes on in rural industries finds it valuable in his/her teaching	1 0.3	13 4.3	38 12.6	171 56.6	79 26.2
5. If I were given the chance, I would reframe the school syllabus.	9 3.0	47 15.6	26 8.6	135 44.7	85 28.1
6. Teaching is one of the most interesting jobs	30 9.9	32 10.6	43 14.2	115 38.1	82 27.2
7. Pupils who acquire job skills through experience on the job get promoted less than pupils with higher education	25 8.3	52 17.2	42 13.9	87 28.8	96 31.8
8. Rural industries are necessary for the employment of school leavers who are unable to go on to higher education	4 1.3	18 6.0	20 6.6	97 32.1	163 54.0
9. At present, promotion in the teaching service is strictly by experience	54 17.9	110 36.4	37 12.3	64 21.2	37 12.3*

TABLE 44 (Contd).

	SD	D	NS	A	SA
10. The present official syllabus is only relevant to pupils who go on to higher education after completing elementary school.	34 11.3	69 22.8	65 21.5	81 26.8	53 17.5*
11. My views do not matter to the syllabus writers	55 18.2	90 29.8	50 16.6	83 27.5	24 7.9
12. Rural industries are not the best employment for pupils who are unable to go on to higher education.	86 28.5	109 36.1	35 11.6	52 17.2	20 6.6
13. The opportunity in this school to try new ways of teaching is limited by the headteacher's insistence on the use of the syllabus.	63 20.9	108 35.8	49 16.2	48 15.9	34 11.3*
14. I think the syllabus is O.K. the way it is.	73 24.2	122 40.4	40 13.2	54 17.9	13 4.3
15. If I had the chance, I would leave the teaching service.	34 11.3	33 10.9	31 10.3	58 19.2	146 48.3

1. Two numbers are given under each response. The first number stands for frequency of response and the second stands for percentage of responses to N.

\* Figures in this row do not add up to 100% due to correction made to individual percentages to one decimal place.

Note on Abbreviations Used:

SD = Strongly Disagree  
D = Disagree  
NS = Not Sure or Don't Know  
A = Agree  
SA = Strongly Agree.

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7:0:4.3 Analysis of TAS Part Three Responses

In this section, rural teachers' responses relating to their inter-personal relations with pupils and the local community are analysed.

TABLE 45

Responses to 5 Items by Rural Teachers Concerning Inter-Personal Relations.

Item	Responses <sup>1</sup> (N = 302)			
	NE	VO	SO	OF
1. Some of my pupils complain to me about other teachers on the staff	163 54.0	57 18.9	74 24.5	8 2.6
2. Local community activities take some of my time outside class hours	69 22.8	83 27.5	127 42.1	23 7.6
3. My headteacher finds fault with my teaching	205 67.9	55 18.2	35 11.6	7 2.3
4. I invite people from the local community to come and give talks to my students about post-school experience.	136 45.0	67 22.2	81 26.8	18 5.9*
5. In teaching, experience counts more towards promotion than a higher qualification.	69 22.8	25 8.3	113 37.4	95 31.5

1. Two numbers appear under each response. The first number represents the frequency of respondents and the second represents the percentage of responses to N.

\* The figures in this row do not add up to 100% due to correction of figures to one decimal place.

Note on Abbreviations Used:

NE = Never  
VO = Very Occasionally  
SO = Sometimes  
OF = Often.

.....

7:0:4.4 Analysis of TAS Part Four Responses

In this section, rural teachers' responses relating to conditions at work are analysed.

TABLE 46

Responses to 10 items by Rural Teachers Concerning General Conditions at Work.

Item	Total %	Responses (N = 302)			
		Yes		No	
		Frequency	%	Frequency	%
1. I get on well with my colleagues at work	100	16	5.3	286	94.7
2. I am enrolled in a correspondence course	100	245	81.1	57	18.9
3. I need higher qualifications* to get promotion	99.9	70	23.1	232	76.8
4. There are very few opportunities open to me to make my views known to the officials who write the school syllabus	100	74	24.5	228	75.5
5. My headteacher sees to it that every teacher follows the syllabus strictly	100	134	44.4	168	55.6
6. The majority of my pupils do not come from urban area	100	128	42.4	174	57.6
7. Half of my pupils come from families where parents are trained skill workers	100	167	55.3	135	44.7
8. I have never had the chance to visit a rural industry	100	194	64.2	108	35.8
9. The school syllabus is not quite relevant to the skills needed in rural industries	100	116	38.4	186	61.6
10. At the beginning of my teaching here, I was given a syllabus to guide my teaching.		36	11.9	266	88.1

\* Percentage figures do not add up to 100% due to rounding up of initial percentages to one decimal place.

CHAPTER EIGHT

RESEARCH RESULTS : INFERENCEAL STATISTICS

8:0:0 Inferential Analysis of Part Three of WAS Questionnaire

The aim of this chapter is to test the hypotheses stated in chapter three of this thesis by means of applying appropriate analytic statistical techniques to the fieldwork data collected in rural small-scale industries of southern Ghana. Whereas all the 68 variables included in the WAS questionnaire were used to describe structural, environmental and situational aspects of workers' sample in southern Ghana's rural industrial sector in chapter six, only the 38 most related variables to the hypotheses are used in this chapter.

The stated testable hypotheses in chapter three constituted generalizations about the rural industrial sector which consisted of organized statements on verifiable relationships between the 38 selected variables on the WAS questionnaire. Thirty-seven of these selected variables are located in Part Three of the WAS questionnaire as items 1 to 37 and the 38th variable is located in Part One of WAS questionnaire as item 6. It must be emphasised at this stage that the general aim of this thesis is to establish a role for European education in supporting rural SSI in southern Ghana. Consequently, the relationships that this chapter attempts to establish are those between workers' formal European education, represented by the independent variable, item 6 in Part One of the WAS questionnaire, and the other 37 selected variables in Part Three of the WAS questionnaire.

In Table 47 below, the stated hypotheses have been matched with the factors to be investigated and the items or variables employed in the investigation.

TABLE 47

Factors Under Investigation, Items Employed and Hypotheses to be Tested.

Factor Under Investigation	Specific Area Under Investigation	Item Number and Location <sup>1</sup>	Hypotheses To be Tested
EUROPEAN EDUCATION AND TRAINING PROGRAMMES IN RURAL SSI	Relevance of Education to Rural SSI.	6,11,26	Gen. Hyp. 1 <sup>*</sup> 1(i)
	Importance of Education in Rural SSI.	18,25	1(ii), 1(iii)
	Teacher-Influence on Rural SSI Workers.	15,31	1(iv), 1(v)
	Relevance and Importance of Training Programmes In Rural SSI.	8,9,24,32	1(vi), 1(vii), 1(viii), 1(ix)
JOB SATISFACTION AMONG RURAL SSI WORKERS	Promotion and Pay in Rural SSI.	1,36	Gen. Hyp. 2 <sup>*</sup> 2(i), 2(ii)
	Attitudes of Self-Esteem Among Rural SSI Workers.	3,22 23,28	2(iii), 2(iv) 2(v), 2(vi)
	Inter-personal Relations Among Rural SSI Workers.	2,10	2(vii), 2(viii)
	Health Trends Among Rural SSI Workers.	17,30	2(ix), 2(x)
	Attitudes of RSSI Workers to Their Supervisors.	12,14,19	2(xi), 2(xii) 2(xiii).
	Workers' Attitudes to Routine Tasks.	27,35	2(xiv), 2(xv).
	Workers' Education and Job Satisfaction.	34	2(xvi)
MODERNIZATION IN RURAL SSI	Attitudes to the Use of Modern Machines.	4,13,16,20,37	Gen. Hyp. 3 <sup>*</sup> 3(i), 3(ii), 3(iii), 3(iv) 3(v)
	Freedom to Use New Ideas.	5,33	3(vi), 3(vii)
	Attitudes As Barriers to Modernization.	7,21,29	3(viii), 3(ix), 3(x)

1. Located in Part Three of WAS Questionnaire.

\* Gen. Hyp. = General Hypothesis.



The hypotheses stated in chapter three of this thesis could be viewed as suppositions presumed by the writer to be true for the rural industrial sector of southern Ghana. They assumed that relationships do exist between the 38 selected variables. In order to determine whether or not such relationships exist, and if they do, to evaluate the extent of association that exists between the variables, factor analysis statistical technique was applied to the item scores which, in this case, represent the selected variables. In other words, the use of factor analysis introduces a model in which the writer's theoretical assumptions are supplemented by empirical analysis. This situation is quite acceptable, for as Blalock points out:

In more complex examples ... a simple inspection of the correlations among items will not be sufficient to enable one to infer the underlying factors. What is needed are quantitative techniques that make it possible to estimate the degree to which each item is measuring each factor, as well as the number of such factors and their interrelationships. It turns out that although such techniques exist and have been studied under the label of "factor analysis", there are in effect too many unknowns in the theoretical system to give unique estimates of the factors without further assumptions.

The justification for choosing factor analysis as a statistical technique applicable to the rural SSI sample-data in preference to other techniques, lies in the fact that:

(i) Factor analysis technique applied to the analysis of responses to each item could be viewed as a process by which factors derived from workers' attitudes, opinions and probably a number of other unknown factors, which are uniquely related to the independent variable, item A, may be extracted. Child expounds this point when he writes:

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1. Blalock, H.M., An Introduction to Social Research, Prentice Hall, Englewood Cliffs, New Jersey, 1970, pp.101-2.

It should be reassuring for the reader to discover that factor analysis seeks to do precisely what man has been engaged in throughout history, that is to make order out of the apparent chaos of his environment. This process of identifying the attributes of our surroundings in an attempt to make our world intelligible is a very familiar one. In fact, if we were not able to organize our experiences in such a complex environment, the assimilation and communication of knowledge<sup>1</sup> would be a most arduous, if not impossible task.

He goes on to illustrate his point thus:

At an early stage of development, children gradually learn the characteristics which differentiate one object from another by observing and manipulating them in a variety of situations. This cataloguing of similarities and differences has much in common with factor analysis.<sup>1</sup>

(ii) Factor analysis is a social science statistical tool which enables a researcher to analyse scores on a large number of variables in order to determine whether there are a few identifiable dimensions which can be used to describe many of the variables under study. Essentially, it entails finding causes or influences which are, in some measure, responsible for a given phenomenon. Factor analysis is the mathematical computation of intercorrelations between variables under study in such a way as to extract several underlying traits or factors which can then be used to describe a sample group characteristics.

(iii) The many variables selected for this study renders the finding of intercorrelations between variables by the method of inspection virtually impossible. And yet, for this study, the assessment of importance and group patterns within the variable-intercorrelations is of major consequence. Nevertheless, the kind of data generated by the survey is of nominal nature since no ordering exists in the interval scales employed in the definition of the variables used.

In the opinion of the writer, therefore, factor analysis provides

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1. Child, D., The Essentials of Factor Analysis, Holt, Rinehart and Winston, London, 1976, p.1.

the most adequate statistical technique for tackling this problem. Finally, renowned social scientists such as Eysenck are optimistic about the possibilities for factor analysis as a tool for sorting out even causal relationships between variables:

This causal implication characterizes not only the interpretation of factors as suggestive of a hypothesis, but also the next level of factors as proving a hypothesis, and ,... from the psychological point of view this causal implication is precisely what lends interest and value to factor analysis.<sup>1</sup>

In order to determine the nature of association among the 38 selected variables, correlation matrices were computed on the scores derived from these variables. The use of this technique helped not only to ascertain whether or not any relationships existed among the variables or sets of data, but also to find out the direction and the magnitude of such relationships. Table 48 presents the correlation coefficients between pairs of the selected variables.

Pearson's product-moment method of computing correlation coefficients was in-built into the statistical technique of factor analysis used. The correlation matrix produced in Table 48, therefore, represents Pearson Correlation Coefficients, usually represented by  $r$ .

The interpretation of  $r$  requires some knowledge about the sample size surveyed in the investigation. In this respect, Appendix 4 should be referenced. According to Appendix 4,  $r = 0.125$  could be said to be significant at 5% level for our sample size of 234 and  $r = 0.163$  could be said to be significant at 1% level.<sup>2</sup>

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1. Eysenck, H.J., as quoted in: Child, D., (1976) op. cit., p.9.

2. For further information on the interpretation of  $r$ , see Child, D., The Essentials of Factor Analysis, Holt, Rinehart and Winston, London 1976, pp. 38-49; also, see Ferguson, G.A., Statistical Analysis in Psychology and Education, McGraw-Hill, New York, 1965; and Edwards, A.L. An Introduction to Linear Regression and Correlation, W.H. Freeman, San Francisco, 1976.

One of the major concerns here in presenting a correlation matrix for the selected variables to be used in verifying the stated hypotheses is to establish that relationships exist between the variables. A careful look at column A in Table 48 reveals that the variable A (EDSTD) has  $r > 0$  with the other 37 selected variables to be used in the testing of the hypotheses stated in chapter 3, although the level of association varies from one variable to another. The establishment of this fact seems to justify the use of variable A with the other 37 variables to infer the statements posited by the hypotheses.

It should be noted however that the lowest value Pearson  $r$  can take is  $r = 0.00$ , which represents zero correlation and indicates no relation of one variable to another in the sample. The highest value Pearson  $r$  can take is  $r = \pm 1.00$ , indicating a perfect linear correlation between any two variables in the sample. Values of  $r$  closer to  $\pm 1.00$  reflect more relatedness and values of  $r$  closer to  $0.00$  reflect less relatedness. The value of  $r$ , therefore, simply refers to the direction of relationship and the value of  $r$  summarizes the degree of relationship. If a correlation of  $r = \pm 1$  exists between variables, then it should be a perfect one. Correlations less than  $\pm 1.00$  reflect that other unspecified factors do exist. Thus the extent to which a correlation differs from  $\pm 1.00$  indicates the extent of unspecified factors into the relationship. In other words, the extent to which  $r$  differs from  $\pm 1.00$  describes ignorance of extraneous factors in a relationship.

This thesis will not be interested in the extraneous factors. The analysis and inferences will be based on the fact that relationships exist between the variables involved in the

TABLE 48

CORRELATION COEFFICIENTS BETWEEN 38 VARIABLES SELECTED TO TEST HYPOTHESES (N = 234)

VARIABLE LABEL	ITEM NO.	1*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37		
EDSTD	4*																																								
DIFFICUL	1	-045																																							
HELP	2	-110	033																																						
LOW	3	103	-098	-151																																					
MACHINES	4	059	-025	-071	084																																				
IDEAS	5	009	-057	-147	280	211																																			
SCHOOL	6	-074	084	-048	139	-113	001																																		
CITY/WORK	7	-055	034	150	-157	-077	-124	052																																	
RELEVANT	8	055	104	-123	252	121	120	-035	007																																
CHANGEDB	9	058	104	-047	-017	045	058	-055	022	102																															
OWNPLACE	10	221	07	-088	189	047	-071	157	-115	-018	063																														
EDRELEVA	11	170	-009	-074	145	195	057	-029	-194	180	127	190																													
FAIRHEAD	12	100	053	279	-105	-113	-133	015	057	-094	-215	-097	-053																												
ADVANCED	13	109	140	-030	228	202	126	113	-102	-033	053	101	047	133																											
CARELESS	14	004	-004	-029	153	202	193	-076	078	152	200	-075	025	-236	-061																										
TEACHER	15	-042	-102	-001	-024	150	163	074	-085	-145	027	011	154	029	131	-024																									
HANDWORK	16	015	172	-089	009	-029	034	069	046	024	-007	155	-002	-051	114	-015	047																								
HEALTH	17	174	105	054	053	050	-139	-053	-034	-005	-246	057	122	225	055	-004	-126	-104																							
PRIVATST	18	-037	025	215	-159	-141	-174	-046	097	-057	-051	-139	-128	170	-107	-019	044	093	105	-054																					
TALKFREE	19	-058	-077	059	078	046	142	-110	059	083	-087	-042	-005	-088	-207	152	-034	-034	-015	-054																					
NEWMACHI	20	119	081	053	217	135	033	124	-084	-141	051	173	121	062	474	-055	215	135	075	-122	-159																				
OVERSEAS	21	015	-020	-094	236	035	225	014	100	221	054	019	002	-051	026	179	-009	087	-121	009	118	128																			
OFFICEWK	22	-020	-009	-022	-025	130	025	099	138	-008	145	094	-052	-124	078	109	130	104	-245	004	-064	051	087																		
WKCONDIT	23	-081	073	089	-192	-009	-015	142	-009	024	-232	-232	-350	-025	-048	135	-045	037	-060	126	047	-097	003	215																	
USEFUL	24	-055	-049	175	023	-031	-002	-067	070	-145	-135	020	-050	144	-029	-103	091	-113	153	052	065	127	045	007	133																
BETTERDB	25	-004	-090	-029	143	-010	059	044	-080	-038	061	134	025	-115	148	003	167	127	032	038	-001	191	192	167	001	-028															
SCHWOKK	26	-181	-030	175	-073	-141	-051	138	119	-178	-055	-114	-250	100	-140	-289	028	061	092	194	063	-150	-025	187	068	083	039														
SAME	27	-020	-159	087	099	141	137	-010	010	052	-152	-015	-052	071	005	-355	078	011	092	027	127	-090	-019	-060	-075	-049	-102	027													
EASIER	28	062	099	-006	228	086	143	139	-045	-009	023	255	155	-018	259	-052	159	181	021	-005	-105	340	195	125	-078	-023	277	-092	-010												
MANUFACT	29	090	-009	-002	359	070	148	044	-035	141	128	117	031	005	308	135	015	103	-035	-123	-063	315	189	107	113	155	165	-032	-069	228											
TIRED	30	049	043	144	101	059	117	019	-038	138	095	099	103	-013	072	095	090	138	-107	052	029	031	171	204	091	014	151	080	007	186	206										
FINISCHO	31	070	073	029	024	198	050	046	-080	-053	042	104	143	077	088	057	143	103	073	136	051	131	-153	023	034	132	057	028	015	-033	-015	086									
MCRETRNG	32	-104	-042	141	057	014	039	084	040	-284	-115	-005	-051	125	155	-074	118	113	100	079	-050	227	-021	-044	030	229	097	001	036	141	027	-011	068								
PFREEDOM	33	-098	012	191	-182	041	-132	102	216	-073	-141	-217	-059	155	-067	-017	027	029	221	198	-058	-076	-145	059	215	201	021	137	086	-153	-048	044	043	127							
OCBSATIS	34	100	038	001	134	204	175	030	-043	125	128	087	225	-094	222	-012	187	030	019	073	-083	300	059	-036	-109	018	-017	-250	-048	220	167	153	029	136	-038						
BORED	35	055	-005	008	297	-064	101	075	004	135	-024	010	-103	-019	-064	155	101	027	-200	117	177	050	153	110	120	119	064	139	136	074	193	235	090	-083	-058	-059					
PAYHERE	36	-007	115	200	-215	-175	-265	-015	142	-173	-137	-032	-152	151	-150	-070	-100	164	213	350	015	-135	-085	-020	207	114	-049	302	051	-079	-041	-004	160	-071	269	-219	098				
TCOLS	37	-090	-073	251	-146	-125	-139	-045	191	-184	-195	-140	-250	099	-112	-125	005	187	017	425	071	044	-022	056	155	115	-045	251	100	-091	-162	025	097	143	242	129	020	350			

\* Represents Item 6 in Part One of WAS Questionnaire. Subsequent Items come from Part Three of WAS Questionnaire. Decimal Points Have Been Omitted.

On the basis of N = 234, r = 0.125 is significant at p < .05 where p is the probability occurrence. That is probability of r's occurrence is less than 5 in 100.

verification of the stated hypotheses and the fact that the  $r$  values do not occur by complete chance. Nevertheless, the information regarding these extraneous factors may be of use to future design of researches in rural small scale industries in Ghana. For this reason oblique factor matrix intercorrelations extracted from correlations of the 38 selected variables are given in Table 49. Fourteen extraneous factors were extracted for the sample of RSSI worker's responses on the 38 selected variables.

For future researchers in the area of RSSI in Ghana, this information may be of some significance. For example, under Factor 1 (F1), intercorrelations above 0.5 includes items 18, 36 and 37. Reference to Table 47 reveals that item 18 is specifically probing RSSI workers in relation to the importance of educational attainment in rural small-scale industries, while item 36 is probing attitudes towards promotion in RSSI, and item 37 is investigating attitudes to the use of modern machines in the RSSI sector. The high intercorrelation values on these three items under F1, therefore suggests that they could be studied together in a future research. In other words, their high  $r$  values under F1 appear to suggest a strong common relationship under the extraneous factor F1. On the other hand, however, items A, 1 and 15 have very low  $r$  values, and therefore seem to suggest that they should be studied separately together with other variables under an F where they possess high  $r$  values. A careful study of Table 49, therefore, will suggest the most appropriate variables that can be studied together and those that cannot.

Popham et. al. put this succinctly as:

Factor analysis is a formidable statistical tool used to detect common traits or dimensions that

Oblique Factor Matrix Based on Centroid Factors Extracted From Intercorrelations of The 38 Selected Variables.

VARIABLE LABEL	ITEM NO.	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	COMMUNALITY
EDSTD	A*	-.000	.098	.145	.090	-.068	.038	.065	-.127	-.129	-.027	-.163	.352	-.033	-.058	.237
DIFFICUL	1	.003	-.026	.010	.010	-.013	.028	.046	-.090	.084	-.040	.070	.013	-.155	.608	.429
HELP	2	.199	-.110	-.042	.002	.056	.095	-.026	.158	.526	-.036	-.070	-.040	.032	.019	.366
LOW	3	-.172	.614	.116	.122	-.184	-.054	-.010	.011	-.194	.132	.133	.153	.155	-.077	.598
MACHINES	4	-.244	.002	.104	.239	.203	.210	.253	.008	-.115	.030	-.235	.028	.388	.057	.500
IDEAS	5	-.200	.296	-.021	.174	.073	-.116	.108	.058	-.190	.144	-.015	-.210	.256	-.005	.359
SCHOOL	6	-.028	.064	.096	-.025	.045	.054	.006	.055	-.043	.036	.628	.037	.003	.092	.430
CITYWORK	7	.148	-.019	-.123	-.032	.209	.180	-.266	.087	.145	-.073	.049	-.063	.018	.121	.241
RELEVANT	8	-.137	.345	-.108	.222	.000	.088	-.125	-.444	-.064	-.028	-.043	-.026	.070	.159	.458
CHANGEJB	9	-.126	.027	.043	.152	.329	-.102	.070	-.173	-.063	.025	-.088	.014	-.238	.078	.271
OWNPLACE	10	-.101	.030	.032	.041	.039	-.125	.067	.052	-.048	.142	.143	.687	.002	.104	.563
EDRELEVA	11	-.258	-.032	-.076	.419	-.125	.044	.307	-.214	.060	.182	-.025	.251	-.037	-.026	.509
FAIRHEAD	12	.081	-.042	.176	-.109	-.258	.061	.029	.070	.511	-.055	.055	-.107	.067	.054	.413
ADVANCED	13	-.133	.093	.678	.113	.005	-.032	.084	.111	.015	.134	.013	.021	.127	.155	.577
CARELESS	14	-.144	.268	-.165	.059	.310	.034	.061	-.075	-.177	-.022	-.180	-.134	.003	.099	.308
TEACHER	15	-.006	-.035	.093	.165	.161	-.083	.359	.133	.091	.230	.131	-.101	.095	-.196	.353
HANDWORK	16	.272	.016	.092	-.007	.110	-.075	.032	.023	-.134	.229	.104	.106	.078	.306	.295
HEALTH	17	.042	-.035	.082	-.042	-.542	.474	.051	.042	.124	.057	-.109	.220	.073	.061	.622
PRIVATST	18	.592	-.016	-.052	.025	-.044	.095	.102	-.059	.180	.074	-.031	-.116	-.073	.007	.437
TALKFREE	19	-.015	.214	-.419	-.056	-.011	-.056	.028	.097	-.019	-.006	-.153	-.039	.206	.034	.308
NEWMACHI	20	-.092	.140	.487	.217	-.003	-.070	.110	.337	.059	.201	.030	.158	-.052	.078	.522
OVERSEAS	21	-.025	.368	-.082	.101	.088	-.084	-.238	.003	-.036	.317	-.066	-.051	.033	.084	.341
OFFICEWK	22	.042	.040	.083	-.104	.578	.093	.003	-.018	-.016	.177	.107	.066	.022	-.040	.414
WKCONDIT	23	.196	.123	.036	-.220	.318	.243	-.046	.121	-.042	-.108	-.131	-.242	-.106	.119	.395
USEFUL	24	.022	.203	-.069	-.030	-.037	.216	.083	.473	.237	-.070	-.056	.040	-.123	-.122	.421
BETTERJB	25	.017	.093	.094	-.078	.070	.045	.056	.067	-.105	.597	.002	.036	-.098	-.087	.424
SCHWORK	26	.269	.037	-.123	-.341	.082	.099	.016	.020	.167	.074	.199	-.081	.048	-.052	.307
SAME	27	.071	.071	-.037	-.037	-.084	.011	.026	-.049	.083	-.058	.032	-.004	.551	-.124	.353
EASIER	28	-.030	.141	.240	.171	.040	-.109	-.028	.081	.055	.449	.104	.186	.044	.124	.397
MANUFACT	29	-.114	.502	.336	.045	.142	.071	-.055	.076	.036	.115	-.052	.096	-.112	.018	.454
TIRED	30	.095	.272	.005	.108	.266	.014	.095	-.102	.175	.221	.011	.061	.017	.039	.270
FINISCHO	31	.122	.060	.010	-.001	.028	.072	.592	.106	-.005	-.044	-.025	.096	.045	.139	.419
MORETRNG	32	.061	-.058	.120	.112	-.089	.051	.025	.502	.063	.144	.092	-.089	.064	.011	.343
FREEDOM	33	.207	-.111	-.021	-.027	.052	.612	.026	.095	.137	-.034	.127	-.167	.045	-.018	.509
JOBSAFIS	34	.112	.090	.202	.746	.035	-.006	.030	.088	-.032	.011	.005	.048	-.005	.006	.632
BORED	35	.147	.570	-.081	-.153	.107	-.091	.143	-.053	.071	.006	.093	.009	.044	-.064	.440
PAYHERE	36	.510	-.023	-.089	-.344	-.057	.228	.100	-.022	.154	-.056	-.035	.112	.052	.155	.520
TOOLS	37	.749	-.079	-.076	.059	.037	.044	-.070	.231	.059	-.062	-.005	-.056	.154	-.036	.674
% Variance		21.2	13.9	11.4	7.9	7.2	6.7	5.9	5.2	4.3	3.7	3.7	3.2	2.9	2.9	

F<sub>n</sub> = Factor n . Decimal points have been omitted under Fs and the communality column.

\* As in Table 48.

underly many intercorrelated variables. By analyzing the correlations between a host of measures, the factor analyst can usually produce several factors to which some, but not all, of the measures are highly correlated. These factors are then rotated in such a way that the cluster of measures which have high correlations with a factor are well reflected by it. The factors are subsequently interpreted and labelled so that they may be of value in further research. During the analysis many somewhat subjective decisions and classifications must be made by the researcher.<sup>1</sup>

To assist future researchers in deciding which variables contribute more significantly to this research instrument, and therefore need more attention in future researches, percentage variances computed for the factors have been included in Table 49. These figures give us some idea about the contribution that each factor makes to the total variance of the factors extracted:

The higher the figure is, the more substantial can be the claim that the items with significant loadings have some property in common.<sup>2</sup>

Again correlation matrices for the extracted factors have been used to compute communality values for the selected variables, using the Principal Components Method.<sup>3</sup> The communality value or what is usually referred to as 'the sum of the squares of factor loading', is computed by squaring correlation coefficients for the extracted factors and in summing all the squares up, subtract the result from unity. It is clear therefore that no communality value reaches unity for any variable.

The significance of the communality value tells us about how reliable the test scores on a variable are. The higher the communality value is for a variable, the more reliable are the test scores on such a variable.

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1. Popham, J.W., and Sirotnik, K.A., Educational Statistics: Use and Interpretation, Harper and Row, New York, 1973, p.265.

2. Child, D., (1976), op. cit., p.42.

3. For further reading on this method, refer to: Ibid., p.43.



The inclusion of percentage variance matrices and communality matrices in Table 49, therefore, is to help future researchers in the selection of the more significant variables applicable to the RSSI sector in Ghana.

#### 8:0:1 Summary Statistics: The RSSI Sample

In this section, crosstabulations have been applied to some of the variables used in describing the rural small-scale industrial sample in order to find more meaningful interpretations for the characteristics discussed in chapter six. For example, while chapter six tells us that in the RSSI sample surveyed, there were 193 men and 41 women, this section attempts to analyse the number of men and women who had attained primary, secondary and college education. Descriptive information about the RSSI sample requiring the application of crosstabulation statistical technique to data scores will be given in this section. The statistical summary tables presented in this section are meant to add descriptive information to frequency tables presented in chapter six; the responses to variables being crosstabulated will, therefore, not be used to compute any correlation coefficients or any statistical-significance values. In Table 50, educational attainment by different sexes is given.

TABLE 50

Educational Standard by Sex Among RSSI Workers.<sup>1</sup>

Education Standard Attainment	Male	%	Female	%
No Education	5	2.1	2	0.9
Primary School	15	6.4	0	0.0
Middle School	93	39.7	11	4.7
Secondary School	39	16.7	4	1.7
Technical/Vocational/Commercial	36	15.4	23	9.8
Teacher Training	5	2.1	1	0.4
Total	193	82.5	41	17.5

1. Unless otherwise stated, N = 234 for the sample or RSSI workers used for the analysis in this section (8:0:1).

TABLE 51

Distribution of Workers by Sex in Industry.

Type of Industry	Male	%	Female	%
Pottery	28	12.0	2	0.9
Food	70	29.9	8	3.4
Woodwork	31	13.2	5	2.1
Iron	22	9.4	8	3.4
Textiles	30	12.8	0	0.0
Bricks and Tiles	12	5.1	18	7.7
Total	193	82.5	41	17.5

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TABLE 52

Age by Sex of Workers in RSSI.

Age Groups	Male	%	Female	%
Under 15 years	2	0.9	1	0.4
15 - 20 years	36	15.4	19	8.1
21 - 25 years	47	20.1	12	5.1
26 - 30 years	37	15.8	5	2.1
Over 30 years	71	30.3	4	1.7
Total	193	82.5	41	17.5

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TABLE 53

Educational Standard by Type of Industry.<sup>1</sup>

Educational Standard	P	F	W	I	T	B	TOTAL
No Education	4 1.7	1 0.4	1 0.4	0 0.0	1 0.4	0 0.0	7 3.0
Primary School	2 0.9	1 0.4	7 3.0	0 0.0	5 2.1	0 0.0	15 6.4
Middle School	18 7.7	32 13.7	17 7.3	20 8.5	14 6.0	3 1.3	104 44.4
Secondary School	2 0.9	16 6.8	4 1.7	5 2.1	10 4.3	6 2.6	43 18.4
Technical/Vocational/ Commercial	4 1.7	27 11.5	7 3.0	0 0.0	0 0.0	21 9.0	59 25.2
Teacher Training	0 0.0	1 0.4	0 0.0	5 2.1	0 0.0	0 0.0	6 2.6
Total	30 12.8	78 33.3	36 15.4	30 12.8	30 12.8	30 12.8	234 100.0

Abbreviations Used:

P = Pottery.

F = Food.

W = Woodwork.

I = Iron.

T = Textiles

B = Bricks and Tiles.

1. Two figures are given under each category of educational standards. The first figure represents the number of respondents and the second one represents the percentage of respondents to the sample population (N = 234).

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TABLE 54

Educational Standard by Region of Origin of RSSI  
Workers (Ethnicity in RSSI).

Region of Origin	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	%
Greater Accra	0	0	5	0	2	0	3.0
Ashanti	0	0	1	3	2	1	3.0
Brong Ahafo	0	0	0	1	0	1	0.9
Central	1	7	22	10	23	0	26.0
Eastern	1	1	15	5	12	0	14.5
Northern	0	0	1	0	0	0	0.4
Upper	0	0	2	0	0	0	0.9
Volta	3	7	51	21	8	4	40.2
Western	1	0	7	3	10	0	9.0
Immigrant	1	0	0	0	2	0	1.3
Total	7	15	104	43	59	6	234.0

100.1\*

\* This column adds up to more than 100% due to corrections made to row percentages to one decimal place. Other columns contain distribution frequencies (N = 234).

Abbreviations Used:

None = No education.

Pr. = Primary School.

Midd. = Middle School.

Sec. = Secondary School.

Tech = Technical/Vocational/Commercial School.

T.Tr. = Teacher Training (College).

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TABLE 55

Educational Standard by The Five Regions Surveyed.<sup>1</sup>

Region Surveyed	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
Greater Accra	0 0.0	0 0.0	6 2.6	0 0.0	1 0.4	0 0.0	7 3.0
Central	2 0.9	7 3.0	27 11.5	9 3.8	31 13.2	0 0.0	76 32.5
Eastern	0 0.0	1 0.4	16 6.8	9 3.8	15 6.4	1 0.4	42 17.9
Volta	4 1.7	7 3.0	45 19.2	17 7.3	2 0.9	5 2.1	80 34.2
Western	1 0.4	0 0.0	10 4.3	8 3.4	10 4.3	0 0.0	29 12.4
Total	7 3.0	15 6.4	104 44.4	43 18.4	59 25.2	6 2.6	234 100.0

Abbreviations Used:

None = No education  
 Pr. = Primary School  
 Midd. = Middle School.  
 Sec. = Secondary School  
 Tech. = Technical/Vocational/Commercial.  
 T.Tr. = Teacher Training (College).

1. Two figures are given under each category of Region Surveyed. The first figure stands for the number of respondents and the second one represents the percentage of respondents to the sample population (N = 234).

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TABLE 56

Occupation of Mother of RSSI Worker by Educational Standard.<sup>1</sup>

Mother's Occupation	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
Teacher	0 0.0	0 0.0	5 2.1	4 1.7	1 0.4	0 0.0	10 4.3
Farmer	3 1.3	3 1.3	54 23.1	13 5.6	11 4.7	4 1.7	88 37.6
Trader	3 1.3	12 5.1	41 17.5	26 11.1	41 17.5	2 0.9	125 53.4
Factory Worker	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Medical Worker	1 0.4	0 0.0	3 1.3	0 0.0	1 0.4	0 0.0	5 2.1
Government Worker	0 0.0	0 0.0	1 0.4	0 0.0	5 2.1	0 0.0	6 2.6
Forces Personnel	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
Total	7 3.0	15 6.4	104 44.4	43 18.4	59 25.2	6 2.6	234 100.0

Abbreviations Used:

None = No education.

Pr. = Primary School.

Midd. = Middle School.

Sec. = Secondary School.

Tech. = Technical/Vocational/Commercial School.

T.Tr. = Teacher Training (College).

1. Two figures are given under each category of Mother's occupation. The first figure stands for the number of respondents and the second one represents the percentage of respondents to the sample population (N = 234).

Comment:

It appears that the majority of RSSI workers come from Middle Schools and their mothers' work in farm and trade occupations. Parental background, therefore, seems to suggest the type of education workers in RSSI are more likely to have.

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TABLE 57

Occupation of Father of RSSI Worker by  
Educational Standard.

Father's Occupation	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
Business	3 1.3	2 0.9	9 3.8	7 3.0	9 3.8	0 0.0	30 12.8
Teacher	0 0.0	0 0.0	6 2.6	2 0.9	4 1.7	0 0.0	12 5.1
Farmer	2 0.9	4 1.7	69 29.5	26 11.1	21 9.0	5 2.1	127 54.3
Government Worker	1 0.4	6 2.6	11 4.7	5 2.1	13 5.6	1 0.4	37 15.8
Industrial Worker	0 0.0	3 1.3	7 3.0	2 0.9	10 4.3	0 0.0	22 9.4
Medical Worker	0 0.0	0 0.0	2 0.9	1 0.4	0 0.0	0 0.0	3 1.3
Forces Personnel	1 0.4	0 0.0	0 0.0	0 0.0	2 0.9	0 0.0	3 1.3
Total	7 3.0	15 6.4	104 44.4	43 18.4	59 25.2	6 2.6	234 100.0

Abbreviations Used:

None = No education.

Pr. = Primary School.

Midd. = Middle School.

Sec. = Secondary School.

Tech. = Technical/Vocational/Commercial School.

T.Tr. = Teacher Training (College).

1. Two figures are given for each category of father's occupation. The first figure stands for the number of respondents and the second one represents the percentage of respondents to the sample population (N = 234).

Comment:

Table 57 seems to suggest that the majority of RSSI workers have Middle School education and that such workers have fathers who work in farming and clerical (Government worker) occupations. Few workers appear to come from elitist-occupation-backgrounds such as teaching or medical or forces personnel.

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TABLE 58

Workers' Attitudes to Pay by Educational Standard.<sup>1</sup>

Attitudes to Pay	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
More than the work I do	2 0.9	0 0.0	5 2.1	2 0.9	3 1.3	0 0.0	12 5.1
Just O.K.	2 0.9	10 4.3	48 20.5	21 9.0	26 11.1	2 0.9	109 46.6
Less than the work I do	3 1.3	5 2.1	51 21.8	20 8.5	30 12.8	4 1.7	113 48.3
Total	7 3.0	15 6.4	104 44.4	43 18.3	59 25.2	6 2.6	234 100.0

Abbreviations Used:

None = No education.

Pr. = Primary School.

Midd. = Middle School.

Sec. = Secondary School.

Tech. = Technical/Vocational/Commercial School.

T.Tr. = Teacher Training (College).

1. Two figures are given against each category of attitudes. The first figure stands for the number of respondents and the second one represents the percentage of respondents to the sample population (N = 234).

Comment:

and  
It appears workers of all categories/of education think their pay is less than the work they do. However, it seems the majority of Primary and Secondary school leavers think their pay is 'just O.K.' This is probably the case because Primary and Secondary schools particularly give no specific skills unlike Technical, Vocational, Commercial, Teacher Training and, in some cases, Middle Schools where specific skills are taught and therefore must earn more for their skills.

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TABLE 59

Pay in RSSI and Job-Pride of Workers.

Attitudes to Pay	A little proud	Proud Very Much	Not at all proud	Total
More than the work I do	2 0.9	8 3.4	2 0.9	12 5.1
Just O.K.	19 8.1	89 38.0	1 0.4	109 46.6
Less than the work I do	31 13.2	69 29.5	13 5.6	113 48.3
Total	52	166	16	234
% Total	22.2	70.9	6.8	100.0

Comment:

It appears that attitude to pay is not a significant factor to workers in determining job-pride.

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TABLE 60

Educational Standard and Job-Pride.

Job-Pride	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
A little	3 1.3	0 0.0	21 9.0	11 4.7	17 7.3	0 0.0	52 22.2
Very Much	3 1.3	14 6.0	75 32.1	29 12.4	39 16.7	6 2.6	166 70.9
Not at all	1 0.4	1 0.4	8 3.4	3 1.3	3 1.3	0 0.0	16 6.8
Total	7	15	104	43	59	6	234
% Total	3.0	6.4	44.4	18.4	25.2	2.6	100.0

Comment:

Standard of workers' education appears not to be significant in determining workers' job-pride. Probably this is the case because workers project mainly their personal self-esteem into the importance of their jobs. In other words, what the workers appear to be saying is that 'if I am important, then my job must be important too'.

(For abbreviations used see bottom of Table 58).

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TABLE 61

Educational Standard by Job-Change  
Rate Among RSSI Workers.

No. of Jobs Held Since Leaving School.	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
First Job	2 0.9	7 3.0	49 20.9	18 7.7	30 12.8	4 1.7	110 47.0
Second Job	3 1.3	2 0.9	28 12.0	18 7.7	17 7.3	1 0.4	69 29.5
Third or More	2 0.9	6 2.6	27 11.5	7 3.0	12 5.1	1 0.4	55 23.5
Total	7	15	104	43	59	6	234
% Total	3.0	6.4	44.4	18.4	25.2	2.6	100.0

(For abbreviations used see bottom of Table 58).

Comment:

It appears that workers with higher education change jobs less than workers with lower education or no education.

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TABLE 62

Educational Standard by Reasons for Working in  
RSSI.

Reasons for Working	None	Pr.	Midd.	Sec.	Tech.	T.Tr.	Total
I have to work.	2 0.9	1 0.4	20 8.5	3 1.3	9 3.8	1 0.4	36 15.4
The pay is good.	1 0.4	3 1.3	9 3.8	6 2.6	3 1.3	0 0.0	22 9.4
Not to stay idle	4 1.7	4 1.7	27 11.5	12 5.1	20 8.5	0 0.0	67 28.6
I like the job	0 0.0	6 2.6	45 19.2	21 9.0	22 9.4	5 2.1	99 42.3
The only job I could find	0 0.0	1 0.4	3 1.3	1 0.4	5 2.1	0 0.0	10 4.3
Total	7	15	104	43	59	6	234
% Total	3.0	6.4	44.4	18.4	25.2	2.6	100.0

(For abbreviations used see bottom of Table 58).

Comment:

It appears that the two most popular reasons for working in RSSI are 'I like the job' (42.3%), and 'Not to stay idle' (28.6%).

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8:0:2 Method of Testing the Hypotheses.

The Chi-square Test will be used in the testing of the hypotheses stated in chapter three of this thesis. This involves the application of crosstabulations statistical technique to data derived from the 38 selected variables on the RSSI sample. Popham et. al. assert that:

The Chi-Square ( $x^2$ ) test is undoubtedly the most important member of the nonparametric family. This test can be used with data which are only nominal in strength such as categories representing college major or parental occupation. Chi-square is employed to test the difference between an actual sample and another hypothetical or previously established distribution. Chi-square can also be used to test differences between two or more actual samples ... Though  $x^2$  can be used to treat data which are classified into nominal nonordered categories, it can also be employed with numerical data. But for nominal data, few alternatives to  $x^2$  analysis exist.

The data for this thesis is nominal. The data is derived from variables such as educational standard of RSSI workers (EDSTD) and attitudes and opinions of the workers (Items 1-37 in WAS questionnaire). The Chi-square ( $x^2$ ) Test is therefore viewed as appropriate for analysing the data for this thesis.

The variable EDSTD initially had six categories. These categories have been recoded into only two for the purpose of testing the hypotheses. The recoding is shown as below:

Variable: EDSTD.

<u>Initial Coding</u>	<u>Recoding</u>
1. No Formal Schooling )	
2. Primary Schooling )	1. Lower Education
3. Middle Schooling )	
4. Secondary Schooling )	
5. Technical/Vocational/Commercial )	2. Higher Education.
Schooling )	
6. Teacher Training or College Education.)	

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1. Popham, W.J., et. al. (1973), op. cit., p.284.

The writer observed during fieldwork that those workers who had no formal schooling had acquired a certain amount of literacy skills; because they were able to respond to the WAS questionnaire on their own. It was therefore deemed appropriate to include such workers in the Lower Education category.

In the testing of the hypotheses, therefore, the Chi-square ( $\chi^2$ ) Test will be exploring the differences between Lower Education and Higher Education categories. Values will be given for three matrices computed on the derived data: Chi-square ( $\chi^2$ ) values, Number of Cells (Degrees of Freedom, df) and Significance values computed during crosstabulations. These values will indicate whether or not a hypothesis has been successfully tested.

Let us examine the interpretation of  $\chi^2$  and df values first. Significance values will be explained under Section 8:0:2.2.

(i) The Chi-Square ( $\chi^2$ ) Value.

The  $\chi^2$  value depends on the number of cells and the degrees of freedom generated on the nominal data during the computation. The chi-square value indicates the degree to which the RSSI sample distribution departs significantly from a normal distribution. Generally, the higher the  $\chi^2$  value, the more significant a hypothesis could be said to be successfully tested. But this value has to be used in conjunction with the number of cells generated during computation for a more meaningful interpretation.

(ii) Number of Cells or Degrees of Freedom (df).

During crosstabulation analysis, data is grouped into categories or cells. The number of cells generated during crosstabulations less one<sup>1</sup> gives a value referred to as the df number. This df number is

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1. If the cells are generated for two samples, then the df number will be the number of cells less two; and so on. For the purposes of this thesis where only one sample is being dealt with, the df number is number of cells less one.

essential in the interpretation of  $x^2$  value. For this reason Appendix 5 has been included in this thesis to help the reader in determining the significance of  $x^2$  values included in subsequent tables. When  $x^2$  and df values are used in conjunction, with the help of Appendix 5, the reader will be able to determine the level of tenability or rejection of the hypotheses. Popham et. al. explain degrees of freedom as:

All the information about the population (under survey) is contained in the sample. The total number of independent "pieces of information" are, loosely speaking, the degrees of freedom. Suppose we have the following sample of five scores: 1,2,3,4,5. We thus have 5 independent pieces of information of 5 df. In general, if we have a sample of n scores, we have n df to start with. When we estimate the mean, we use up one of these degrees of freedom. This is because knowing the sample mean  $\bar{x}$ , we automatically know the value of any score in the sample, given the values of the remaining n-1 scores ... In the above example, knowing that  $\bar{x} = 3$ , we can deduce the value of the remaining score, given, say, the scores 1,2,3 and 5. To take a meaningful (unbiased) arithmetic average, one must divide by the number of df present in the qualities being averaged.

In addition to the EDSTD variable, 37 other variables have been used in the hypothesis testing. These 37 variables are drawn from Part Three of the WAS questionnaire. The 37 selected variables were scored on a five point scale. For the purpose of hypothesis testing, the five point scale was recoded into a three point scale. The recoding is shown as below:

#### 8:0:2.1 Recoding of Part Three WAS Five-Point Scale.

<u>Initial Scale</u>		<u>Recoding</u>
1. Strongly Disagree	)	1. Disagree
2. Disagree	)	
3. Not Sure	)	2. Not Sure
4. Agree	)	
5. Strongly Agree	)	3. Agree

The combination of EDSTD variable and the 37 selected variables therefore produced a crosstabulation model of the structure shown below:

	DISAGREE	NOT SURE	AGREE
LOWER EDUCATION			
HIGHER EDUCATION			

#### 8:0:2.2 Tenability or Rejection of an Hypothesis.

It must be emphasised that this thesis is not attempting to prove any hypothesis. For, as Popham et. al. explain:

'Researchers can accept or reject ... hypotheses, although never considering them absolutely verified, for there will always be one chance in 100 or even one chance in 10,000, that the observed phenomenon actually occurred because of chance alone. Conversely, one cannot prove that the null hypothesis is true, even if a particular set of data appear to strongly support it.<sup>1</sup>

This thesis is, therefore, an attempt to suggest tenability or rejection of the hypotheses set out in chapter three.

The most commonly used method of verifying the state of an observed phenomenon is to state such an occurrence in a null hypothesis form. A null hypothesis postulates that there is no (null) relationship between the variables under analysis. If, on the basis of a statistical test, it is found that a significant relationship exists between the variables, the null hypothesis is rejected. If, however, it is found that the relationship that exists between the variables occurs because of mere chance, the null hypothesis becomes tenable. Tenability or rejection of a hypothesis, therefore, is an attempt to determine, by statistical means, the probability that chance alone underlines an observed relationship. If the chance probability of an event's occurrence is 5 in 100, the

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1. Ibid., p 49.

event is said to be statistically significant at the 0.05 level (or at 5% level). In some cases the symbol  $p$  is used to represent the chance probability of an event's occurrence as ( $p < 0.05$ ).

Nevertheless, hypothesis can be stated in a positive fashion:

The experimenter can, of course, state his hypothesis in a positive fashion and make a mental transition to null hypothesis terms. This, infact, is seen frequently in reports of research studies.<sup>1</sup>

In this thesis, the method of stating hypotheses in a positive fashion has been adopted. The question then arises: How do we accept as tenable or reject positively stated hypothesis?

Popham et. al., again, give us some guidelines:

There is some danger when the beginner employs this approach, since, if he finds his observed relationship will occur by chance only 5 times in 100, he may conclude that his research hypothesis (stated positively) will be confirmed 95 per cent of the time if he were to replicate his research. This is simply not true. If the observed phenomenon would occur by chance only 5 times in 100, then the null hypothesis can be rejected with a high probability that the rejection is warranted.<sup>2</sup> Converse notions about the probability of supporting the research hypothesis cannot be made legitimately. For that matter, if a really strong relationship has been detected by an initial research study, it would probably<sup>3</sup> recur in all future replications of the research.

This study, however, will endorse any relationship that has a chance-occurrence of 5 times in 100 ( $p < 0.05$ ) as rejecting the null hypothesis and accordingly view such a relationship as having a high probable re-occurrence in all future replications. But this is a long statement to add to the tables that will follow. The nomenclature TENABLE and UNTENABLE will be adopted in this thesis.

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1. Ibid. p.49.
  2. Emphases mine.
  3. Ibid., p.49.

Tenable means a relationship, basing our argument on  $\chi^2$ , df and p values, has a chance-occurrence such that the null hypothesis is rejected, and therefore, the relationship has a high probable re-occurrence in all future replications. Untenable means the opposite of Tenable.

Although there are several schools of thought regarding the determination of significance levels that should be used to reject null hypotheses, this thesis will adopt the 0.05 significance level:

What significant level should be used in rejecting null hypotheses? There are several schools of thought regarding this question. It has been conventional in behavioural science research work to use the 0.05 and 0.01 level of significance. (Of course, if a statistical test yields a result which is significant at the 0.01 level, it is also significant at the 0.05 level). These are the significance levels usually reported in research literature.

Youngman, however, contends that:

The hypotheses are tested by comparing obtained statistics with each other, or against some external value. The principle of statistical significance enables the researcher to assess these findings within the context of his research. Whether or not social significance or importance can also be assumed is a completely separate matter. In statistical terms, significance is simply the degree to which a value could not have occurred by chance. This is usually expressed in the form of a probability or a percentage. So the .01 or 1 per cent level of significance indicates a probability of one chance in a hundred, a highly unlikely result. A significance level of .05 implies five chances in a hundred, one in twenty ... The numerical value .05 is larger<sup>2</sup> than .01, but its statistical significance is lower.

For this reason, in Section 8:0:4, a summary table will be provided for the stated hypotheses in this thesis and matched with significance values as obtained from statistical analysis. This may provide information for future researchers that may wish to explore hypotheses with less stringent significance values.

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1. Ibid, p.50.

2. Youngman, M.B., (1979), op. cit., p.5.



8:0:3 Testing the Hypotheses.

In this section, the general area of a set of hypothesis will be stated, followed by the specific hypotheses and their corresponding  $\chi^2$  one-sample test tables.

Area (a)

Relevance and importance of education and skill-training programmes of RSSI employees to rural industrial work in southern Ghana.

General Hypothesis 1.

Workers in RSSI will acknowledge that European education supports the rural economy (rural small-scale industries) of southern Ghana.

Testable Hypotheses Under General Hypothesis 1

Relevance of Education to RSSI.

1(i) Workers with Higher education and workers with lower education will agree more than disagree that what they learnt at school is relevant to rural SSI work.

TABLE 63

Educational Standard by Problems experienced at work were never mentioned at school: (EDSTD BY SCHOOL)

	DA	NS	AG	total
LE	47 <sup>1</sup> 20.1 <sup>2</sup>	20 8.5	59 25.2	126 53.8
HE	43 <sup>1</sup> 18.4 <sup>2</sup>	13 5.6	52 22.2	108 46.2
Total	90 38.5	33 14.1	111 47.4	234 100.0*

$$\chi^2 = 0.724$$

$$df = 2$$

$$p = 0.696$$

Decision: Untenable

Abbreviations Used:

1 = Figures in this row represent frequencies.

2 = Figures in this row represent percentages to sample population (N = 234).

LE = Lower Education.

HE = Higher Education.

DA = Disagree;

NS = Not Sure;

AG = Agree.

This abbreviations pattern will be maintained in this section.

\*Percentages in all the tables in this section have been computed on cell frequencies or total frequencies. In some cases, therefore, total percentages do not add up to what the cell percentages indicate or add up to 100% when summed up.

TABLE 64

Educational Standard by My school education is quite relevant to my job (EDSTD BY EDRELEVANT).

	DA	NS	AG	Total
LE	51 21.8	15 6.4	60 25.6	126 53.8
HE	26 11.1	4 1.7	78 33.3	108 46.2
Total	77 32.9	19 8.1	138 59.0	234 100.0

$$x^2 = 15.540$$

$$df = 2$$

$$p = 0.000$$

Decision: Tenable.

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TABLE 65

Educational Standard by My school work was not related to my present work.(EDSTD BY SCHWORK).

	DA	NS	AG	Total
LE	44 18.8	13 5.5	69 29.5	126 53.8
HE	59 25.2	10 4.3	39 16.7	108 46.2
Total	103 44.0	23 9.8	108 46.2	234 100.0

$$x^2 = 9.581$$

$$df = 2$$

$$p = 0.008$$

Decision: Tenable.

.....

Importance of Education in RSSI.

1(ii) Workers with lower education and workers with higher education will agree more than disagree that management here encourages private study.

TABLE 66

Educational Standard by The management here encourages private study (EDSTD BY PRIVATST).

	DA	NS	AG	Total
LE	48 20.5	17 7.3	61 26.0	126 53.8
HE	40 17.1	13 5.6	55 23.5	108 46.2
Total	88 37.6	30 12.8	116 49.6	234 100.0

$$\chi^2 = 0.187$$

$$df = 2$$

$$p = 0.911$$

Decision: Untenable.

.....

1(iii) Workers with lower education will agree more than disagree that through private study they can get better jobs than their present ones. As a corollary, workers with higher education will disagree more than agree that through private study they can get better jobs than their present ones.

TABLE 67

Educational Standard by Through private study I can get a better job than my present one (EDSTD BY BETTERJB).

	DA	NS	AG	Total
LE	31 13.2	13 5.6	82 35.0	126
HE	25 10.7	10 4.3	73 31.2	108 46.2
Total	56 23.9	23 9.8	155 66.2	234 100.0

$$\chi^2 = 0.346$$

$$df = 2$$

$$p = 0.841$$

Decision: Untenable.

.....

Teacher-Influence on RSSI Workers.

i(vi) Workers with higher education will agree more than disagree that their class teachers wanted them to go on to higher education. As a corollary, workers with lower education will disagree more than agree that their class teachers wanted them to go on to higher education.

TABLE 68

Educational Standard by My Class teacher wanted me to go on to higher education. (EDSTD BY TEACHER)

	DA	NS	AG	Total
LE	29 12.4	15 6.4	82 35.0	126 53.8
HE	14 6.0	5 2.1	89 38.1	108 46.2
Total	43 18.4	20 8.5	171 73.1	234 100.0

$x^2 = 9.189$                        $df = 2$                        $p = 0.010$

Decision: Tenable.

.....

l(v) Workers with lower education will agree more than disagree that their school teachers were concerned about what they were going to do after they finished school. As a corollary, workers with higher education will disagree more than agree that their school teachers were concerned about what they were going to do after they finished school.

TABLE 69

Educational Standard by My teacher at school was concerned about what I was going to do after I finished school. (EDSTD BY FINISCHO).

	DA	NS	AG	Total
LE	47 20.1	26 11.1	53 22.6	126 53.8
HE	27 11.5	17 7.3	64 27.4	108 46.2
Total	74 31.6	43 18.4	117 50.0	234 100.0

$x^2 = 6.980$                        $df = 2$                        $p = 0.031$

Decision: Tenable

## Relevance and Importance of Skill Training Programmes in RSSI.

1(vi) Workers with higher education will agree more than disagree that training programmes by their companies are not relevant to their work. As a corollary, workers with lower education will disagree more than agree that training programmes by their companies are not relevant to their work.

TABLE 70

Educational Standard by The training programmes by the company are not relevant to my work. (EDSTD BY RELEVANT).

	DA	NS	AG	Total
LE	82 35.0	10 4.3	34 14.5	126 53.8
HE	67 28.6	10 4.3	31 13.3	108 46.2
Total	149 63.7	20 8.5	65 27.8	234 100.0

$$x^2 = 0.265$$

$$df = 2$$

$$p = 0.876$$

Decision: Untenable.

.....

1(vii) Workers with higher education will agree more than disagree that they can easily change jobs without further training. As a corollary, workers with lower education will disagree more than agree that they can easily change jobs without further training.

TABLE 71

Educational Standard by I can easily change job without further training. (EDSTD BY CHANGEJOB).

	DA	NS	AG	Total
LE	39 16.7	15 6.4	72 30.8	126 53.8
HE	31 13.2	16 6.8	61 26.1	108 46.2
Total	70 29.9	31 13.2	133 56.9	234 100.0

$$x^2 = 0.475$$

$$df = 2$$

$$p = 0.789$$

Decision: Untenable.

1(viii) Workers with higher education will agree more than disagree that the experience they gain on the job from their day to day work is much more useful to them than the company training programmes. As a corollary, workers with lower education will disagree more than agree that the experience they gain from their day to day work is much more useful to them than the company training programmes.

TABLE 72

Educational Standard by The experience I gain on the job from my day to day work is much more useful to me than the company training programmes. (EDSTD BY USEFUL).

	DA	NS	AG	Total
LE	31 13.2	17 7.3	78 33.3	126 53.8
HE	20 8.5	14 6.0	74 31.6	108 46.2
Total	51 21.8	31 13.2	152 65.0	234 100.0

$$x^2 = 1.392$$

$$df = 2$$

$$p = 0.499$$

Decision: Untenable.

.....

1(ix) Workers with lower education will agree more than disagree that the company needs more training schemes if the employees are to work better. As a corollary, workers with higher education will disagree more than agree that the company needs more training schemes if the employees are to work better.

TABLE 73

Educational Standard by The company needs more training schemes if the employees are to work better. (EDSTD BY MORETRNG).

	DA	NS	AG	Total
LE	18 7.7	6 2.6	102 43.6	126 53.8
HE	18 7.7	7 3.0	83 35.5	108 46.2
Total	36 15.4	13 5.6	185 79.1	234 100.0

$$x^2 = 0.647$$

$$df = 2$$

$$p = 0.723$$

Decision: Untenable.

Area (b)

Attitudes of job satisfaction among RSSI workers and their relation to worker's formal education.

General Hypothesis 2

Workers in RSSI will acknowledge that attitudes of job satisfaction are influenced by the level of their formal education.

Testable Hypotheses Under General Hypothesis 2

Promotion and Pay in RSSI.

2(i) Workers with higher education will agree more than disagree that it is not difficult to get promotion in their industries. As a corollary, workers with lower education will disagree more than agree that it is not difficult to get promotion in their industries.

TABLE 74

Educational Standard by it is not difficult to get promotion in this industry (EDSTD BY DIFFICUL).

	DA	NS	AG	Total
LE	56 23.9	17 7.3	53 22.6	126 53.8
HE.	55 23.5	20 8.5	33 14.1	108 46.2
Total	111 47.4	37 15.8	86 36.8	234 100.0

$$\chi^2 = 3.540$$

$$df = 2$$

$$p = 0.170$$

Decision: Untenable.

.....

2(ii) Workers with lower education will agree more than disagree that the pay here is better than the pay in other industries. As a corollary, workers with a higher education will disagree more than agree that the pay here is better than the pay in other industries.

TABLE 75

Educational Standard by The pay here is better than the pay in other industries. (EDSTD BY PAYHERE).

	DA	NS	AG	Total
LE	45 19.2	25 10.7	56 23.9	126 53.8
HE	45 19.2	24 10.3	39 16.7	108 46.2
Total	90 38.5	49 20.9	95 40.6	234 100.0

$$\chi^2 = 1.688$$

$$df = 2$$

$$p = 0.430$$

Decision: Untenable.

.....

Attitudes of Self-Esteem Among RSSI Workers.

2(iii) Workers with lower education will agree more than disagree that they see themselves as very low in their company set-ups. As a corollary, workers with higher education will disagree more than agree that they see themselves as very low in their company set-ups.

TABLE 76

Educational Standard by I see myself as very low in the company set-up. (EDSTD BY LOW).

	DA	NS	AG	Total
LE	79 33.8	16 6.8	31 13.2	126 53.8
HE	55 23.5	11 4.7	42 17.9	108 46.2
Total	134 57.3	27 11.5	73 31.2	234 100.0

$$\chi^2 = 2.549$$

$$df = 2$$

$$p = 0.280$$

Decision: Untenable.

.....



2(iv) Workers with lower education will agree more than disagree that office work is more respectable than factory work. As a corollary, workers with higher education will disagree more than agree that office work is more respectable than factory work.

TABLE 77

Educational Standard by Office work is more respectable than factory work. (EDSTD BY OFFICEWK).

	DA	NS	AG	Total
LE	50 21.4	27 11.5	49 20.9	126 53.8
HE	51 21.8	22 9.4	35 15.0	108 46.2
Total	101 43.2	49 20.9	84 35.9	234 100.0

$$x^2 = 1.478$$

$$df = 2$$

$$p = 0.478$$

Decision: Untenable.

.....

2(v) Workers with higher education will agree more than disagree that their working conditions are better than those of their parents. As a corollary, workers with lower education will disagree more than agree that their working conditions are better than those of their parents.

TABLE 78

Educational Standard by My working conditions are better than those of my parents (EDSTD BY WKCONDIT).

	DA	NS	AG	Total
LE	40 17.1	10 4.3	76 32.5	126 53.8
HE	44 18.8	19 8.1	45 19.2	108 46.2
Total	84 35.9	29 12.4	121 51.7	234 100.0

$$x^2 = 9.598$$

$$df = 2$$

$$p = 0.008$$

Decision: Tenable.

2(vi) Workers with lower education will agree more than disagree that things were easier for their parents than they are for them now. As a corollary, workers with higher education will disagree more than agree that things were easier for their parents than they are for them now.

TABLE 79

Educational Standard by Things were easier for my parents than they are for me now. (EDSTD BY EASIER).

	DA	NS	AG	Total
LE	27 11.5	15 6.4	84 35.9	126 53.8
HE	22 9.4	17 7.3	69 29.5	108 46.2
Total	49 20.9	32 13.7	153 65.4	234 100.0

$x^2 = 0.725$        $df = 2$        $p = 0.696$

Decision: Untenable.

.....

Inter-Personal Relations Among RSSI Workers.

2(vii) Workers with higher education will agree more than disagree that the people they work with help each other at work. As a corollary, workers with lower education will disagree more than agree that the people they work with help each other at work.

TABLE 80

Educational Standard by The people I work with help each other at work (EDSTD BY HELP).

	DA	NS	AG	Total
LE	10 4.3	8 3.4	108 46.2	126 53.8
HE	8 3.4	10 4.3	90 38.5	108 46.2
Total	18 7.7	18 7.7	198 84.6	234 100.0

$x^2 = 1.536$        $df = 2$        $p = 0.674$

Decision: Untenable.

2(viii) Workers with lower education will agree more than disagree that some people they work with act as if they own this place. As a corollary, workers with higher education will disagree more than agree that some people they work with act as if they own this place.

TABLE 81

Educational Standard by Some people I work with act as if they own this place (EDSTD BY OWNPLACE).

	DA	NS	AG	Total
LE	59 25.2	14 6.0	53 22.6	126 53.8
HE	28 12.0	7 3.0	73 31.2	108 46.2
Total	87 37.2	21 9.0	126 53.8	234 100.0

$$x^2 = 15.260$$

$$df = 2$$

$$p = 0.001$$

Decision: Tenable.

.....

Health Trends Among RSSI Workers.

2(ix) Workers with higher education will agree more than disagree that their health has shown improvement recently. As a corollary, workers with lower education will disagree more than agree that their health has shown improvement recently.

TABLE 82

Educational Standard by My health has shown improvement recently (EDSTD BY HEALTH).

	DA	NS	AG	Total
LE	36 15.4	13 5.6	77 32.9	126 53.8
HE	11 4.7	10 4.3	87 37.2	108 46.2
Total	47 20.1	23 9.8	164 70.1	234 100.0

$$x^2 = 14.242$$

$$df = 2$$

$$p = 0.001$$

Decision: Tenable.

.....

2(x) Workers with lower education will agree more than disagree that they are not overworked but they feel tired after their day's work. As a corollary workers with higher education will disagree more than agree that they are not overworked but they feel tired after their day's work.

TABLE 83

Educational Standard by I am not overworked but I feel tired after my day's work. (EDSTD BY TIRED).

	DA	NS	AG	Total
LE	55 23.5	6 2.6	65 27.8	126 53.8
HE	34 14.5	11 4.7	63 26.9	108 46.2
Total	89 38.0	17 7.3	128 54.7	234 100.0

$$\chi^2 = 5.102$$

$$df = 2$$

$$p = 0.078$$

Decision: Untenable.

.....

Attitudes of Workers in RSSI to Their Supervisors.

2(xi) Workers with higher education will agree more than disagree that their supervisor is fair to all workers. As a corollary, workers with lower education will disagree more than agree that their supervisor is fair to all workers.

TABLE 84

Educational Standard by My supervisor is fair to all workers, (EDSTD BY FAIRHEAD).

	DA	NS	AG	Total
LE	14 6.0	15 6.4	97 41.4	126 53.8
HE	19 8.1	10 4.3	79 33.8	108 46.2
Total	33 14.1	25 10.7	176 75.2	234 100.0

$$\chi^2 = 1.418$$

$$df = 2$$

$$p = 0.492$$

Decision: Untenable.

2(xii) Workers with higher education will agree more than disagree that their supervisor does not care about the way they do their work. As a corollary, workers with lower education will disagree more than agree that their supervisor does not care about the way they do their work.

TABLE 85

Educational Standard by My supervisor does not care about the way I do my work. (EDSTD BY CARELESS).

	DA	NS	AG	Total
LE	89 38.0	12 5.1	25 10.7	126 53.8
HE	81 34.6	11 4.7	16 6.8	108 46.2
Total	170 72.6	23 9.8	41 17.5	234 100.0

$$x^2 = 1.017$$

$$df = 2$$

$$p = 0.601$$

Decision: Untenable.

.....

2(xiii) Workers with lower education will agree more than disagree that they cannot talk freely with their supervisor if they have a problem. As a corollary, workers with higher education will disagree more than agree that they cannot talk freely with their supervisors if they have a problem.

TABLE 86

Educational Standard by I cannot talk freely with my supervisor if I have a problem. (EDSTD BY TALKFREE).

	DA	NS	AG	Total
LE	71 30.3	9 3.8	46 19.7	126 53.8
HE	69 29.5	7 3.0	32 13.7	108 46.2
Total	140 59.8	16 6.8	78 33.3	234 100.0

$$x^2 = 1.603$$

$$df = 2$$

$$p = 0.449$$

Decision: Untenable.

Attitudes of RSSI Workers to Routine Tasks.

2(xiv) Workers with lower education will agree more than disagree that they work at the same task the whole day. As a corollary, workers with higher education will disagree more than agree that they work at the same task the whole day.

TABLE 87

Educational Standard by I work at the same task the whole day.  
(EDSTD BY SAME).

	DA	NS	AG	Total
LE	52 22.2	22 9.4	52 22.2	126 53.8
HE	48 20.5	13 5.6	47 20.1	108 46.2
Total	100 42.7	35 15.0	99 42.3	234 100.0

$$\chi^2 = 1.405$$

$$df = 2$$

$$p = 0.495.$$

Decision: Untenable.

.....

2(xv) Workers with lower education will agree more than disagree that they easily feel bored with their work these days. As a corollary, workers with higher education will disagree more than agree that they easily feel bored with their work these days.

TABLE 88

Educational Standard by I easily feel bored with my work these days.

(EDSTD BY BORED).

	DA	NS	AG	Total
LE	64 27.4	18 7.7	44 18.8	126 53.8
HE	46 19.7	15 6.4	47 20.1	108 46.2
Total	110 47.0	33 14.1	91 38.9	234 100.0

$$\chi^2 = 1.950$$

$$df = 2$$

$$p = 0.377$$

Decision: Untenable.

Workers' Education and Job Satisfaction.

2(xvi) Workers with higher education will agree more than disagree that many things they learnt at school were related to job satisfaction. As a corollary, workers with lower education will disagree more than agree that many things they learnt at school were related to job satisfaction.

TABLE 89

Educational Standard by Many things I learnt at school were related to job satisfaction. (EDSTD BY JOBSATIS).

	DA	NS	AG	Total
LE	51 21.8	14 6.0	61 26.1	126 53.8
HE	19 8.1	14 6.0	75 32.1	108 46.2
Total	70 29.9	28 12.0	136 58.1	234 100.0

$$\chi^2 = 14.773$$

$$df = 2$$

$$p = 0.001$$

Decision: Tenable.

.....

Area (c)

Attitudes of RSSI Workers As They Indicate Acceptance or Willingness to Adopt Factors of Modernization into the RSSI and How These Attitudes Relate to Workers' Formal Education.

General Hypothesis 3

Workers in RSSI will acknowledge that attitudes of willingness to accept factors of modernization are dependent upon level of formal educational attainment.

Testable Hypotheses Under General Hypothesis 3

Attitudes of RSSI Workers to the Use of Modern Machines and Production Techniques.

3(i) Workers with lower education will agree more than disagree

that high quality work is produced only by machines. As a corollary, workers with higher education will disagree more than agree that high quality work is produced only by machines.

TABLE 90

Educational Standard by High quality work is produced only by machines. (EDSTD BY MACHINES).

	DA	NS	AG	Total
LE	58 24.8	15 6.4	53 22.6	126 53.8
HE	39 16.7	19 8.1	50 21.4	108 46.2
Total	97 41.5	34 14.5	103 44.0	234 100.0

$$x^2 = 2.549$$

$$df = 2$$

$$p = 0.280$$

Decision: Untenable.

.....

3(ii) Workers with higher education will agree more than disagree that new and advanced machines are what their industries need. As a corollary, workers with lower education will disagree more than agree that new and advanced machines are what their industries need.

TABLE 91

Educational Standard by New and advanced machines are what this industry needs. (EDSTD BY ADVANCED).

	DA	NS	AG	Total
LE	18 7.7	11 4.7	97 41.5	126 53.8
HE	9 3.8	7 3.0	92 39.3	108 46.2
Total	27 11.5	18 7.7	189 80.0	234 100.0

$$x^2 = 2.652$$

$$df = 2$$

$$p = 0.266$$

Decision: Untenable.



3(iii) Workers with lower education will agree more than disagree that there is no point in using their hands to work if machines could be found to do the same work. As a corollary, workers with higher education will disagree more than agree that there is no point in using their hands to work if machines could be found to do the same work.

TABLE 92

Educational Standard by There is no point in using my hands to work if machines could be found to do the same work. (EDSTD BY HANDWORK).

	DA	NS	AG	Total
LE	35 15.0	9 3.8	82 35.0	126 53.8
HE	32 13.7	12 5.1	64 27.4	108 46.2
Total	67 28.6	21 9.0	146 62.4	234 100.0

$$x^2 = 1.406$$

$$df = 2$$

$$p = 0.495$$

Decision: Untenable.

.....

3(iv) Workers with higher education will agree more than disagree that new machines will help to produce more goods in this industry. As a corollary, workers with lower education will disagree more than agree that new machines will help to produce more goods in this industry.

TABLE 93

Educational Standard by New machines will help to produce more goods in this industry. (EDSTD BY NEWMACHI).

	DA	NS	AG	Total
LE	21 9.0	12 5.1	93 39.7	126 53.8
HE	2 0.9	9 3.8	97 41.5	108 46.2
Total	23 9.8	21 9.0	190 81.2	234 100.0

$$x^2 = 14.912$$

$$df = 2$$

$$p = 0.001$$

Decision: Tenable.

3(v) Workers with higher education will agree more than disagree that they are encouraged to develop simple tools suitable for their work at the industry. As a corollary workers with lower education will disagree more than agree that they are encouraged to develop simple tools suitable for their work at the industry.

TABLE 94

Educational Standard by We are encouraged to develop simple tools suitable for our work at the industry. (EDSTD BY TOOLS).

	DA	NS	AG	Total
LE	33 14.1	11 4.7	82 35.0	126 53.8
HE	41 17.5	8 3.4	59 25.2	108 46.2
Total	74 31.6	19 8.1	141 60.3	234 100.0

$$x^2 = 3.618$$

$$df = 2$$

$$p = 0.164$$

Decision: Untenable.

.....

Freedom to Use New Ideas in RSSI.

3(vi) Workers with lower education will agree more than disagree that it is difficult to try new ideas here, the supervisor is always watching. As a corollary, workers with higher education will disagree more than agree that it is difficult to try new ideas here, the supervisor is always watching.

TABLE 95

Educational Standard by It is difficult to try new ideas here, the supervisor is always watching. (EDSTD BY IDEAS).

	DA	NS	AG	Total
LE	53 22.6	16 6.8	57 24.4	126 53.8
HE	47 20.1	23 9.8	38 16.2	108 46.2
Total	100 42.7	39 16.7	95 40.6	234 100.0

$$x^2 = 4.056$$

$$df = 2$$

$$p = 0.132$$

Decision: Untenable

3(vii) Workers with higher education will agree more than disagree that they have plenty of freedom to use their own ideas at work. As a corollary, workers with lower education will disagree more than agree that they have plenty of freedom to use their own ideas at work.

TABLE 96

Educational Standard by I have plenty of freedom to use my own ideas at work. (EDSTD BY FREEDOM).

	DA	NS	AG	Total
LE	39 16.7	23 9.8	64 27.4	126 53.8
HE	26 11.1	25 10.7	57 24.4	108 46.2
Total	65 27.8	48 20.5	121 51.7	234 100.0

$$x^2 = 1.714$$

$$df = 2$$

$$p = 0.425$$

Decision: Untenable.

.....

Attitudes of RSSI Workers Serving As Barriers to Modernization.

3(viii) Workers with lower education will agree more than disagree that working in a large city is not as good as working in a small town. As a corollary, workers with higher education will disagree more than agree that working in a large city is not as good as working in a small town.

TABLE 97

Educational Standard by Working in a large city is not as good as working in a small town. (EDSTD BY CITYWORK).

	DA	NS	AG	Total
LE	44 18.8	19 8.1	63 26.9	126 53.8
HE	50 21.4	17 7.3	41 17.5	108 46.2
Total	94 40.2	36 15.4	104 44.4	234 100.0

$$x^2 = 3.786$$

$$df = 2$$

$$p = 0.151$$

Decision: Untenable.

3(ix) Workers with lower education will agree more than disagree that no matter what we do in this country, we will never catch-up with overseas industry. As a corollary, workers with higher education will disagree more than agree that no matter what we do in this country, we will never catch-up with overseas industry.

TABLE 98

Educational Standard by No matter what we do in this country, we will never catch-up with overseas industry. (EDSTD BY OVERSEAS).

	DA	NS	AG	Total
LE	51 21.8	27 11.5	48 20.5	126 53.8
HE	48 20.5	12 5.1	48 20.5	108 46.2
Total	99 42.3	39 16.7	96 41.0	234 100.0

$$x^2 = 4.502$$

$$df = 2$$

$$p = 0.105$$

Decision: Untenable.

.....

3(x) Workers with lower education will agree more than disagree that machines manufactured overseas are better than the ones made here. As a corollary, workers with higher education will disagree more than agree that machines manufactured overseas are better than the ones made here.

TABLE 99

Educational Standard by Machines manufactured overseas are better than the ones made here. (EDSTD BY MANUFACT).

	DA	NS	AG	Total
LE	20 8.5	22 9.4	84 35.9	126 53.8
HE	17 7.3	11 4.7	80 34.2	108 46.2
Total	37 15.8	33 14.1	164 70.1	234 100.0

$$x^2 = 2.638$$

$$df = 2$$

$$p = 0.267$$

Decision: Untenable.

8:0:4 Summary of Analysis of Testable Hypotheses.

Table 100 gives a summary of the statistical analysis applied to the hypotheses forming the basis of this thesis. The observed cell frequencies and percentages are given in Tables 63-99.

Out of 35 hypotheses posited, statistical analysis has evidenced that 8 have  $x^2$  values significant at, at least the 5 per cent level. The 8 hypotheses have, therefore, been decided upon as tenable. One very important point must be made at this stage. The other 27 untenable hypotheses do not imply invalidity. Their untenability simply means that more complex factors other than the formal education dimension of rural workers have influence over the areas set out by the untenable hypotheses.

TABLE 100

Summary of Analysis of Hypotheses.

Hypothesis	Variables Used	$x^2$	df	p	Decision
1(i)	EDSTD BY SCHOOL	0.724	2	0.696	Untenable
	" BY EDRELEVANT	15.540	"	0.000	Tenable
	" BY SCHWORK	9.581	"	0.008	Tenable
1(ii)	EDSTD BY PRIVATST	0.187	2	0.911	Untenable
1(iii)	EDSTD BY BETTERJB	0.346	2	0.841	Untenable
1(iv)	EDSTD BY TEACHER	9.189	2	0.010	Tenable
1(v)	EDSTD BY FINISCHO	6.980	2	0.031	Tenable
1(vi)	EDSTD BY RELEVANT	0.265	2	0.876	Untenable
1(vii)	EDSTD BY CHANGEJB	0.475	2	0.789	Untenable
1(viii)	EDSTD BY USEFUL	1.392	2	0.499	Untenable
1(ix)	EDSTD BY MORETRNG	0.647	2	0.723	Untenable
2(i)	EDSTD BY DIFFICUL	3.540	2	0.170	Untenable
2(iii)	EDSTD BY LOW	2.549	2	0.280	Untenable
2(iv)	EDSTD BY OFFICEWK	1.478	2	0.478	Untenable
2(v)	EDSTD BY WKCONDIT	9.598	2	0.008	Tenable
2(vi)	EDSTD BY EASIER	0.725	2	0.696	Untenable
2(vii)	EDSTD BY HELP	1.536	2	0.674	Untenable
2(viii)	EDSTD BY OWNPLACE	15.260	2	0.001	Tenable

TABLE 100 (Contd.)

Hypothesis	Variables Used	$\chi^2$	df	p	Decision
2(ix)	EDSTD BY HEALTH	14.242	2	0.001	Tenable
2(x)	EDSTD BY TIRED	5.102	2	0.078	Untenable
2(xi)	EDSTD BY FAIRHEAD	1.418	2	0.492	Untenable
2(xii)	EDSTD BY CARELESS	1.017	2	0.601	Untenable
2(xiii)	EDSTD BY TALKFREE	1.603	2	0.449	Untenable
2(xiv)	EDSTD BY SAME	1.405	2	0.495	Untenable
2(xv)	EDSTD BY BORED	1.950	2	0.377	Untenable
2(xvi)	EDSTD BY JOBSATIS	14.773	2	0.001	Tenable
3(i)	EDSTD BY MACHINES	2.549	2	0.280	Untenable
3(ii)	EDSTD BY ADVANCED	2.652	2	0.266	Untenable
3(iii)	EDSTD BY HANDWORK	1.406	2	0.495	Untenable
3(iv)	EDSTD BY NEWMACHI	14.912	2	0.001	Tenable
3(v)	EDSTD BY TOOLS	3.618	2	0.164	Untenable
3(vi)	EDSTD BY IDEAS	4.056	2	0.132	Untenable
3(vii)	EDSTD BY FREEDOM	1.714	2	0.425	Untenable
3(viii)	EDSTD BY CITYWORK	3.786	2	0.151	Untenable
3(ix)	EDSTD BY OVERSEAS	4.502	2	0.105	Untenable
3(x)	EDSTD BY MANUFACT	2.638	2	0.267	Untenable

The discussion of research results and the conclusions that will be drawn from them will therefore involve all the stated hypotheses.

Another way of looking at the untenable hypotheses is that future researches should look for other factors which may be more significant than the education component in these areas. What this thesis has done therefore is a process of defining areas significantly influenced by formal schooling in the RSSI sector. In this sense, the untenable hypotheses become very useful.

PART   FOUR

This part consists of Chapters Nine and Ten. In Chapter Nine an attempt was made to synthesise research results and the implications of these results were given in Chapter Ten.

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CHAPTER NINE

SYNOPSIS OF RESEARCH RESULTS

9:0:0 Procedural Summary.

Data for this thesis was collected from communities with rural characteristics in Ghana. Two different samples were surveyed:

(i) Workers in RSSI of Southern Ghana. This sample data formed the basis for this study.

(ii) Rural Teachers' (RT) sample in Southern Ghana. This was supplementary data to that of RSSI workers'.

The RSSI sample data was analysed with statistical techniques which permitted the identification of descriptive characteristics of the sample and the testing of posited hypotheses. Although the hypotheses formulated in this thesis do not appear to involve the TR's sample directly, information solicited from the statistical analysis of that sample will be given equal prominence.

9:0:1 Synopsis of Results: Structural Characteristics of RSSI Sample.

This study, being the first of its kind on RSSI workers in southern Ghana, poses problems of relating the present results, especially in the area of sample structural characteristics, to any previous findings. For this reason, the results of this analysis will be discussed in their own right; however, whenever a basis for comparison arises between this analysis and a relevant documented result of a previous survey, the opportunity will not be missed.

The characteristics of the RSSI sample will be discussed in this chapter, as far as possible, in accordance with the ordering of variable items in the WAS questionnaire; especially, in accordance with the presentation of results in chapter six.



Nevertheless, this ordering will not be strictly adhered to in cases where the discussion will be more meaningful by judiciously bringing together variables from different parts of the WAS.

Sex, Age, Marital Status and Educational Standard:

The 234 RSSI sample was found to have more males (82.5%) than females (17.5%). This result is not particularly surprising in the context of this sector. This<sup>is</sup>/because there appears to be a general view in Ghana that RSSI require relatively high inputs of manual labour and women are not supposed to engage in strenuous activities. Secondly, the low representation of women in the RSSI sample may be due to the fact that Ghanaian women have a longer tradition in retail trading than small-scale industries.

Mambogunje, for instance, states that:

... in many African countries, especially in West Africa, women dominate major subsectors of the informal economy, particularly petty trading, <sup>1</sup> in conditions which are far from unfavourable.

As sex distribution shows a bias towards male dominance, so does age distribution towards workers aged 21 or over (75.2%, see Table 13). Workers aged 15 - 20 constitute 25.3% of the sample and under fifteens, only 1.3%. This age distribution pattern among RSSI workers is quite significant for several reasons: When Ankrah (Section 4:0:1.1), for instance, talked of 70,000 school-leavers joining the labour market every year, he was referring to school-leavers aged 15 - 20. This age group has also been referred to in the 1974 Ghana Government proposals for the establishment of a national board for RSSI (Section 4:0:1.1). According to these proposals, Government emphases were being shifted from establishment of large-scale urban industries to RSSI in order 'to combat the high levels of school-leavers' unemployment problem

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1. Mambogunje, A.L. (1980), op. cit., p.184.

in rural areas and the tendency of school-leavers migrating into cities'.

Wood's research on 'training of out-of-school youth in twelve African countries'<sup>1</sup> defined 'youth' as those 'under 20 years of age'. To him, like to Ankrah and the Ghana Government, the unemployment problem mainly concerns 'youth'; and the solution lies in expanding the RSSI sector.

Age distribution analysis of this thesis appears to contradict the predominantly held notion that rural industries engaged only school-leavers under 20-years of age. Evidence here suggests that RSSI cater for unemployment in general, notwithstanding age differentials. For example, evidence here shows that a significant proportion of RSSI workers (32.1%) are over 30-years old.

#### Region of Origin (Ethnicity) Among RSSI Workers:

In a country such as Ghana, where kinship ties still form a sociological basis for social mobility, one would expect that, since this survey was conducted in the southern section of the country, workers must mainly have southern Ghana origin. This however was not the case as evidence here shows. There is a certain degree of ethnic homogeneity among RSSI workers and this is depicted in Table 14. Workers in southern Ghana RSSI have origins covering all the administrative regions of the country.

#### Marital Status:

Over half of the sample were married (54.3%), 37.2% were single, 6.8% were engaged to be married and 1.7% were others. This result appears to be in accord with the age structure where 75.2% of workers were 21 years old or over. In Ghana, where economic independence seems to be an important factor in the establishment of marital relationships, it is not surprising that after workers

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1. Wood, A.W., (1970), op. cit. (passim).

of a certain age secure employment thus overcoming economic constraints, they naturally tend to establish marital units.

Methods By Which Workers Learn About Their Jobs, Educational Standard and Methods of Employment:

It appears that irrespective of the educational standard attained by workers, a large proportion tend to learn about their jobs through friends (55.1%). This may be the case because newspaper circulation in Ghana could be termed inadequate compared to what happens in developed countries such as Britain and the United States. Here, comparatively few people read, let alone subscribe to newspapers. News is then passed on by word of mouth to friends.

Although 97% of workers were found to be literate (Table 16), 6.4% have had Primary schooling, 44.4% Middle schooling, 18.4% Secondary schooling, 25.2% Technical or Vocational or Commercial schooling and 2.6% College education, it appears family connections or kinship ties still play a significant role in the way workers get their jobs: 22.2% learnt about their jobs in this manner.

Whereas 13.7% of workers learnt about their jobs through newspapers, only 9.0% did so by the tour of industries.

Although 22.2% of workers learnt about their jobs through family connections, only 16.7% were actually employed by this means. 65.8% were interviewed before being employed and 17.5% were given a test of some kind.

Number of Jobs Held After Leaving School and Number of Years Workers Have Stayed With Their Industry.

For a large section of the RSSI workers (47.0%), this has been their first job. 29.5% said this has been their second job and 23.5%, their third or more job.

On the other hand, 20.1% claimed to have kept the same job

for under one year while 29.5% have kept the same job for one to two years, 23.5% for three to five years and 26.9% have kept the same job for over five years. This result does not appear to agree with the widespread held notion in Ghana that RSSI work is used as 'a stepping stone' in readiness for better paid jobs.

#### Lateness to Work:

Lateness to work in the RSSI sector seems to carry some form of disciplinary action. The most popular disciplinary action appears to be warning (68.4%), followed by loss of pay (29.9%) and sacking(1.7%).

#### Categories of Jobs and Social Status Symbols Workers Would Choose for Their Children:

Workers were asked to choose some categories of jobs and social status symbols for their children if they had the opportunity. These items were included in the questionnaire to examine worker's aspirations. The assumption here was that what workers perceived as they could not become, they would wish for their children.

As far as occupations were concerned, the order of preference was medical professions (30.3%), farming (20.1%), business (18.8%) factory work (11.1%), government work or office work (9.8%), teaching (5.6%) and armed forces personnel (4.2%). This result appears to disagree with Foster's results.<sup>1</sup> Although Foster's sample was drawn from secondary pupils, the writer considers his results, in certain aspects, relevant to this study: the educational component in shaping workers', and, for that matter secondary pupils' aspirations. Foster's results presented an order of preference for medical professions, business, government work, forces personnel, farming, teaching and factory work. The low ranking accorded forces

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1. Foster, P. (1971), op. cit.

personnel in this survey, for instance, could be explained in terms of the poor performance exhibited by forces personnel since 1966, when they took over political functions of government in Ghana. Another example of low ranking in this study against high ranking in Foster's result is the businessmen. During the forces rule in Ghana, businessmen were known to have become corrupt. The Ghanaian society's disenchantment with these occupational groups, therefore, appears to be reflected in this result. The highest ranking given to the medical professions by the two samples appears to confirm that attitudes to occupations change in relation to the esteem in which the society perceives the performance of an occupation as a whole, irrespective of other sample characteristics. See Section 1:0:7 for human behaviour in terms of economic, psychological and easthetic framework.

Subsequently, when workers were asked to select a status symbol which they would choose for their children, 'good education' came to the top of the list (79.5%) while 'money' was ranked very low (0.4%) and gambling or 'playing lotto' came last (0.0%, see Table 28).

#### Categories of Parental Occupations:

Parental-occupation background appears to be significant as an indicator of the type of people who go into RSSI work. Table 24 suggests that 53.4% of the sample had mothers who were traders but no worker had a mother from forces personnel and factory worker occupational groups. Similarly, Table 23 shows that 54.3% of the sample had fathers whose occupation was farming. The two predominant occupations for workers' mothers and fathers were therefore trading and farming respectively. This result appears to agree with Lloyds Bank Report (Section 4:0:1) and Mambogunge's observation quoted

above.

Pride of Company, Pay, Reasons for Working and Promotion:

The majority of workers seem to be proud of their companies: 70.9% said they were 'very proud' of their companies, 22.2% said 'a little' proud and only 6.8% said 'not at all' proud. This widespread pride among workers for their companies does not seem to match workers' opinions about their pay: 48.3% of the sample thought their pay was 'less than the work I do', 46.6% said their pay was 'just O.K.' and only 5.1% said their pay was 'more than the work I do'.

When workers were asked the reasons for working in their respective industries, 42.3% said they 'like the job', 28.6% said their reason was 'I do not want to stay idle', 15.4%, 'I have to work', 9.4% said 'the pay is good' and 4.3% said 'this is the only job I could find'. A question about the number of promotions they have had since joining their companies revealed that 21.8% have had one promotion, 12.0% have had more than one promotion and 66.2% have had no promotion.

The above result seems to suggest that pride of company is independent of reasons for working, pay or number of promotions one has attained. This brings to focus, in a wider context, questions about motivation for efficient performance at a job. Some of the issues related to finding solutions to this problem have been discussed in chapter three sections 3:0:0 and 3:0:1, 3:0:3 and in chapter four. Nonetheless, it will suffice to suggest that the manner in which workers evaluate their companies appears to relate to the way in which they view themselves and their self-esteem.

Agencies for Creating Jobs:

There is a widespread belief among RSSI sample that the

Government should be responsible for job creation. This is reflected in workers' responses where 56.0% were of this opinion. 23.5%, however, were of the opinion that private individuals should attempt to create jobs, 14.1% think businessmen, 3.4% think schools and 3.0% think Banks should be responsible for creating jobs. Mentioning schools as agencies for creating jobs appears to support Peil's and Foster's assertion (Section 2:0:1) that 'alternative and much cheaper sources of skilled workmen be provided by training within industry and apprenticeship to an individual craftsman'.

#### 9:0:1.1 Synopsis of Results: Situational Characteristics.

Twelve items were used to study situational characteristics of the RSSI sample, however, in this section, these characteristics will be discussed under five headings.

#### Provision of Transport Facilities for Workers:

The sample majority (85.5%) claimed that they went to work by Trotro,<sup>1</sup> although 42.7% said their work places were less than half an hour's walking distance from where they lived.

A proportion of the sample (8.5%) owned their own vehicles by means of which they went to work and 38.5% claimed that their companies provided transport facilities to and from work.

#### In-Service Training and Private Study:

Workers were asked about in-service training schemes in their industries and 41.9% said that their companies had some in-service training schemes. Responding to a question about private study, 49.6% of the sample said 'many workers here take part in some kind of private study'.

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1. Trotro is a passenger lorry that is used mainly by workers as means of transportation. Trotros are invariably privately owned and they ply set routes. Their fares are usually less than those for buses and taxis although they are less comfortable.

Promotion:

Whereas 91.5% of the sample responded that they were not expecting promotion at work in the near future, 58.1% said that none of their workmates got promotion recently. It appears that, not considering other factors, this negative view about promotion in RSSI deters workers from encouraging friends or relatives to join this sector industries: 60.3% said they could 'not advise a friend or a relative to come and work here'.

Looking for New Jobs:

A high percentage (68.4%) of the RSSI sample claimed that they were looking for new jobs and a significant proportion (44.4%) also claim that some of their workmates were looking for new jobs.

Company Policies and Supervisors:

Only 25.6% of the sample said that their supervisors explained company policies to them.

9:0:1.2 Synopsis of Results: Opinions and Attitudes.

The opinions and attitudes of RSSI workers' sample were surveyed by 37 items. The items were rated on a five-point scale. The analysis results have been summed up in Table 32. In the opinion of the writer, Table 32 can be understood on its own: respondents expressed their opinions in a rated form on specific issues pertaining to what could be termed 'The Rural Small-Scale Condition'. Consequently, it is the view of the writer that such expressed opinions should be sufficient in themselves without any further opinionated explanations.

The variables given basic analysis in Table 32 have been used to formulate hypotheses stated in chapter three and later tested in chapter seven. Results of tested hypotheses will be discussed fully in section 9:0:4.



## 9:0:2 Synopsis of Results: Entrepreneurs' Responses to EIS.

Table 33 summarises the 21 RSSI entrepreneurs' responses to EIS questionnaire. Although this table is sufficiently self explanatory, some of the issues raised in it are of crucial importance to the object of this thesis, especially, issues such as skill training and dependency of developing countries on developed nations discussed in sections 2:0:0, 2:0:1 and chapter four respectively. In this section, the discussion will be at three levels: education of entrepreneurs and skill training schemes preferred by entrepreneurs; dependency issues in relation to RSSI; and entrepreneurs' suggestions for improvement of the RSSI sector.

### Educational Standard of Entrepreneurs and Skill Training Schemes Preferred by RSSI Entrepreneurs:

All the RSSI entrepreneurs had some level of formal education. One or 4.8% had primary schooling, 28.6% had middle school education and 66.7% had more than middle school education. Those who had professional education (e.g. BA, Dip, Cert A, HND or ACCA), formed 57.1%. But those who actually had some training in management skills (e.g. MDPI, AT, OT, ACCA or NVTI) formed 33.3% of this sub-sample of RSSI workers.

On the basis of this result it appears that Lewis's assertion, quoted in section 2:0:1, that African entrepreneurship is deficient in technical knowledge and managerial capacity is not borne out. Secondly, Peil and Foster's contention (Section 2:0:1) that 'technical trainees may be too "high powered" to be useful in small-scale, indigenous businesses and most holders of technical certificates drift into work quite different from that which they were trained' requires re-examination. In the RSSI sector of southern Ghana, this category of entrepreneurs appear

to be performing a very important function: setting up small-scale industries.

A significant proportion, 47.6%, of the sub-sample were ex-civil servants. It appears that this category of entrepreneurs would improve the overall performance by bringing some of their expertise in to the RSSI sector.

In section 9:0:1.1, it was noted that 41.9% of RSSI workers claimed that their companies had some sort of in-service training schemes for the workers. Since Peil and Foster contended that in-service training programmes would be less expensive means of training craftsmen, especially if they took the form of apprenticeship, it will be of major consequence here to examine the views of RSSI entrepreneurs on this issue (see section 2:0:1).

All the entrepreneurs in the sub-sample responded to this item and it could be argued that, to some extent, this was an indication that they viewed skill training as an important factor in the development of quality craftsmen. Their preferential in-service training schemes ranged over App, NVTI, IST, AT, OT, MDPI to YMCA (see Table 33). Their responses are shown below:

App = 66.7%	OT = 14.3%
NVTI = 19.0%	MDPI = 19.0%
IST = 33.3%	YMCA = 9.5%
AT = 9.5%	

This result appears to confirm the views of Peil and Foster: apprenticeship schemes of training seem to be preferred by RSSI entrepreneurs as a means of developing skilled craftsmen in this sector. In some respects, this result also appears to challenge the Human Capital Development Theory (Section 5:0:1) since IST schemes appear not to be popular with entrepreneurs. In the same vein, Foster's 'The Vocational School Fallacy in Development

Planning'<sup>1</sup> appears to apply.

Dependency Issues in Relation to RSSI:

The responses to a question about operational difficulties in RSSI by entrepreneurs were classified into nine response-types. Percentage responses by the sub-sample (see Table 33) are given as follows:

- (a) High wages for employees and high cost of raw materials (66.7%)
- (b) No official sources of finance to aid mechanization and expansion (66.7%)
- (c) Farming or fishing community. During farming/fishing season workers leave to go and farm/fish (66.7%)<sup>2</sup>
- (d) Exposure of workers to naked fire. Safety equipment required (28.6%)
- (e) Lack of raw material and of spare parts for machines on the local market (33.3%)
- (f) Lack of land to expand factory space (9.5%)
- (g) Difficulty in obtaining appropriate transport facilities to evacuate finished products to market centres (57.1%)
- (h) Limited foreign exchange quotas for importation of diesel motors to power fishing boats (4.8%)
- (i) Government or big companies have expressed no interest in project. Investment has remained at individual rural level, (9.5%)

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1. For the full text of this article, see Foster, P., 'The Vocational School Fallacy in Development Planning' in Anderson, C.A., and Bowman M.J., Education and Economic Development, Frank Cass, London, 1966 pp.142-165.

2. Kennedy, P., 'Cultural Factors Affecting Entrepreneurship and Development in the Informal Economy in Ghana' in Institute of Development Studies Bulletin, Vol. 8, No 2. September 1976, for example, states that: Many of the smaller manufacturers studied in Ghana, whose firms were labour - rather than capital-intensive and who therefore relied heavily on the availability of a few skilled workers, complained bitterly about the problems of securing the long-term loyalty and co-operation of employees.

It is worth noting that since entrepreneurs were not restricted in the number of operational difficulties they could mention, it is reasonable to say that the most endemic complaints are reflected in the highest percentages. Classified response-types of a, b and c were most endemic. A careful observation of the sources of these difficulties would reveal that they were of types that could be easily minimised at the national level, given a certain degree of government intervention. Similarly, low frequency factors such as d, f and i could also be minimised by means of more efficient planning and co-ordination between government institutions and private individuals. It would be recalled, for example, that land in Ghana is owned by families but held in trust by an elected member of the family. The government could therefore introduce some kind of negotiation bill by means of which access to land could become easier.

However, factors such as e and g have no simple solutions. These issues are more complex because spare parts and vehicles constitute an area where Ghana is absolutely dependent on developed countries. Although the factor h did not occur significantly, it constitutes another central area where dependency plays an important role.

In Chapter five it was shown how economic, education and development issues could not be treated in isolation: a reform in one of the sectors requires an overall restructuring. Recalling dependency issues raised in chapter four, therefore, and relating them to factors identified above, suggest that unless dependency is minimised by way of adopting 'utilitarian education' stance as opposed to education for certification, RSSI will remain problematic (see, especially, Bowles and Gintis and Dore's arguments in section 5:0:1).

Suggestions by Entrepreneurs for Improvement:

The five categories of suggestions offered by the RSSI entrepreneurial sub-sample (reference Table 33) could be viewed as initial practical measures which could be incorporated in government planning policies for the improvement of this sector. Nonetheless, research institutions, which in Ghana, consist mainly of educational institutions have been charged with the function of disseminating research results in forms that could be easily understood and accessed by those who need them in RSSI. This issue was raised and stressed in Chapter Six section 6:1:2 as one of the objectives of this thesis.

In addition to suggestions for improvement, the sub-sample offered in 'Further comments' item, comments which appear to be a reinforcement of the suggestions. However, they argued that youth migration could be minimised if this sector was improved. This argument becomes significant if it is remembered that this was one of the reasons for the government's 1974 review of RSSI policy in Ghana.

9:0:3 Synopsis of Results: Rural Teachers Responses to TAS.

The majority of studies conducted in Ghana concerning the wider issues of education seem, consistently, to exclude a teachers' component. This is not peculiar only to Ghana but to many countries in the Third World in general. Dove succinctly puts it as:

There is a certain amount of analytical literature, as well as case-study material, on both the innovative and conservative influence of the school in rural development. But there is very little which spells out, except incidentally, the implications of such schemes for the school teachers. This is strange when we consider the crucial position of teachers in activating any programme which aims<sub>1</sub> to bring the school and community together.

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1. Dove, L.A., 'The Teacher and the Rural Community in Developing Countries', in Compare, Vol. 10, No. 1, 1980.

This study, therefore, considers a survey on rural teachers, as a component of the main issues, an important factor.

In this section, salient results arising from analysis of the teachers' sample responses will be discussed.

#### Structural Characteristics of the Sample:

The composition of the sample was found to be 57.0% male and 43% female. 78.8% were married, 16.9% were single, 2.6% divorced and 1.7% were widowed. The age-structure of the sample shows a definite bias towards teachers aged 26 and above: no teachers were found to be below 20 years of age, 18.5% were 20-25 years old, 46.4% were 26-35 years, 14.6% were 36-40 years and 20.5% were over 40 years old.

In Ghana, there is widespread belief that rural teachers are usually less qualified than urban teachers.<sup>1</sup> This results, however, appear to be contrary to the belief. For example, analysis shows that 53.0% of rural teachers were of trained certificate 'A' category, 22.2% were of trained post-secondary certificate 'A' category, 4.6% were of trained diploma or specialist category and only 10.6% and 5.6% were of untrained secondary and middle school teachers' categories respectively. In addition to this, 4.0% of the teachers were trained, blind or deaf or community resource personnel. The significant implication of this result is that over 84% of rural teachers were trained and qualified.

Their teaching experience profile is almost as impressive as their qualification: 39.4% had over 10 years teaching experience, 28.5% had 6-10 years experience, 16.2%, 3-5 years experience,

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1. See also: Commonwealth Secretariat, Education in Rural Areas (Report of the Commonwealth Conference on Education in Rural Areas Held at University of Ghana, Legon, Accra, 23 March to 2 April, 1970), p.97. Professor L.J. Lewis, for instance, believes that with few exceptions, teachers engaged in rural primary schools 'are ill equipped both in academic knowledge, practical and professional skills ... A considerable proportion of them have had no professional training'.

9.3%, 1-2 years experience and only 6.6% had under one year experience.

The sample analysis shows that 45.7% of RT taught in primary schools, 35.1% taught in middle schools, 15.9% in continuation schools and 3.3% taught in junior secondary schools. It appears, however, that quite a significant proportion of teachers taught classes containing more than 45 pupils: 34.4% taught classes containing over 45 pupils, 32.1% classes containing 36-45 pupils, 31.1% classes of 20-35 pupils and 2.3% taught classes under 20 pupils. The size of a normal class is set at 45 pupils by the Ghana Government.

Ethnicity among RT appears to be homogeneous. That is, although this study was conducted in southern Ghana teachers of all the different major ethnic backgrounds were found in the sample (see Table 43).

#### Major Attitudes of RT:

In this section, only major attitudes of RT which were summarised in Tables 44 to 46 will be discussed.

RT strongly agreed (SA, 26.2%) or agreed (A, 56.6%) that teachers who were familiar with what went on in RSSI found it valuable in their teaching work because, it seems they viewed the present school syllabus as only relevant to pupils who went on to higher education: (SA, 26.8%) and (A, 17.5%).

Sample analysis further shows that 54.0% strongly agreed and 32.1% agreed that rural industries were necessary for the employment of school leavers who were unable to go on to higher education but, at the same time, 28.5% strongly agreed and 36.1% agreed that rural industries were not the best employment for pupils who were unable to go on to higher education. Consequently, it is not surprising to note that 31.8% of RT strongly agreed and 28.8%

agreed that pupils who acquired job skills through experience on the job got promoted less than pupils with higher education. The importance attached to higher education by RT for pupils before going into employment is not limited to this sample alone. It is a widespread attitude among many sectors of the Ghanaian society:

Given the seemingly more instrumented attitudes towards education of Ghanaian parents, it was no surprise to find that a higher proportion had the intention that their children continue their studies. Whereas in Mexico 42% expected their children to continue, in Ghana 61% had this desire ...

Evidence from Ronald Dore (The Late Development Theory) and the Addis Ababa conference of 1961, however, seem to suggest that the desire for children to continue studying was a widespread one especially in many Third World countries, the late developers.

The view of RT that the present school syllabuses favoured students with higher education potential seems to be reflected in the analysis that 28.1% strongly agreed and 44.7% agreed that if they were given the chance, they would reframe the present school syllabus. Furthermore, 61.6% of RT are of the opinion that the school syllabus was not quite relevant to the skills needed in RSSI.

Although the interaction between Ghanaian RT and their communities could be described as favourable (42.1% said they sometimes take part in community activities and 7.6% said they do so often), 45.0% said they never invited people from the local community to come and give talks to their students about post-school experience and 22.2% said they do occasionally. This situation is not surprising, for as Dove points out:

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1. Brooke, N., 'The Quality of Education in Rural Ghana and Mexico', in IDS Bulletin, Vol. 11, No. 2, May, 1980.



It is often assumed that the teacher will not only be involved in the community but will also develop it, alone or, more usually, in co-operation with other agencies such as local-self help organisations and co-operatives or governmental extension and welfare agencies ... involvement in the community is not without its problems for the teacher. These problems are even greater when community development is identified with help for the poorest and least powerful members of the community as it is at present by most aid agencies and governments.

However, in Ghana, it appears the RT strive to maintain the same level of contact, if not better, between their community and the local industry: 53.2% of RT said they have had the chance to visit a rural industry. The expressed views of RT about RSSI could therefore be considered to be based on some degree of acquaintance with this sector.

#### 9:0:4 Synopsis of Results: Testing of Hypotheses.

Thirty-seven hypotheses were formulated based on 38 variables included in WAS questionnaire. To find out whether significant relationships existed between the selected 38 variables, and if they did, their magnitude and direction, factor analysis statistical technique was applied to the variables. Tables 48 and 49 show correlation coefficients and extracted factor matrices. The significance of these two tables is not only to establish magnitude, direction, reliability and order of association that exist between the selected variables for the benefit of this study, but also to help researchers in future to identify appropriate and significant variables for their studies.

Crosstabulations statistical analysis was also applied to the 38 selected variables. The results of this technique have been reported in two parts as summary statistics and, on the recoded

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1. Dove, L.A., (1980), op. cit.

data, chi-square test of hypotheses. The discussion in this section will follow the same pattern.

#### 9:0:5 Synopsis on Summary Statistics.

The distributions of age and educational attainment among the sexes of RSSI appear to be uniformly patterned. The same cannot, however, be said for the distribution of sex by RSSI. This is because whereas textile industries showed a marked bias towards male employment (12.8% - male, 0.0% - female), the brick and tile industries showed a tendency towards preferred female employment (7.7% - female, 5.1% - male). The argument for this conclusion is that since the sample of RSSI consists of 193 males and only 41 females, the frequency of males to females in any category of employment should reflect more males than females. A departure from this pattern therefore becomes significant.

Distributions of educational attainment by industry and educational attainment by region of origin, do not seem to exhibit any significant properties. However, the distribution of workers' educational attainment by parental occupations suggests that the majority of workers had mothers who were traders and fathers who were farmers (reference section 9:0:1 and Tables 23 and 24).

As far as summary statistical results indicate, a proportion of workers' attitudes appear to have been influenced in their formation by education. But the significance of causal relationships between educational attainment and attitudes will be the burden of the next section. In the next section, chi-square test results on the posited hypotheses of this thesis will be discussed.

#### 9:0:6 Synopsis on $\chi^2$ Test of Hypotheses:

For the sake of convenience and brevity, the hypotheses will be stated in this section without their corollaries. Hypotheses

were tested under three areas to determine the significance of causal relationships between workers' educational levels and their attitudes.

#### Area (a)

Area (a) was to evaluate relevance and importance of education and skill training programmes to RSSI work. The general hypothesis for Area (a) was that all workers in RSSI in southern Ghana will acknowledge that European education or formal schooling supports the rural economy (RSSI).

The specific hypothesis which was to test educational relevance to RSSI stated: Workers with higher education and workers with lower education (all workers) will agree more than disagree that what they learnt at school is relevant to RSSI work.

Three attitudinal variables were used to test this hypothesis, and the results were as follows:

(i) Problems experienced at work were never mentioned at school. In accordance with a predetermined significance level ( $p < 0.05$ ), this variable was found to be untenable.

It appears, therefore, that a conclusion on educational relevance to RSSI cannot be drawn on the basis of workers' attitudes about what they were taught at school in relation to work experience. Other factors besides the influence of school work may have been responsible for the formation of these attitudes.

(ii) My school education is quite relevant to my job.

The  $\chi^2$  test on this attitude proved it to be tenable.

It appears therefore that education plays a role in the formation of this attitude.

(iii) My school work was not related to my present work.

The  $\chi^2$  test on this attitude proved it to be tenable.

On the basis of these three variables above, a conclusion could be drawn that workers' attitudes towards relevance of education to

RSSI work are influenced by school curricula although problems experienced at work are never mentioned during school work.

Two hypotheses were to test importance of education in RSSI.

The first hypothesis stated: Workers with lower education and workers with higher education will agree more than disagree that management here encourages private study.

The  $\chi^2$  test rendered this hypothesis untenable.

The second hypothesis stated: Workers with lower education will agree more than disagree through private study they can get better jobs than their present ones.

The  $\chi^2$  test rendered this hypothesis untenable.

A conclusion could therefore be drawn that workers' attitudes towards importance of education in RSSI are not sufficiently influenced in their formation by education factors.

Two hypotheses were to test teacher-influence on RSSI workers. The first hypothesis stated: Workers with higher education will agree more than disagree that their class teachers wanted them to go on to higher education.

The  $\chi^2$  test on this hypothesis proved it tenable.

The second hypothesis stated: Workers with lower education will agree more than disagree that their school teachers were concerned about what they were going to do after they finished school.

The  $\chi^2$  test on this hypothesis proved it tenable.

A conclusion could be drawn therefore that school teachers influence workers' attitudes about further studies and occupational choice after leaving school.

Four hypotheses were to test relevance and importance of skill training programmes in RSSI. The hypotheses and their test results were as follows:

(i) Workers with higher education will agree more than disagree that training programmes by their companies are not relevant to their work.

The  $x^2$  test showed that this hypothesis was untenable.

(ii) Workers with higher education will agree more than disagree that they can easily change jobs without further training.

The  $x^2$  test on this hypothesis proved it to be untenable.

(iii) Workers with higher education will agree more than disagree that the experience they gain on the job from their day to day work is much more useful to them than the company training programmes.

The  $x^2$  test on this hypothesis proved it to be untenable.

(iv) Workers with lower education will agree more than disagree that the company needs more training schemes if the employees are to work better.

The  $x^2$  test rendered this hypothesis untenable.

A conclusion that could be drawn from the above results is that education of workers did not play any major role in the formation of attitudes towards skill training programmes initiated by companies and the value of work experience.

This result seems to be quite understandable if one considers the fact that factors such as work experience and skill training are involvements at a personal level. It is possible that workers may seek work experience or more skill training for different reasons such as promotion, more pay or to enhance higher self-esteem. In such cases, it appears ones education has very little to do with what course of action a worker may decide upon.

#### Area (b)

Area (b) was to evaluate the role of formal education on workers' job-satisfaction attitudes. The general hypothesis for

this area was that all workers in RSSI will acknowledge that attitudes of job-satisfaction are influenced by the level of their formal education.

Two specific hypotheses were to test attitudes to promotion and pay in RSSI. The first hypothesis stated: Workers with higher education will agree more than disagree that it is not difficult to get promotion in their industries.

The  $\chi^2$  test on this hypothesis rendered it untenable.

The second hypothesis stated: Workers with lower education will agree more than disagree that the pay here is better than the pay in other industries.

The  $\chi^2$  test on this hypothesis proved it to be untenable.

A conclusion could be drawn therefore that workers attitudes to pay and promotion were not significantly influenced in their formation by the formal education system.

Like self-esteem and pride of ones company, attitudes to promotion and pay may be socially determined. These attitudes may vary from worker to worker just as they may vary from society to society and their formation may depend upon the values that a society attaches to them. The educational component although present, from correlation evidence in Table 48, may be minor as compared with other over-riding factors. In section 1:0:1 notions of what constituted 'education' in different societies were illustrated. In Ghana, for example, apart from the formal school system, other non-formal education systems operate. It is possible that inputs contributed by systems such as Islamic education into the Ghanaian society, overshadow those contributed by formal schools. Workers' attitudes towards promotion and pay, therefore, could be mainly derivatives of a syndrome termed 'growing up in two worlds'.<sup>1</sup>

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1. For a comprehensive statement on this concept, see Grindal, B., (1972), op. cit.

Four specific hypotheses were used to test attitudes of self-esteem among RSSI workers:

(i) Workers with lower education will agree more than disagree that they see themselves as very low in their company set-up.

The  $x^2$  test on this hypothesis proved it untenable.

(ii) Workers with lower education will agree more than disagree that office work is more respectable than factory work.

The  $x^2$  test on this hypothesis proved it untenable.

(iii) Workers with higher education will agree more than disagree that their working conditions are better than those of their parents.

The  $x^2$  test proved this hypothesis untenable.

(iv) Workers with lower education will agree more than disagree that things were easier for their parents than they are for them now.

The  $x^2$  test proved this hypothesis untenable.

A conclusion could, therefore, be drawn from the result above as workers' attitudes of self-esteem were not particularly formed as a result of influence of formal education.

Two specific hypotheses were used to test attitudes relating to inter-personal relations among RSSI workers.

(i) Workers with higher education will agree more than disagree that the people they work with help each other at work.

The  $x^2$  test rendered this hypothesis untenable.

(ii) Workers with lower education will agree more than disagree that some people they work with act as if they own this place.

The  $x^2$  test rendered this hypothesis tenable.

A conclusion could be drawn from the results above that inter-personal relations' attitudes of workers were influenced by formal

education in so far as some workers exhibited a sense of superiority over others but less so in attitudes of worker-co-operation with each other.

It appears that workers with higher education form the category which exhibits a sense of superiority or 'more-belongingness' over workers with lower education. In section 5:0:1, it was pointed out that students who manage to 'percolate' through the education system as it presently stands, are imodestly imbued with a high sense of superiority, of personal status through academic achievement, especially in the Third World. It is not surprising, therefore, that people such as these should continue to be accorded special status under work conditions.

Two specific hypotheses were used to test attitudes relating to Health trends among RSSI workers.

(i) Workers with higher education will agree more than disagree that their health has shown improvement recently.

The  $x^2$  test rendered this hypothesis tenable.

(ii) Workers with lower education will agree more than disagree that they are not overworked but they feel tired after their day's work.

The  $x^2$  test rendered this hypothesis untenable.

A conclusion could be drawn from the results above that attitudes of RSSI in respect to improvement in health after employment were influenced by educational factors but those concerning a feeling of tiredness after work are not influenced by educational factors.

Three specific hypotheses were to test attitudes of workers to their supervisors:

(i) Workers with higher education will agree more than disagree that



their supervisor is fair to all workers.

The  $x^2$  test rendered this hypothesis untenable.

(ii) Workers with higher education will agree more than disagree that their supervisor does not care about the way they do their work.

The  $x^2$  test rendered this hypothesis untenable.

(iii) Workers with lower education will agree more than disagree that they cannot talk freely with their supervisor if they have a problem.

The  $x^2$  test rendered this hypothesis untenable.

A conclusion could be drawn, therefore, that workers' attitudes to their supervisors had no basis in their formal education.

Two specific hypotheses were to test workers' attitudes to routine tasks.

(i) Workers with lower education will agree more than disagree that they work at the same task the whole day.

The  $x^2$  test rendered this hypothesis untenable.

(ii) Workers with lower education will agree more than disagree that they easily feel bored with their work these days.

The  $x^2$  test rendered this hypothesis untenable.

A conclusion could be drawn, therefore, that workers' attitudes to routine tasks had no basis in factors of education.

This result is very significant, for in section 3:0:1, Hobsbawm<sup>1</sup> argued that factors which induce industrial development such as technological skills have little to do with formal schooling; however, he continued, in developing countries, minor skills and habits which are taken for granted in developed countries such as

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1. See Section 3:0:1 for Hobsbawm's full argument.

literacy, a sense of punctuality and regularity, the conduct of routine, are non-existent. He concluded therefore that human capital development, in that sense, becomes a problem of education. This assumption appears to be fallacious on the strength of evidence gathered above. Routine work is a major component of industrial work, and the evidence above shows that workers' attitudes to routine are not formed from educational factors.

One hypothesis was to test workers' attitudes to job satisfaction. It stated: workers with higher education will agree more than disagree that many things they learnt at school were related to job satisfaction.

The  $x^2$  test rendered this hypothesis tenable.

A conclusion could, therefore, be drawn that education played a role in the formation of workers' attitudes to job satisfaction. It would be recalled that workers' attitudes to health improvement after employment were found to be influenced by educational factors. It appears, therefore, that both job satisfaction and health improvement in a working situation are dependent on educational factors, in other words, on workers' formal education.

#### Area (c)

Area (c) was to evaluate workers' attitudes as they indicate acceptance or willingness to adopt factors of modernization in the RSSI sector. The general hypothesis for this area was that all workers will acknowledge that attitudes of willingness to accept factors of modernization are dependent upon level of formal educational attainment.

Five specific hypotheses were to test attitudes of the use of modern machines and production techniques.

(i) Workers with lower education will agree more than disagree that high quality work is produced only by machines.

The  $\chi^2$  test rendered this hypothesis untenable.

(ii) Workers with higher education will agree more than disagree that new and advanced machines are what their industries need.

The  $\chi^2$  test rendered this hypothesis untenable.

(iii) Workers with lower education will agree more than disagree that there is no point in using their hands to work if machines could be found to do the same work.

The  $\chi^2$  test rendered this hypothesis untenable.

(iv) Workers with higher education will agree more than disagree that new machines will help to produce more goods in this industry.

The  $\chi^2$  test rendered this hypothesis tenable.

(v) Workers with higher education will agree more than disagree that they are encouraged to develop simple tools suitable for their work at the industry.

The  $\chi^2$  test rendered this hypothesis untenable.

A conclusion could be drawn that while workers' attitudes about the use of modern machines and production techniques were influenced by educational factors with regard to more goods being produced by new machines, educational factors appear not to have significant influence on attitudes such as the ability of machines only being capable of producing high quality work, the need for advanced machines, the need for substituting machines for manual work and encouragement to develop simple tools for work in RSSI.

The results above have significant implications for theories of schooling and development. Stated in other words, the results above imply:

(i) That formal education plays a significant role in the formation of workers' beliefs that modern or new machines will help to produce more goods in the RSSI sector;

(ii) but formal education appears to have no significant influence in the formation of attitudes towards issues such as machines only being capable of producing high quality work; substituting machines for manual work, given that machines will produce work of similar quality; encouragement to develop simple tools for use in the RSSI sector and the need to acquire advanced and new machines.

The implications of results such as above will, of course, be complex in their explanation. Nonetheless, some general arguments could, at least be advanced on the evidence.

It could be argued that through the system of formal education workers have become aware of the fact that new machines would help to produce more goods in RSSI. At the same time, however, it appears education has failed to conscientize workers to see the need for these new and advanced machines in the sector. Education has therefore induced an attitude but failed to induce its complementary one, and this could be viewed as a creation of false awareness in RSSI workers. It seems obvious that the false awareness is responsible for workers seeing neither the need for acquisition of new and modern machines nor for developing their own simple tools as well as substituting machines for manual work. In this sense, it seems education has been a hinderance to modernization in RSSI.

A situation such as above, has stagnated processes of modernization in the RSSI sector and thereby has deepened the dependency of the sector as well as the economy of the country. The issues concerning how schools could be reformed in order to rectify induction of complementary attitudes is beyond the scope of this thesis and it is being recommended that this could be an area for any future investigations.

Two specific hypotheses were used to test attitudes pertaining to workers' freedom to use new ideas in RSSI.

(i) Workers with lower education will agree more than disagree that it is difficult to try new ideas here, the supervisor is always watching.

The  $\chi^2$  test rendered this hypothesis untenable.

(ii) Workers with higher education will agree more than disagree that they have plenty of freedom to use their own ideas at work.

The  $\chi^2$  test rendered this hypothesis untenable.

A conclusion could be drawn from the above results that workers' attitudes pertaining to innovative behaviour or the use of new ideas were not significantly influenced by education.

In the wider context, the above conclusion seems to imply that injection of innovative behaviour or application of new ideas in industry have no causal relationships with formal education. This appears to explain Hobsbawm's assertion discussed in section 3:0:1 above that the industrial revolution which took place in Britain in the seventeenth century had little to do with formal schooling. Innovation in RSSI in southern Ghana, therefore, used to come from within; and it appears that this is where the recommendations of RSSI entrepreneurs (section 9:0:2 and Table 33), for improvement of this sector should be given serious attention.

In section 5:0:3.1, Stallings appeared to have emphasised economic and political factors between developed and developing nations more than cultural factors in her definition of dependency. The results above, however, seem to suggest that cultural factors play a significant role in industrial development, the type that would minimise dependency. In this sense, the colonial experience of industrial development in Ghana (Section 4:0:1) appears to have hindered growth of cultural factors and hence had contributed to the deepening of dependency.

Three specific hypotheses were to test attitudes of workers serving as barriers to modernization in RSSI.

(i) Workers with lower education will agree more than disagree that working in a large city is not as good as working in a small town.

The  $\chi^2$  test rendered this hypothesis untenable.

(ii) Workers with lower education will agree more than disagree that no matter what we do in this country, we will never catch-up with overseas industry.

The  $\chi^2$  test rendered this hypothesis untenable.

(iii) Workers with lower education will agree more than disagree that machines manufactured overseas are better than the ones made here.

Application of the  $\chi^2$  test proved this hypothesis untenable.

A conclusion could be drawn from the results above that workers' attitudes serving as barriers to modernization in RSSI had insignificant causal relationship with education.

It appears, therefore, that workers' attitudes which serve as barriers to modernization are culturally based and education has played no significant role in changing them. Education planners and policy makers would have to devise realistic programmes aimed at resolving imbalances such as these in future education policies in addition to structural changes of the type outlined in section 4:0:1.1 and Fig. 2. if education is to play a holistic role in making RSSI successful in a Ghanaian context.

In the next chapter conclusions on the major findings of this study will be outlined.

CHAPTER TENCONCLUSIONS AND IMPLICATIONS

The aim of this study has been to examine the role of formal education in supporting the rural economy of southern Ghana. The study was, therefore, designed to provide information on attitudes of rural small-scale industrial workers to school curricula, to occupations in the rural industrial sector and to evaluate how significantly the process of formal education influenced formation of these attitudes. Basic information about structural and situational characteristics of RSSI was also provided for in the design.

A complimentary survey was conducted on rural teachers to provide information on attitudes of rural teachers to rural small-scale industrial occupations and to relevance of school work for requirements of skills in RSSI.

This survey has shown that education has assumed a major role in the formation of a new class of entrepreneurs and workers in this sector. Similarly, a significant proportion of RSSI workers' attitudes have been shown to be influenced by the process of education. But trends of these educational influences on workers' attitudes appear to follow certain patterns.

On the one hand, evidence suggested that workers' attitudes in areas such as educational relevance to RSSI work, teacher-influence on choice of further studies and occupation, interpersonal relations, health trends, job satisfaction and the use of modern machines and new production techniques, were significantly influenced by the process of education.

On the other hand, workers' attitudes in areas such as importance of education in RSSI, relevance and importance of skill

training programmes in RSSI, promotion and pay, self esteem, relation with supervisors, freedom to use new ideas, working in cities as opposed to working in small towns and confidence in local industry and locally manufactured machines, were not significantly influenced by the process of education.

Clearly, the educational provision expansion and government interventionist policies in national development which have characterised the last two decades in Ghana, tended to produce only certain attitudes in RSSI workers in relation to the rural economy.

It appears schooling can be used to correct imbalances not only between establishments but also in creating favourable attitudes of working in the rural small-scale industrial sector. For an overall efficient development of the RSSI sector to be possible, educational policies need to be reviewed in the light of current information on this sector.

While there appears to be a tendency among workers in RSSI to up-grade traditional methods of production and to expand, some attitudes of workers tend to militate against it. Consequently, the development of 'workmanship-quality' among RSSI workers in Ghana appears to exhibit a sharp contrast to what obtains in developed economies of Britain or the United States. A majority of RSSI workers, for example, claimed that they could not talk freely with their supervisors if they had a problem at work. Such attitudinal constraints have been reinforced by cultural factors which, to great extent, were given impetus by Ghana's colonial experience. The colonial control of means of employment, educational opportunity and the economy (reference sections 3:0:2.1, 3:0:2.3 and 4:0:1), which interrupted the on-going evolution of indigenous



economy and society, injected a colonial mentality into the cultural continuum of the Ghanaian society and has led certain constraining effects on attitudes. The non-confidence expressed by workers in local industries and locally manufactured machines, illustrates the undervalued and 'inferior' influences which colonialism imposed on events of the Ghanaian society. It is the argument of this study that, educational policies, if properly oriented in the context of current research results on RSSI, could adapt schools as means to minimise adverse effects of cultural factors in attitude formation.

This survey has shown that, to a certain extent, skills development and pride of workmanship seem to stem from individual intrinsic motives rather than sectorial incentives. Subsequently, RSSI entrepreneurs expressed preferences for individual non-formal means for skill-development in this sector. Furthermore, entrepreneurs suggested a comprehensive government intervention in the organization and the operation of RSSI. In order to minimise atrophy and worker-frustration in this sector, this study ventures to recommend that entrepreneurs' suggestions must be critically evaluated by appropriate government agencies and embody them in future industrial policies.

It has been shown in the analysis that there is a low representation of women in the RSSI sector. This seems to be an area which demands some attention from planners if all sections of the society are to benefit from the economic capabilities and potentials of the rural sector. Women have been shown to perform creditably in other categories of economic activity in the country, especially in retail trades, and the rural sector may well benefit from a policy of attracting more female participation.

Indeed, the rural sector appears to have some advantages over the urban modern sector in that at least as far as RSSI are concerned they employ simple appropriate technology and draw their managerial personnel from the indigenous local elite. This is in sharp contrast to the urban modern sector which relies and essentially transplants technology, machinery, foreign exchange and managerial expertise originally developed in economically advanced societies. But the RSSI sector appears to be lacking in innovative behaviour and this seems to have resulted in workers having a less strong perception of opportunity for individual initiative and progress. Understandably, encouragement of individual initiative and innovative behaviour will result in attracting a higher calibre of workers into this sector and thereby help to minimise inter- and intra-national dependency of the sector.

Probably the most significant thing about the RSSI entrepreneurs is that the majority of them have worked at one time or another in the urban bureaucratic sector. It is therefore reasonable to suggest that these entrepreneurs are deviants who broke away from the traditional economic establishments because they could no longer contain the required conformity, lack of innovation and the stagnation which has become characteristic of urban large-scale industries. It therefore becomes a paradox that workers under these entrepreneurs should feel apathetic to innovative behaviour and initiative. This area needs further investigation in order to rectify this paradox.

The rural teachers surveyed appear to be well trained and qualified teachers. They also appear to have strong influence on their students in respect of decisions concerning further education and occupational choice. Furthermore, they seem to have good inter-

personal relations with their communities and know what goes on in industries in their localities. Any government policies, therefore, that aim at inducing attitudes which are at present lacking in RSSI workers through schools would need the consultation and approval of RT if they are to be successful.

Like RT, migration patterns among RSSI workers indicate that such workers are mobile both geographically and socially. The rural workers surveyed also seem to have definite conceptions about the aspirations they envisage for their children. A comprehensive policy statement which is formulated on change of attitudes as a result of conferring between RT and RSSI workers may be of invaluable use to planners in any future government intervention in the area of educational role in RSSI development. In Ghana, at present, the central government appears to be in charge of formulating and amending school curricula, while local authorities and village councils appear to be responsible for implementing them. What might be of significant importance to future planners and implementers of national educational policies is that European educational system,<sup>1</sup> as inherited from the colonial experience, cannot be abandoned entirely. This is because 'deschooling' arguments advanced by writers such as Ivan Illich<sup>2</sup> do not appear to be viable solutions to developmental problems in Ghana in as far as the demand for European education remains a high desirable aspiration of many parents for their children.

On the other hand, 'good correlations' found between educational enrolments and economic factors of development in advanced countries

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1. See Chapter One for the description of how European education was inherited by the Ghanaian society.

2. See Illich, I., Deschooling Society, Penguin, London, 1971, for arguments in favour of deschooling society.

by Harbison and Myers<sup>1</sup> do not seem to establish any crucial strategy for rapid economic development of newly independent nations. Neither denigration of schools nor higher enrolments in schools, therefore, appear to be solutions to economic development in Third World countries such as Ghana.

In the Ghanaian context, in particular, and probably in a general context, the results of this survey appear to suggest that despite some notably negative results concerning a fair body of workers' attitudes to education, there seems to be no evidence that the educational process has had harmful effects on such workers. Nonetheless, the value of European education, if any, appears to assist entrepreneurial initiative in RSSI sector in Ghana. European education, therefore, seems to be important in the context of RSSI development in Ghana even if in a diffused form alone.

The apparent negatively disposed attitudes of RSSI workers toward the role of education seem to arise because there appears to be a gap between educational levels and perceptions of entrepreneurs and employees in the sector. But in order to determine the sources of these employees' negative attitudes, a totally new research of other variables different from education need to be conducted on RSSI workers. A detailed study of content of school syllabuses in relation to RSSI work, for instance, would reveal the effects of factors such as ideological, political, religious or aesthetic values on attitudes of employees. A study such as the one suggested above will help to define the role of the 'hidden curriculum' in school syllabuses on RSSI employees.

Although any resource allocation directed towards expansion and effective operation of the RSSI sector appears to hold more

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1. See Chapter two for Harbison and Myers findings between European education and national economic growth.

economic development potential for Ghana than large-size urban industries, unfortunately, the economic situation in the country at present seems to be deteriorating rather than improving and allocating resources to the RSSI appears to be of secondary consequence to much more pressing problems.

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A P P E N D I C E S

APPENDIX 1WORKER-ATTITUDES AND VALUES TO THE RELEVANCE OF EDUCATION  
AND TRAINING PROGRAMMES FOR RURAL INDUSTRIES(WORKER-ATTITUDE SCALE - WAS)

## General Information for Respondents:

1. This is not a test. Do not sign your name on the survey. There are no 'good' or 'bad' answers to the questions; so do not waste time on any one question trying to figure out the correct answer. We want your opinion about the questions. If you are not sure of an answer, mark off the answer that you feel is most like your opinion.
  2. Please answer all questions. Do not write in the margin.
- 

PART ONEINSTRUCTIONS:

1. This section consists of factual questions. For example:

Age:

Under 15 years

15-20 years

21-30 years

Above 30 years

2. In each item, mark "X" in the box near the answer that best described you.
- 

1. Sex:

Male

Female

2. Age:

Under 15 years

15-20 years

21-25 years

26 - 30 years

Over 30 years

3. Region of Origin:

Accra

Ashanti

Brong-Ahafo

Central

Eastern

Northern

Upper

Western

Other

4. Marital Status:

Married

Single

Engaged

Other

5. I Learnt About My Present Job Through:

Newspaper Advert

Friends

Going Round

Other

6. Standard of Education:

Primary

Middle

Secondary

Technical/Vocational/Commercial

Teacher Training

None



7. I have Worked here for:

Under 1 year

1-2 years

3-5 years

Over 5 years


8. After leaving schoolm this is my:

First job

Second job

Third or more job


9. Lateness to work is punishable by:

Sack

A Warning

Loss of pay


10. If you had the opportunity, what kind of job would you like for your child:

Farming

Factory Work

Medical Professions

Business

Government Work

Teaching

Forces Personnel


11. Before I was employed, I was:

Interviewed

Tested

Other


12. Which category best describes your father's occupation:

Business

Teaching

Farmer

Government Worker

Industrial Worker

Medical Worker

Forces Personnel

13. Who in your opinion, should be responsible for creating jobs:

Government

Private Individuals

Banks

Schools

Businessmen

14. Are you proud of your company:

A little

Very much

Not at all

15. My pay in this job is:

More than the work I do

Just O.K.

Less than the work I do.



16. If you were to choose for your child, which one of these would you select:

Money

Good education

A secure job with average pay

An easy job with less pay

Playing Lotto

A risky job with high pay.

17. Which category best describes mother's occupation:

Teacher

Farmer

Trader

Factory Worker

Medical Worker

Government Worker

Forces Personnel.

18. I work here mainly because:

I have to work

The pay is good

I do not want to stay idle

I like the job

This is the only job I could find

19. Since I joined this company, I have had:

One promotion

Two promotions

Three or more promotions









APPENDIX 2

ENTREPRENEUR INTERVIEW SCHEDULE (EIS)

- 1. Name of Industry: .....  
.....
- 2. Location:.....Town.....Region.....
- 3. What Products do you specialise in:.....  
.....
- 4. When was your Industry established:.....
- 5. How many Employees:.....Normally.....  
In Lean Season.....
- 6. How many shareholders does the Factory have:.....
- 7. Name difficulties experienced by your industry:.....  
.....  
.....
- 8. What suggestions would you offer for improvements:.....  
.....  
.....
- 9. What type of in-service training programmes do you have or  
would like to be offered for your employees:  
.....
- 10. Your own experience and training:.....  
.....
- 11. Any further relevant comments:.....  
.....  
.....



TEACHER ATTITUDES TO SCHOOL CURRICULUM, POST-SCHOOL  
TRAINING AND RURAL INDUSTRIES

(TEACHER ATTITUDE SCALE - TAS)

INSTRUCTIONS:

1. Do not put your name on the answer sheet. We do not want to identify individual answer sheets.
  2. Put an "X" in the appropriate box as it relates to you in each item.
  3. Please do not write in the margin.
- 

PART ONE  
(Background Info.)

- |                                      |                          |
|--------------------------------------|--------------------------|
| 1. <u>Sex:</u>                       |                          |
| Male                                 | <input type="checkbox"/> |
| Female                               | <input type="checkbox"/> |
| 2. <u>Marital Status:</u>            |                          |
| Married                              | <input type="checkbox"/> |
| Single                               | <input type="checkbox"/> |
| Divorced                             | <input type="checkbox"/> |
| Widowed                              | <input type="checkbox"/> |
| 3. <u>Age:</u>                       |                          |
| Under 20 years                       | <input type="checkbox"/> |
| 20-25 years                          | <input type="checkbox"/> |
| 26-35 years                          | <input type="checkbox"/> |
| 36-40 years                          | <input type="checkbox"/> |
| Above 40 years                       | <input type="checkbox"/> |
| 4. <u>Educational Qualification:</u> |                          |
| 4-Year Cert. 'A'                     | <input type="checkbox"/> |
| Cert. 'B'                            | <input type="checkbox"/> |
| Post-Sec. Cert. 'A'                  | <input type="checkbox"/> |
| Specialist/Diplomate                 | <input type="checkbox"/> |
| Secondary Untrained Teacher          | <input type="checkbox"/> |
| Middle Untrained Teacher             | <input type="checkbox"/> |
| Other                                | <input type="checkbox"/> |

5. Type of School in which you are Teaching:Primary Middle Middle/Continuation Junior Secondary 6. Teaching Experience:Under 1 year 1-2 years 3-5 years 6-10 years Above 10 years 7. Your School Location:Rural Urban/Municipal 8. Number of Students in Your Class:Under 20 20-35 36-45 Above 45 9. Your Region of Origin:Accra Ashanti Brong Ahafo Central Eastern Northern Upper Volta Western Other

PART TWO (FOR TEACHERS)

INSTRUCTIONS:

1. This section is to afford you to express your views about the relevance of the school curriculum to the skills required in rural industries.

2. Each of the statements is to be marked on a five-point scale against it.

- 5 = Strongly Agree
- 4 = Agree
- 3 = Not Sure (I don't know)
- 2 = Disagree
- 1 = Strongly Disagree

For example:

Teaching is a very satisfying profession

5	4	3	2	1
		X		

3. In each item, mark "X" in the square that expresses your view best.

	5	4	3	2	1
1. To help the children learn easily, I teach sometimes outside class hours.					
2. My teaching would be better if I had more materials and equipment.					
3. Pupils who go direct from school into employment have better prospects for advancement.					
4. The teacher who is familiar with what goes on in rural industries finds it valuable in his/her teaching.					
5. If I were given the chance, I would reframe the school syllabus.					
6. Teaching is one of the most interesting jobs.					
7. Pupils who acquire job skills through experience on the job get promoted less than pupils with higher education.					
8. Rural industries are necessary for the employment of school leavers who are unable to go on to higher education.					



PART THREE (FOR TEACHERS)INSTRUCTIONS:

1. Five statements are given on the answer sheet. There is a four-point scale against each statement. For example:

- 4 = Often  
 3 = Sometimes  
 2 = Very Occasionally  
 1 = Never

For example:

I go late to school

4	3	2	1
		X	

2. For each statement, mark an "X" in the box that best matches your method of working.

	4	3	2	1
1. Some of my pupils complain to me about other teachers on the staff				
2. Local community activities take some of my time outside class hours.				
3. My headteacher finds faults with my teaching				
4. I invite people from the local community to come and give talks to my students about post-school experience				
5. In teaching, experience counts more towards promotion than a higher qualification.				

PART FOUR (FOR TEACHERS)

INSTRUCTIONS:

1. Ten factual statements are given below. You may either agree (Yes) or disagree (No) with the statement. Mark an "X" in the box of your choice. For example:

	YES	NO.
(a) I am an Inspector of Schools		X
<hr/>		
	YES	NO
1. I get on well with my colleagues at work.		
2. I am enrolled in a correspondence course.		
3. I need higher qualifications to get promotion.		
4. There are very few opportunities open to me to make my views known to the officials who write the school syllabus.		
5. My headteacher sees to it that every teacher follows the syllabus strictly.		
6. The majority of my pupils do not come from urban area.		
7. Half of my pupils come from families where parents are trained skill workers.		
8. I have never had the chance to visit a rural industry.		
9. The school syllabus is not quite relevant to the skills needed in rural industries.		
10. At the beginning of my teaching here, I was given a syllabus to guide my teaching.		

## APPENDIX 4

SIGNIFICANCE LEVELS FOR PEARSON PRODUCT-  
MOMENT CORRELATION COEFFICIENTS

Sample size	Values of correlations required	
	at 5% level	at 1% level
5	.755	.875
10	.576	.714
15	.483	.605
20	.425	.538
25	.380	.488
30	.338	.440
35	.320	.417
40	.300	.394
45	.280	.370
50	.262	.346
60	.248	.328
70	.233	.308
80	.220	.290
90	.206	.272
100	.194	.255
150	.158	.209
200	.137	.182
250	.125	.163
500	.088	.115

Interpolated from graphical Table X in G.H. Fisher, The New Form Statistical Tables, University of London Press, London, 1965.  
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Source: Child, D., op. cit., (1976), p.95.

## APPENDIX 5

PROBABILITY DISTRIBUTION OF  $\chi^2$ 

df	.99	.98	.95	.90	.80	.70	.50	.30	.20	.10	.05	.02	.01	.001
1	0.157	0.028	.00393	.0158	.0642	.148	.455	1.074	1.642	2.706	3.841	5.412	6.635	10.827
2	.0201	.0404	.103	.211	.446	.713	1.386	2.408	3.219	4.605	5.991	7.824	9.210	13.815
3	.115	.185	.352	.584	1.005	1.424	2.366	3.665	4.642	6.251	7.815	9.837	11.341	16.268
4	.297	.429	.711	1.064	1.649	2.195	3.357	4.878	5.989	7.779	9.488	11.668	13.277	18.465
5	.654	.752	1.145	1.610	2.343	3.000	4.351	6.064	7.289	9.236	11.070	13.388	15.086	20.517
6	.872	1.134	1.635	2.204	3.070	3.828	5.348	7.231	8.558	10.645	12.592	15.033	16.812	22.457
7	1.239	1.564	2.167	2.833	3.822	4.671	6.346	8.383	9.803	12.017	14.067	16.022	18.475	24.322
8	1.646	2.032	2.733	3.490	4.594	5.527	7.344	9.524	11.030	13.362	15.507	18.168	20.090	26.125
9	2.088	2.532	3.325	4.168	5.380	6.393	8.343	10.656	12.242	14.684	16.919	19.679	21.666	27.877
10	2.558	3.059	3.940	4.865	6.179	7.267	9.342	11.781	13.442	16.987	18.307	21.161	23.209	29.588
11	3.053	3.609	4.576	5.578	6.989	8.148	10.341	12.899	14.631	17.275	19.675	22.618	24.725	31.264
12	3.571	4.178	5.226	6.304	7.807	9.034	11.340	14.011	15.812	18.549	21.026	24.054	26.217	32.909
13	4.107	4.765	5.892	7.042	8.634	9.926	12.340	15.119	16.985	19.812	22.362	25.472	27.688	34.528
14	4.660	5.368	6.571	7.790	9.467	10.821	13.339	16.222	18.151	21.064	23.685	26.873	29.141	36.123
15	5.229	5.985	7.261	8.547	10.307	11.721	14.339	17.322	19.311	22.307	24.996	28.259	30.578	37.697
16	5.812	6.614	7.962	9.312	11.152	12.624	15.338	18.418	20.465	23.542	26.296	29.633	32.000	39.252
17	6.408	7.255	8.672	10.085	12.002	13.531	16.338	19.511	21.615	24.769	27.587	30.995	33.409	40.790
18	7.015	7.906	9.390	10.865	12.857	14.440	17.338	20.601	22.760	25.989	28.869	32.346	34.805	42.312
19	7.633	8.567	10.117	11.651	13.716	15.352	18.338	21.689	23.900	27.204	30.144	33.687	36.191	43.820
20	8.260	9.237	10.851	12.443	14.578	16.266	19.337	22.775	25.038	28.412	31.410	35.020	37.566	45.315
21	8.897	9.915	11.591	13.240	15.445	17.182	20.337	23.858	26.171	29.615	32.671	36.343	38.932	46.797
22	9.542	10.600	12.338	14.041	16.314	18.101	21.337	24.939	27.301	30.813	33.924	37.659	40.289	48.268
23	10.196	11.293	13.091	14.848	17.187	19.021	22.337	26.018	28.429	32.007	35.172	38.968	41.638	49.728
24	10.856	11.992	13.848	15.659	18.062	19.943	23.337	27.096	29.553	33.196	36.415	40.270	42.980	51.179
25	11.524	12.697	14.611	16.473	18.940	20.867	24.337	28.172	30.675	34.382	37.652	41.566	44.314	52.620
26	12.198	13.409	15.379	17.292	19.820	21.792	25.336	29.246	31.795	35.563	38.885	42.856	45.642	54.052
27	12.879	14.125	16.151	18.114	20.703	22.719	26.336	30.319	32.912	36.741	40.113	44.140	46.963	55.478
28	13.565	14.847	16.928	18.939	21.588	23.647	27.336	31.391	34.027	37.916	41.337	45.419	48.278	56.893
29	14.256	15.574	17.708	19.768	22.475	24.577	28.336	32.461	35.139	39.087	42.557	46.693	49.588	58.302
30	14.953	16.306	18.493	20.599	23.364	25.508	29.336	33.530	36.250	40.256	43.773	47.962	50.892	59.703

For larger values of  $df$ , the expression  $\sqrt{2x^2} - \sqrt{2df - 1}$  may be used as a normal deviate with unit variance, remembering that the probability for  $\chi^2$  corresponds with that of a single tail of the normal curve.

Source: Popham, W.J., et. al., Educational Statistics, Harper and Row, New York, 1973, p.391.



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