

EFFECTS OF THE AGRICULTURAL SCIENCE CURRICULUM,
THE SCHOOL ENVIRONMENT AND THE STUDENT'S HOME
SOCIO-ECONOMIC STATUS ON ATTITUDES TOWARD
CAREERS IN AGRICULTURAL PRODUCTION

by

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of Education

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APPROVAL PAGE

This dissertation of Makhunga Wintshi Njobe
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ABSTRACT

The study tested the hypotheses that students' attitudes toward careers in agricultural production were related to (i) attitudes toward agricultural science as a school subject; (ii) curricular inclusion of agricultural science; (iii) urban / rural environmental location of schools; (iv) student's home socio-economic status. The sample ($N=666$) was randomly drawn from the population of male tenth grade students in Zambia. A questionnaire constructed and pilot tested for the study included (a) scale to measure attitudes toward careers in agricultural production, (b) scale to measure attitudes toward agricultural science. Simple regression analysis tested the first three hypotheses while Chi Square was used on the fourth hypothesis.

The findings included that attitudes of tenth grade male students were significantly related to : attitudes toward agricultural science; curricular inclusion of agricultural science; and student's home socio-economic status. No significant relation was found between students' attitudes toward careers in agricultural production and urban / rural environmental location of schools.

Conclusions included that (i) prediction of students' attitudes toward careers in agricultural production might be possible from attitudes toward agricultural science. (ii) Curricular inclusion of agricultural science and student's home socio-economic status probably had each, a differential effect on students' attitudes toward careers in agricultural production. (iii) Home location might have stronger influence than school location. (iv) Most students (89%) showed positive attitudes toward careers in agricultural production.

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TABLE OF CONTENTS

CHAPTER	PAGE
Abstract	v
Acknowledgements	vi
Table of Contents	vii
List of Tables	ix
List of Appendices	x
Chapter I STATEMENT OF THE PROBLEM	1
The Problem	2
The Purpose of the Study	3
Hypotheses	3
Consequences of the Hypotheses	4
Assumptions	7
Significance and Importance of the study	8
Limitations of the Study	9
Definition of Terms	10
Organisation of Study	12
Notes	12
Chapter II REVIEW OF SELECTED LITERATURE	14
Attitude Definition	14
Attitude Change	14
Attitude Measurement Problems	16
Studies on Attitudes	17
Notes	22
Chapter III METHOD	
Subjects	25
Instruments	29
Data Collection	32
Control of Variables	33
Data Analysis	34
Notes	35

Chapter IV	RESULTS AND DISCUSSION	36
	Results	36
	Discussion	38
	Notes	40
Chapter V	SUMMARY AND CONCLUSIONS	42
	Summary	42
	Conclusions	43
BIBLIOGRAPHY		46
APPENDICES		49

LIST OF TABLES

TABLE	TITLE	PAGE
1	Percentage of student pushed out of school at the end of grades seven and ten.	25
2	Distribution of sample classes used in the study by region and sample group type.	28
3	Distribution of subject totals per sample group.	28
4.	Students' age range percentages.	29
5	Numerical scoring guide.	30
6	Summary of data analysis scheme used for hypotheses testing	34
7	Sums and cross products for simple regression (hypotheses one, two, and three)	37
8	Summary frequency data for Chi square (hypothesis four)	38

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Agricultural Science attitude scale (ASAS) and Careers toward Agricultural Production attitude scale (CAPAS).	49
B	Pilot study Internal Consistency test summary data for items selected for the main study.	54
C	Summary of data for computing Reliability Coefficients for ASAS and CAPAS.	55
D	Rank orders of total (composite) scores of all subjects per item on scales ASAS and CAPAS.	57

CHAPTER I.

STATEMENT OF THE PROBLEM

Education could contribute to individual and national development. If the teaching of agricultural science in developing countries is to boost agriculture, then attention should be paid to the development of positive attitudes toward careers in agricultural production. An effective combined learning of cognitive, affective and psychomotor domains of agricultural science curriculum, might increase the flow of school leavers to the land to produce more food while countering a rise in unemployment and contributing to the national economy.

The thesis of the present study was partly based on Rosenberg's attitude theory¹ in that, students' attitudes toward careers in agricultural production, might be related to students' perceptions of what the careers could contribute towards the attainment or blocking of values and aspirations after leaving school. The development of relevant positive perceptions and values in students then becomes essential. These perceptions and values however, could be influenced at varying degrees by different factors which if known, could enable prediction of students' attitudes toward careers in agricultural production. The extent of the prediction might relate to educational relevance and facilitate the national planning of development. The present study was designed under the foregoing theoretical framework.

The Problem.

In Zambia, tenth grade school leavers, some after studying agricultural science, inevitably increase the army of unemployed people. The percentage² 'pushed out' at the end of 1982 was 60.9 . The country appeared to have abundant unused agricultural land and a national determination to develop agriculture to increase food and cash crop production to strengthen the national economy³. To this end the teaching of agricultural science in schools is encouraged⁴ and Rural Reconstruction Centres (RRCs) were set up to train unemployed youth for careers including those in agricultural production.⁵

Press reports however, sometimes suggested a reluctance by school leavers to enrol in the RRCs and that even desertions occurred.⁶ Possible reasons for this might be many, but negative attitudes toward careers in agricultural production were suspected also to be a factor.⁷ Apparently, attitudes amongst other factors, should be studied, understood and then improved if necessary among potential school leavers.

The main questions in the study problem consequently were: Could the curricular inclusion/exclusion of agricultural science; the urban/rural environmental location of schools; the student's home socio-economic status be also factors influencing the students' attitudes toward careers in agricultural production?

The question became appropriate since education in Zambia was also expected to meet the needs of the economy,⁸ partly by providing farmers with secondary or higher education.⁹

The purpose of the Study.

The purpose of the study was to find out whether or not the attitudes of 1982 tenth grade students toward careers in agricultural production in Zambia are related to :

- (i) Attitudes toward agricultural science as a school subject;
- (ii) The inclusion / exclusion of agricultural science of the curriculum;
- (iii) The urban / rural environmental location of the school;
- (iv) The socio-economic status of the student's home.

Hypotheses.

The four null and alternative hypotheses formulated for the respective questions stated above are presented below. The four null hypotheses were tested at 0.05 level of significance.

- h_0 One: There is no relationship between students' attitudes toward careers in agricultural production and their attitudes toward agricultural science as a school subject.
- h_1 One: There is a relationship between students' attitudes toward careers in agricultural production and their attitudes toward agricultural science as a school subject.
- h_0 Two: There is no relationship between students' attitudes toward careers in agricultural production and agricultural science (a) inclusion among or (b) exclusion from school curricula.

- h_1 Two: There is a relationship between students' attitudes toward careers in agricultural production and agricultural science (a) inclusion among or (b) exclusion from school curricula.
- h_0 Three: There is no relationship between students' attitudes toward careers in agricultural production and the (a) urban or (b) rural environmental location of their respective schools.
- h_1 Three: There is a relationship between students' attitudes toward careers in agricultural production and the (a) urban or (b) rural environmental location of their respective schools.
- h_0 Four: There is no difference in the students' attitudes toward careers in agricultural production on account of their home socio-economic status.
- h_1 Four: There is a difference in the students' attitudes toward careers in agricultural production on account of their home socio-economic status.

Consequences of the hypotheses.

Consequences derived from two tailed hypothesis testing were summarised as shown below. The first consequence is lack of prediction of attitudes toward careers in agricultural production (CAP) from students' attitudes toward agricultural science as a school subject and vice versa, if h_0 One were accepted. Attitudes toward CAP would be such that negative or positive attitude toward agricultural science would not relate to negative nor positive attitude toward CAP. The situation might need investigation to aid correction. However rejection of h_0 One could mean prediction utilisable in planning, was possible.

If positive attitudes toward agricultural science related to positive attitudes to GAP, agricultural science could be a core curriculum in schools. School leavers would then be expected to engage in self-employment through GAP. The 'back to the land' and 'live' campaigns could be boosted.

If positive attitudes toward agricultural science related to negative attitudes toward GAP, that would be prediction in the wrong direction. The cause of the futile result might need investigation before further encouragement of agricultural science curriculum. If negative attitudes toward agricultural science related to positive attitudes toward GAP an investigation aimed at correcting the situation might be necessary. If negative attitudes toward agricultural science related to negative attitudes toward GAP, attitude change from negative to positive in both instances could be necessary.

Acceptance of H_0 Two would mean students' attitudes toward GAP (Y) could not be predicted from curricular inclusion / exclusion of agricultural science (X_1). There might then be no differential effect on Y achieved by including agricultural science on the curriculum. Curriculum would have failed the attainment of positive attitude toward GAP. A review of curriculum, instructional methodology or other factors might be necessary. A rejection might mean that Y might be predicted from X_1 and vice versa.

If inclusion of agricultural science on the curriculum was positively related to attitudes toward GAP, then more

students could be taught agricultural science to increase participants in agricultural production. If inclusion however, was negatively related to attitudes toward CAP, then the agricultural science curriculum and instructional methodology might need investigation before inclusion is encouraged.

Acceptance of h_0 Three would mean prediction of attitudes toward CAP (Y) from urban / rural environmental location of schools (X_2), was not possible. Rejection however, could mean prediction of Y from X_2 and vice versa was possible. If urban students were favourable toward CAP, urban school leavers could be expected to take up agricultural production. Alternatively, unfavourable attitudes in urban students could adversely affect the flow of school leavers to the land. Investigation and efforts to reverse the situation might be necessary. If rural students were favourable toward CAP, chances for boosting agricultural production could be brighter, while if unfavourable, school leaver migration from rural to urban could be expected to increase. If both rural and urban were favourable toward CAP, school leaver participation in agricultural production could be expected to increase substantially. Gloom would overshadow this participation if both urban and rural students were unfavourable toward CAP. The relevance of the education system could then be questioned and investigations to discover factors at play might then be necessary.

Acceptance of h_0 Four could mean the students' home socio-economic status had insignificant influence on students'

attitudes toward CAP. Rejection could mean that prediction of students' attitudes toward CAP might be possible from students' home socio-economic status. If attitudes of lower class group were favourable toward CAP, then since lower class were probably in the majority, a large number of school leavers could be expected to participate in agricultural production, thereby reducing the tendency toward rural-to-urban migration. If lower class attitudes were unfavourable toward CAP, the situation would cause much concern as unemployment effects tend to be severe on this class. Measures to reverse the trend would be necessary.

If upper class were favourable toward CAP, there could be more chances of funds from richer homes being invested in agricultural production. Negative attitudes of upper class students toward CAP would be some set back for recruitment into agricultural production. Consequences of middle class students being favourable or unfavourable toward CAP could be inbetween those of upper and lower classes.

Assumptions

Assumptions which further guided the study include :

- (i) Attitudes become expressed when appropriate stimuli are presented. Consequently, attitudes toward careers in agricultural production and attitudes toward agricultural science as a school subject can be measured using response expressions to questionnaire items.
- (ii) Such measurement can be validly made along a linear continuum of positive to negative with resultant measures being interval data.
- (iii) Attitudes of tenth grade students toward careers in agricultural production are also determined by various factors other than tested in the study hypotheses such as : peer group influences; social prestige accorded the careers; one's financial

capacity to start an agricultural production venture; subjects' attitudes toward self employment versus being employed; preferences for manual as against mental work; and other factors.

- (iv) The probable chances a student believes he has of gaining a place in school towards higher education, partly dependent on student's tenth grade achievement level.
- (v) Explicit parental career influences are distinct from possible implicit influences of the home's socio-economic status.

Significance and Importance of the Study.

The study could add to related previous studies¹⁰ by contributing some research based data towards more understanding of students' attitudes. Increased understanding of relevant attitudes of potential recruits for agricultural production in Zambia, could influence national policy on : youth and development of agriculture; curricular inclusion / exclusion of agricultural science in urban and/or rural schools; matters related to agricultural science curriculum and instruction review, evaluation and research.

In Zambia's agrarian revolution launched to boost agricultural production, education was to be biased towards agriculture to suit a "predominantly agricultural society".¹¹ The school leavers could then become farmers.¹² The students as part of the youth, had been called upon to develop positive attitudes towards "agro-industries planned for participation of school leavers. The students were urged to "look to the land ... to improve ...

(Zambia's) quality of life".¹³ The need to study, understand and develop positive attitudes toward careers in agricultural production seems to be implied in these national aspirations.

The findings of the study could stimulate further investigation into factors related to developing positive attitudes referred to above in aid of Zambia's campaigns such as the 'lima' and 'back to the land' ¹⁴ aimed at stimulating agricultural production. A successful development of attitudes favourable toward careers in agricultural production could mean a flow of more school leavers into farming; increased food and cash crop production to support the population and industry; reduction in rural-to-urban migration, unemployment, crime rate; and contribution to family and national income thereby strengthening family and national stability. Such increased school leaver participation in agricultural production would be relevant to Zambia's needs and in line with objectives of desired educational reform in Zambia.¹⁵

Limitations of the study.

The study was limited to relationships between variables but did not investigate causal factors. Probably the study could have been stronger if an experimental design was used and the population included other relevant students in and already out of school.

Definition of Terms :

Below are study meanings given to the terms defined.

Attitude. The following conceptual definition of attitude proposed by Katz¹⁶ was adopted for the study.

Attitude is the predisposition of the individual to evaluate some symbol or object of his world in a favourable or unfavourable manner... Attitudes include the affective, or feeling core of liking or disliking, and the cognitive, or belief elements which describe the effect of the attitude, its characteristics and its relation to other objects.

Operationally, a subject's response to a questionnaire statement was taken as an opinion. A set of opinions held was taken to indicate an attitude held toward the attitude object (agricultural science or careers in agricultural production) to which the statements directly or indirectly referred. Attitudes which favour (supportive) the attitude object were coded as positive, and attitudes unfavourable (non-supportive) as negative.

Agricultural Science. Agricultural science as a school subject refers to the official course of study prescribed for Zambian schools in 1982. The course content included theory and practical work on the science of crop and animal production. Programmes of production units in Zambian schools were not included except where integrated as part of agricultural science as a school subject.

Careers in Agricultural Production. The clause refers to occupations in which one is (i) self employed such as being a farm owner or plot holder involved in crop, live-stock or such other production as the main source of

income; (ii) employed at the level of a farm manager, agricultural extension officer and so on. Extension officers were taken as fulltime skilled employees such as technicians, mechanics, artisans for providing know-how and guidance to persons practically involved in agricultural production. (iii) Being a member of a cooperative society and involved in agricultural production as a main source of income. (iv) Being a trainee (student or apprentice) in a preparatory establishment imparting skills in agricultural production.

Rural Reconstruction Centres : By the time of writing these were often referred to as 'Multi-purpose cooperative centres'. They are free government training centres for youth including 'pushed out' school leavers. The training includes crop and livestock production. These centres were established to absorb unemployed school leavers.¹⁷ 'Pushed out' refers to students dropping out of school because of a shortage of school places.

Urban/Rural Schools. Urban schools for the purpose of the study were those situated within any one of Zambia's ten "Large Urban Areas" defined in the official Central Statistics Report 1981.¹⁸ The population of each of these large urban areas exceeded 59,000 people in 1980. They are Chililabombwe, Chingola, Kabwe, Kalulushi, Kitwe, Livingstone, Luanshya, Lusaka, Mufulira and Ndola. Schools situated elsewhere in Zambia were taken as rural.

The Organisation of the Study

The study was organised in such a way that Chapter I presented the statement of the problem comprising the theoretical framework, the problem, the purpose of the study, hypotheses, implications of the hypotheses, assumptions, significance of the study, limitations and definitions. The review of literature in Chapter II included attitude definition, attitude change, attitude measurement problems and studies on attitude. Methods were outlined in Chapter III embracing population, sample, sampling procedure, instrument data collection, control of variables and data analysis. In Chapter IV, the results were presented and discussed. Both the summary and conclusions of the study were presented in the final Chapter V.

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REVIEW OF SELECTED LITERATURE

The review of literature was organised under various aspects of attitudes. Among others the main ones were definition, change, measurement and studies. A summary of each of these was prepared as presented below.

Attitude Definition.

Attitudes were defined differently.¹ Newcomb emphasized the role of previous experience in approaching subsequent situations.² The definition by Katz³ adopted for the present study, stressed cognitive and affective components of attitude (see definitions, chapter I). Feelings in the latter definition mainly constitute the affective while beliefs constitute the cognitive. An attitude expression is deemed to involve evaluation and frequently reflect to the same degree, the experienced intensity of both the feeling and the belief about the attitude object.⁴ Beliefs could be about self, general, related to norms rules or goals.⁵

Attitude Change.

Attitude change received great attention in advertising, propaganda and education with various theories of attitude change being advanced.⁶ In the present study the Reinforcement and the Affective-Cognitive theories were selected for reference. The Reinforcement theory contends that attitude changes result from reinforced learning. The learning could be through experience or persuasive communication. The reinforcement could be incentives in

the form of supportive arguments, reasons, expected rewards or avoidance of unpleasantness.⁷ The Affective-cognitive view maintains that a person's attitudes are intimately related to the person's perception of the potentialities (beliefs) of the attitude object in leading to the attainment or blocking of the person's valued states. The degree of affect toward the attitude object, in this view, correlates with the intensity of the contents of the belief.⁸ The above theoretical positions and others, agreed that attitudes could be learnt⁹ and therefore could be influenced.¹⁰ Thus schools should be concerned with influencing the development of attitudes.

Ausubel¹¹ noted that established attitudes might not easily change through a mere presentation of facts. Implications of the facts presented need to be systematically drawn out in order to succeed. A two sided presentation might also be necessary so as to discount counter arguments and dispel possible suspicions that the presentation might be biased propaganda, Ausubel further suggested.

The concern of education includes transmission in the cognitive, psychomotor and affective domains of learning.¹² Attitudes are included in the affective domain.¹³ The teaching of attitudes for transfer to post learning situations however, is often overlooked¹⁴ or found impracticable¹⁵ although important.¹⁶ Education is considered by

some as a key to social change including "attitudes, beliefs ... and employment".¹⁷ Universities, colleges, institutions and schools as agents of agricultural education were known to have played major roles in the progress of farming in "agriculturally advanced parts of the world".¹⁸ Probably in developing countries attempting to boost agricultural production, schools could play a major role too. Walker¹⁹ warned that ignoring attitudes in development education could "limit the possibilities for development through education".

To this end, in Zambia, agricultural science is taught in secondary schools. The introduction to the course content states that the syllabus was designed to be a practical course, teach students to think and experiment scientifically to discover solutions, develop positive attitude to agriculture as a field where school leavers could become improved practical farmers.²⁰ The development of positive attitudes toward careers in agricultural production which could result from curricular inclusion of agricultural science, could aid Zambia's campaigns such as 'lima' and 'back to the land' which hope to attract unemployed school leavers into agricultural production.²¹

Attitude Measurement Problems.

Attitudes can be measured²² and Likert contributed one such method of constructing and using an attitude scale.²³ The present study used a Likert-type scale. The main

measurement problems of conventional attitude scale of Likert-type, include the following.²⁴ (i) The individual's position on the continuum from highly favourable to highly unfavourable is represented by a single score. Research however showed that two persons of the same score could have different attitudes. (ii) In almost every case, a subject in a study could become aware that his attitude was being measured. Probably that could influence the subject's responses. Allport²⁵ also observed that individuals might have many contradictory attitudes which might also change when influencing factors change. Consequently, Allport suggested that attitude scales should be regarded as giving the "roughest approximations of attitudes."

Studies on Attitudes.

Evidence in the literature showed many studies of attitudes toward school subjects.²⁶ Studies on the transfer of attitudes to career situations in agricultural production were not readily available. A paucity of either of these two types of studies seems to exist in most of English speaking Africa. Consequently much of the review here had to rely much more on distant studies than was preferred.

Hicks²⁷ in a study of attitudes of school counsellors toward careers in agriculture in the United States of America, found that those who did not have vocational agricultural experience in the high school tended to have more positive attitudes toward careers in agriculture than

those who had this experience in the high school. The level of the relationship however was not statistically significant. Hicks' counsellors however, were ex-students already in employment in cultural setting in a developed country different from Zambia's tenth grade students faced with a possibility of being pushed out of school into unemployment.

Literature did not seem to guarantee that exposure to vocational agricultural experience in the secondary school breeds positive attitudes toward careers in agricultural production. The present study in part, sought to find out whether or not a relation exists between the learning of agricultural science and students' attitudes toward careers in agricultural production.

Evidence was not available to the researcher about the effects of the urban/rural environmental location of the school and the socio-economic status of the student's home, on students' attitudes toward careers in agricultural production. Environment however was known to influence learning probably through its experiences. Rhine²⁸ after a review of related theories and studies concluded that there was apparent agreement that experience integrates into an attitude.

In Ghana, Chaplin²⁹ studied attitudes toward agriculture in samples of (i) pre-secondary and (ii) university students. Some findings were that students' attitudes

oward "agricultural pursuits" were influenced by the teaching and the school environment. Peil³⁰ investigated Ghana's Form four students, completing ten years of school, mostly about to leave school. Some findings were that farming was less attractive to rural than urban students. The explanation suggested was that rural students saw education as a means of graduating away from rural living conditions. Browne³¹ in yet another study of Ghana Forms three and four students, also mostly about to leave school, found that any supposed unwillingness of these school leavers to take up manual work was "a myth".

Learners pick up value systems and attitudes from the home experience,³² peers, society and school.³³ A difference in attitude toward various occupations was found between educated and uneducated adults in Ghana.³⁴ Chaplin³⁵ had also found that in Ghana farming was associated with illiteracy. In a historical perspective, British colonial agricultural practice offered poor prospects, low pay and prestige and consequently unattractive to good students.³⁶

In Zambia, an agrarian revolution was launched to increase agricultural production and support the national economy.³⁷ Consequently, education had been required to be biased towards agriculture to suit Zambia's "predominantly agricultural society".³⁸ Agricultural science teaching was thus encouraged in secondary schools to influence more school leavers to become cash crop farmers.³⁹

Tuthil et al,⁴⁰ in a study of some agricultural practices in Eastern Zambia, recommended higher levels of education for village cultivators.

Christensen,⁴¹ however, found that in Zambia before independence, an interaction of political and socio-economic factors made Africans see the emphasis of colonial education on agriculture as a means of keeping Africans in disadvantaged forms of labour. In 1976, Zambia's Ministry of Education investigation concluded that in Zambia society gives respect, status, prestige and wealth to those who achieve the highest levels of education. Moreover, wages and salaries were closely linked with educational qualifications and pushed out school leavers were despised.⁴² Kaniki⁴³ in a study of higher education concluded that the University of Zambia was able to initiate students from fairly humble homes into living styles of an employing social class. The educated in this observation, also tended to have preferential access to, and control of public wealth even without ownership. Kaniki's observations suggest that education could be a factor in socio-economic stratification of Zambian society. The factors which appeared to favour higher educational qualifications in Zambia, could affect attitudes toward careers in agricultural production among school leavers whose qualifications might be relatively low.

Hoppers⁴⁴ however, studied seventh grade school leavers

in the rural Mwinilunga area of Zambia. Some findings were that school leavers in Ikelenge area were mostly occupied in agricultural work; land was not scarce; parents thought the school leavers could contribute more to agricultural production with more age and knowledge of agriculture. Reportedly, the school leavers also appeared to accept life in the village inspite of unfavourable rural conditions of work and social life there. Even school leavers who went to towns were reported to have never expressed dislike of home because of its socio-economic disadvantages. Allegedly, the education received did not show any significant adverse effects on the values and attitudes of the school leavers toward manual work. Hoppers' findings could raise hopes of success in retaining rural school leavers on the land. His subjects, however, lived far off the attractive main urban centres of Zambia. Long distance together with tenderness of age could have discouraged the youth from leaving home.

Serious national concern, however, continued to be expressed that school leavers seemed to be apathetic about joining the Rural Reconstruction Centres. The apathy had been ascribed to possible "wrong attitudes" toward self reliance and a belief "that only white collar" jobs were able to sustain a happy and comfortable living. Evidence adduced included the under five percent of expected enrolment and occurrence of desertions in the Rural Reconstruct-

tion Centres.⁴⁵

The present study could contribute towards answering some of the questions arising out of the literature review in relation to Zambia. In adding to Hopper's study, the present sample subjects were drawn from urban and rural Zambia, had more education, were probably older, and some had the agricultural science knowledge.

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CHAPTER III

METHOD

In the research design, deliberate effort was made to keep the theoretical framework and the hypotheses of the study in congruence with the methods used. The rest of the chapter discussed population, sampling, type of data, instruments, data collection, control of variables, and data analysis.

Subjects. Population: The 1982 tenth grade (Form III) male students in government and government aided secondary schools in Zambia constituted the population of the study. Table one below exemplifies that most seventh grade students in Zambia in recent years were not selected to continue with their education in the next eighth and eleventh grades respectively.

TABLE 1

PERCENTAGES¹ OF STUDENTS PUSHED OUT OF SCHOOL AT THE
END OF GRADES SEVEN AND TEN

YEAR	GRADE 7		GRADE 10	
	PUSHED OUT	CONTINUED	PUSHED OUT	CONTINUED
1982	82.9	17.1	60.9	39.1
1981	84.6	15.4	56.7	43.3
1980	84.6	15.4	55.4	44.6
1979	83.4	16.6	54.4	45.6

Press reports sometimes emphasized public concern about

the seriousness of the issue.² Table 1 reveals a consistently rising percentage of tenth grade students pushed out over the years compared to grade sevens. At Grade seven only a minute percentage (about 17%) continued with education to grade eight. The tenth grade school leavers, older and having more basic education, though less numerically compared to grade sevens, still seemed to constitute an important potential source of school leavers for recruitment into careers in agricultural production which was central to the present study. In the 1980 to 1982 Junior Secondary school course (Forms I through III) 43.7 percent of the tenth grade male students studied agricultural science.³ The foregoing observations constituted part of the rationale for selecting the tenth grade male students as the population for the study. The female students in the same grade were excluded in order to control a possible variable relating to cultural sex roles. A random sample of tenth grade male students was drawn from 19 randomly selected tenth grade classes from 15 secondary schools randomly selected from the 89 of Zambia's government secondary schools and government aided secondary schools with male students in the tenth grade of 1982.

The 89 schools were serially numbered and grouped into schools teaching agricultural science in grade ten (T schools) and school not teaching agricultural science in grade ten (NT). The T schools were further divided into

rural schools (TR) and urban school (TU). Similarly NT schools were divided into rural (NTR) and urban (NTU) schools. Four schools were randomly selected from each of the subgroups TU, TR, NTU and NTR giving a total of 16 selected schools.

The main study was conducted in 14 of the 16 schools. The two schools in Lusaka Region were used for the pilot study. Each school randomly provided at least one grade ten class. Schools with more than one of each of T and NT classes, randomly provided one of each type. Consequently, a maximum of two classes of different group type, were used per sample school. Flexibility through the use of one or two classes per school enabled adjustments to be made to make up for shortfalls in planned sample group totals. Shortfalls were due to enrolments being smaller than expected and inclusion of female students in some male classes. The planned approximate main study totals of subjects per sample group, were ultimately realised from 19 classes provided by 14 schools distributed over seven of Zambia's nine regions. Table 2 below shows the distribution by region and sample group type, of the randomly selected classes from the sample schools.

TABLE 2

DISTRIBUTION OF SAMPLE CLASSES USED IN THE STUDY
BY REGION AND SAMPLE GROUP TYPE.

REGION	CLASSES BY TYPE PER REGION				TOTAL No OF CLASSES USED PER REGION
	TU	NTU	TR	NTR	
Lusaka	2	2	1	-	5
Southern	1	-	1	2	4
Kabwe	1	-	-	-	1
Copper- belt	1	3	-	-	4
Luapula	-	-	1	1	2
Eastern	-	-	1	1	2
Western	-	-	-	1	1
TOTALS	5	5	4	5	19

Table 3 below shows the distribution of the main study subjects per sample group adding to a total of 666 subjects.

TABLE 3

DISTRIBUTION OF SUBJECT TOTALS PER SAMPLE GROUP

	CURRICULUM INCLUSION/EXCLUSION		TOTALS
	T	NT	
R (Rural schools)	168	166	334
U (Urban schools)	165	167	332
TOTALS	333	333	666

ENVIRONMENT

The age of the main study sample subjects was distributed as in Table 4 below.

TABLE 4
STUDENTS' AGE RANGE PERCENTAGES

N= 666	Range in years		
	13 - 15	16 - 18	19 - 23
Percentage	7.8	66	26.2

The sample mean age was 17.8 and the standard deviation was 15.2 . The mode and the median of the age coincided at 18 years.

Instruments

A questionnaire (Appendix A) was constructed, pilot test and administered to class-group units by the researcher personally. The questionnaire was constructed specifically for the study. Resources for the questionnaire were based upon the nature of the study, current theories in the literature, plus informal interviews with agricultural science teachers and students in local schools. The Structured questionnaire included (i) an Agricultural Science Attitude Scale (ASAS). (ii) A scale to measure attitudes toward Careers in Agricultural Production (CAPAS) (iii) Open-ended questions to collect data for classifying subjects according to the socio-economic status of the hom

The objectives of the pilot test were to (i) validate the draft attitude scales through an item analysis using

the test of internal consistency. (ii) Test the appropriateness of the materials and clarity of wording used. (iii) Check if the Likert-type numerical scoring of ASAS and CAPAS was appropriately assigned to options. (iv) Test the open-ended questions.

Three tenth grade classes, one of each of TU, NTU, and TR categories, from an urban and a rural school in Lusaka Region were used for the pilot study. A total of 135 subjects took part. Each administration per class unit was followed by 15 to 20 minutes of discussion. The subjects were specifically asked during each discussion to indicate any lack of clarity of words and expressions found.

Each item statement was coded plus (+) or minus (-). Plus-marked statements were those whose endorsement would indicate a positive attitude toward the attitude object in question. Minus-marked statements were those whose endorsement would indicate a negative attitude. Table 5 below shows the scoring guide which used the Likert-type numerical scale 5, 4, 3, 2, 1 on the plus and minus attitude items.

TABLE 5

NUMERICAL SCORING GUIDE

	STRONGLY AGREE ✓✓	AGREE ✓	UNDECIDED ?	DISAGREE ✗	STRONGLY DISAGREE ✗✗
Plus items	5	4	3	2	1
Minus items	1	2	3	4	5

The test of internal consistency was used for selection of items. The total per subject per attitude scale was first computed. The result was two sets of scale scores corresponding to CAPAS and ASAS. The total score (X_t) of the top scoring (TS) 27 percent of the pilot sample subjects per item on each scale was compared with total score (X_b) of the bottom scoring (BS) 27 percent on the same item. If (i) X_t exceeded X_b by 25 or more ($X_t - X_b \geq 25$), the item was selected for the main study unless unsuitable otherwise. (ii) X_t equaled or exceeded X_b by less than 25 ($0 \leq X_t - X_b < 25$), the item was discarded. (iii) X_t was less than X_b ($X_t - X_b < 0$), the plus and minus coding used on the item would have been reversed. Twelve items in ASAS and forty in CAPAS qualified and were adopted for the main study with ^{out} modifications (See Appendix B).

The best claims to validity for CAPAS and ASAS were based on the method used to select items for the main study. Selected items with X_t exceeding X_b by 25 or more ($X_t - X_b \geq 25$) were taken to be more differentiating and consequently assumed closer to each other in measuring the same attitude continuum. The less differentiating items with X_t equal or exceeding X_b by less than 25 ($0 \leq X_t - X_b < 25$), were assumed to be more likely to measure different attitude dimensions and were not used for the study. Although the minimum difference limit of 25 was arbitrarily chosen, more than three quarters of

items used had differences of 30 and above (See Appendix C Likert⁴ found a high correlation ($\rho = 0.91$) between rank orders of items selected by criterion of internal consistency and rank orders of items selected through item analysis correlations.

The reliability coefficients of CAPAS and ASAS were computed from $r_{tt} = \frac{V_t - V_e}{V_t}$ using main study data. V_t represented total variance, V_e represented error variance. The resulting reliability coefficients for CAPAS and ASAS were 0.86 and 0.59 respectively, both significant at p 0.05 level (See Appendix D for summary data). In view of this significance the validity itself has been proved.

Data Collection

The data were collected for pilot and main studies during October and November 1982. The questionnaires in both studies were administered by the researcher personally to subjects in classroom group units. In a brief introduction only the researcher's name and sponsoring university were given. The subjects were then requested to read the instruction on the questionnaire and then start off. The subjects were able to complete the questionnaire in 20 to 30 minutes.

The completed questionnaires were serially numbered on receipt and a note made of the corresponding sample group type. The coding of the statements into plus and minus and the method of scoring were as described for the pilot study above.

Control of Variables.

Deliberate attempts were made to control expected variables including the ones stated below. (i) A fairly large sample, randomly selected from all over Zambia was used. (ii) The questionnaire was first pre-tested in a pilot study in an attempt to validate it. The collection of data by the researcher in person was an attempt to standardise the questionnaire administration. (iv) The inventory was at the end of the questionnaire^a in case the subjects became irritated by the collection of some intimate personal data. (v) The names of the subjects were not required on the questionnaire and an assurance was given to treat data given in confidence so as to allay any possible fears of victimisation for responses given. (vi) The brief introduction without reference to the study matter, was to avoid influencing the subjects' responses. (vii) Female students enrolled in male classes used were also allowed to complete the questionnaire without being made aware that the data so provided would not be used in the study. The idea was to avoid any possible controversy over the exclusion of female students which might affect rapport. (viii) Ticks, question mark and crosses were used by the subjects for responding. The assumption^m was that English was a second language for the subjects, therefore the use of representative symbols familiar in the school experience could make differences among

options clearer, speed up questionnaire completion and consequently reduce chances of boredom over questionnaire administration.

Data Analysis.

Regression analysis was used since the study involved correlation and prediction. The Chi square fitted the nominal data. Table 6 below shows the scheme of analysis used for hypotheses testing.

TABLE 6

SUMMARY OF DATA ANALYSIS SCHEME USED FOR HYPOTHESES TESTING

HYPOTHESIS	DATA USED	MAIN STATISTICAL TEST USED	OTHER SUPPORTIVE TESTS USED
Null hypothesis One	CAPAS on ASAS scores	Simple regression analysis for F ratio.	Linear regression for equation.
Null hypothesis Two	CAPAS scores on T/NT dichotomy	Simple regression analysis for F ratio.	
Null hypothesis Three	CAPAS scores on dichotomy U/R	Simple regression analysis for F ratio.	
Null hypothesis Four	Above/Below mean dichotomy on socio-economic levels	Chi square on frequencies in a 2 x 3 contingency table.	Chi square on sample groups.

In the socio-economic status classification of students' homes, the subject's own classification of home (item 63) was specially noted on an assumption that the subject's

own perceptual view of home could influence attitude toward careers in agricultural production more than what the real home status might be. Classification however, was modified on the strength of other data supplied in items 61, 62 and 64. The importance of educational qualifications as possible class indicators in the Zambian situation was also noted (item 62). The researcher's own value system could have influenced the classifications. The subjects could also have attempted to give false images of parents and homes.

Notes

1. Percentages computed on figures from Times of Zambia 19 February 1983, 22 January 1983 and from Sunday Times of Zambia, 7 March 1982.
2. Zambia Daily Mail, 24 February 1983, 19 February 1983. Times of Zambia 19 February 1983.
3. Percentages computed from data supplied by Curriculum Development Centre Zambia, Examinations Office Zambia, Times of Zambia 22 January 1983.
4. R. Likert, "The Method of Constructing an Attitude Scale" in M. Fishbein, Readings in Attitude Theory and Measurement (London : John Wiley & Sons 1967 : 90 - 95).

CHAPTER IV

RESULTS AND DISCUSSION

The findings of the study according to the hypotheses and methodology were summarised and discussed as presented below.

Results.

Table 7 below shows a summary of data for hypotheses One, Two and Three.

TABLE 7

H ₀ One	SUMS AND CROSS PRODUCTS FOR SIMPLE REGRESSION OF CAPAS SCORES (Y) ON ASAS SCORES (X)						
	Y'	N	X	Y	X ²	Y ²	XY
	52.9-1.99X	666	33580	102062	1711850	15875106	5183276
H ₀ Two	SUMS AND CROSS PRODUCTS FOR SIMPLE REGRESSION OF CAPAS SCORES (Y) ON DICHOTOMY INCLUSION(1)/ EXCLUSION(0) DUMMY VARIABLE (X)						
		666	333	102062	333	15875106	51728
H ₀ Three	SUMS AND CROSS PRODUCTS FOR SIMPLE REGRESSION OF CAPAS SCORES (Y) ON DICHOTOMY URBAN (1)/RURAL(0) DUMMY VARIABLE (X)						
	Rural subjects 334	332	102062	332	15875106	50723	
	Urban subjects 332						

The attitudes of tenth grade students toward careers in agricultural production appeared significantly related to the attitudes toward agricultural science as a school subject. Table 7 above shows a summary of corresponding

data for H_0 One, giving a regression correlation $R=0.56$, $R^2=0.31$, from which $F(1, 664)=306.8$ was statistically significant at $p 0.05$ level. Null hypothesis One therefore was rejected.

The attitudes of the tenth grade students toward careers in agricultural production appeared also to be significantly related to the curricular inclusion of agricultural science. Table 7 above shows the summary data (H_0 Two) from which regression correlation $R=0.11$, $R^2=0.12$, giving $F(1, 664)=8.06$, statistically significant at $p 0.05$ level. Null hypothesis Two was thus rejected.

No significant relation was found between the attitudes of students toward careers in agricultural production and the urban / rural environmental location of schools (H_0 Three). The corresponding summary data on Table 7 above showed a regression correlation $R=0.025$, $R^2=6.25 \times 10^{-4}$ giving $F(1, 664)=0.42$ not significant at $p 0.05$ level. Null hypothesis Three was thus accepted.

The attitudes of tenth grade students toward careers in agricultural production appeared significantly dependent on the socio-economic status of the students' homes. Table 8 below shows summary of corresponding frequency data from which computed Chi square $\chi^2=14.86$ ($df=2$) was significant at $p 0.05$ level.

TABLE 8

ANALYSIS OF FREQUENCY DATA FOR CHI SQUARE

N= 666	UPPER CLASS (U)	MIDDLE CLASS (M)	LOWER CLASS (L)	TOTALS
Above mean	21 (33.5)	154 (157.5)	203 (186.9)	378
Below mean	36 (23.5)	114 (110.5)	115 (131.06)	265
TOTALS	57	268	318	643

* Subjects who did not supply requisite data were excluded.
(Expected frequencies are in brackets)

TABLE 9

TOP FIVE AND BOTTOM FIVE RANK ORDERS OF 10 POSITIVE TOTALS OF
SCORES FOR ALL SUBJECTS PER ITEM ON CAPAS SCALE. N=666.
(Each item on CAPAS tested one attitude indicator)

RANK	TOTAL SCORE	AVERAGE COMPOSITE SCORE	STUDENTS' ATTITUDE TOWARD	ITEM NUMBER ON SCA
1	3027	4.535	Educated people doing dirty work.	27
2	3013	4.524	Everybody taking an interest in agricultural production for the good of their country.	52
3	2970	4.459	Self-employment with hard work being able to bring more success than being employed.	34
4	2962	4.447	Taking up small scale farming if capital were available.	40
5	2899	4.353	Making a living on the land for sometime.	51
36	2122	3.186	Subsidizing tractor prices from motor car prices.	49
37	2094	3.144	Working with brains than hands.	24
38	2036	3.057	Working in an office.	21
39	1809	2.716	Settling more school leavers in agriculture than higher education	30
40	1770	2.658	Using scarce foreign exchange on agricultural than educational needs.	42

Discussion

If students' attitudes toward a school subject always transferred to corresponding career situations, then a correlation between the career attitudes and attitudes toward the school subject could always be expected. Such a transfer however might not always take place.¹ The present study indicated a moderate regression correlation ($r=0.59$) between students' attitudes toward agricultural science and toward careers in agricultural production. The observation might suggest that the students associated in their attitudes the agricultural science as a school subject with its intended vocational career objective. Students who liked or disliked agricultural science appeared to, correspondingly like and dislike the related careers in agricultural production. Probably in a developing country such as Zambia, where rural conditions still dominate and explicit campaigns are mounted in favour of careers in agricultural production, students might tend to view agricultural science with a conscious focus on its career prospects.

Curricular inclusion / exclusion of agricultural science appeared related to students' attitudes toward careers in agricultural production. The mean career attitude score for students learning agricultural science was also significantly above the mean score of the group not learning agricultural science ($t=2.51$ significant at $p 0.05$ level). Thus the teaching of agricultural science in Zambia's Junior Secondary schools might have a positive

differential effect on students' attitudes toward careers in agricultural production. The findings could allay fears that effort and money spent in the curricular inclusion of agricultural science might be wastage.²

Students' attitudes toward careers in agricultural production did not appear related to urban / rural environmental location of schools. Urban and rural school location in Zambia, probably did not significantly effect students' attitudes toward careers in agricultural production as curricular inclusion / exclusion did.

Upper class in Zambia could probably be associated with higher education.³ If higher education were a significant factor in Zambia in determining socio-economic status and the present study found association between socio-economic status and attitudes toward careers in agricultural production, there could be need to determine the effect of the seemingly rising levels of education among Zambians on attitudes toward careers in agricultural production.

Table 9 appears to show that the strongest students' attitudes endorsed the dignity of work including the doing of dirty work by educated people. In particular, there was apparent support for all Zambians taking an active interest in agricultural production for the good of their country. The same attitude seemed coupled with a belief that hard work in self-employment could bring better success than being employed. Apparently, there was a corresponding general preparedness reflected on the part of the students to make a living on the land for sometime

in life if capital to start agricultural production were available.

The weaker attitudes shown on Table 9 seem to point to lesser enthusiasm toward having tractor prices being subsidised from motor car prices, sacrificing academic advancement in favour of agricultural production and so on. Perhaps, on the whole, the strong and weaker attitudes reflected a measure of balanced reality in the students' attitudes. The strongest attitudes appeared to respond favourably to national calls while the weaker attitudes appeared to take into account the reality of personal interests. The implication might suggest therefore that there was reflected a dominance of social influence over individual personal concerns in the students' attitudes toward careers in agricultural production.

Attitude measure might not often be an accurate predictor of behavior.⁴ For the loss, Zambian press reports attributed the reluctance of school leavers to enrol and stay in agro-oriented Rural Reconstruction Centres to negative attitudes toward careers such as those in agricultural production.⁵ The present study found that only a minute (11%) number of students showed neutral or negative attitudes toward careers in agricultural production. The findings of the study, though on a different category of Zambian school leavers, seemed to support Hoppers' finding that school leavers indicated willingness to work on the land.⁶ If students' attitudes toward careers in agricultural production were negative under colonial situations,⁷

change might have taken place.

Notes

1. D.P. Ausubel, Educational Psychology : A Cognitive View (London : Holt, Rinehart and Winston 1968: 164)
2. K.R. Banda, "Westage in Education with Special Reference to Primary and Secondary Schools in Zambia" (Unpublished M.Ed thesis University of London 1977 : 58)
3. J.M.J. Nankki, "Higher Education and Class Formation in Africa : The Zambian Experience." (University of Zambia History Staff Seminar, March 1982)
4. L. Fishbein and I. Ajzen, "Attitudes toward objects as predictors of single and multiple behavioural criteria" Psychological Review 81, 1 (January 1974), 59 - 74.
5. Sunday Times of Zambia, 20 March 1983.
6. M. Loppere, "The Aftermath of Failure" African Social Research 29 (June 1980) , 709 - 739.
7. J.E. Christensen, "Occupational Education in Zambia" (Unpublished Ph.D thesis University of California 1972, viii).

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of the chapter was to present a summary of findings and highlight the conclusions.

Summary.

Diverting pushed out school leavers into careers in agricultural production to reduce unemployment, increase food production and boost the national economy was supported by the findings from the study. An investigation into attitudes of tenth grade male students, considered potential recruits for such careers, was undertaken. The investigation was deemed necessary to improve attitudes, if necessary, in a drive to accelerate recruitment into agricultural production.

The theoretical assumptions were that students' attitudes toward careers in agricultural production could be related to attitudes toward agricultural science as a school subject, curricular inclusion / exclusion of agricultural science, urban / rural environmental location of the school, and socio-economic status of the student's home. Four null hypotheses to verify the assumptions, were tested using simple regression analysis and Chi square on data essentially collected using a five point Likert-type scale (reliability=0.86) developed for the study.

The attitudes of tenth grade male students toward

careers in agricultural production in Zambia were found significantly related to : attitudes toward agricultural science as a school subject, $R=0.56$, $R^2=0.31$, $F(1, 664)=306.8$ significant at $p 0.05$ level; Curricular inclusion / exclusion of agricultural science, $R=0.11$, $R^2=0.12$, $F(1, 664)=8.06$ significant at $p 0.05$ level; Socio-economic status of the student's home by Chi Square $\chi^2=14.86$ (df = 2) significant at $p 0.05$ level. No significant relation was found between the students' attitudes toward careers in agricultural production and the urban / rural environmental location of schools, $R=0.025$, $R^2=6.25 \times 10^{-4}$, $F(1, 664)=0.42$ not significant at $p 0.05$ level. On the whole most students (89%) had positive attitudes toward careers in agricultural production. The mean score of students learning agricultural science was significantly higher than the mean score of students not learning agricultural science ($t=2.51$ significant at $p 0.05$ level).

Conclusions

Generally the attitudes of tenth grade male students toward careers in agricultural production in Zambia were apparently positive. The observation appeared true for students learning and not learning agricultural science. Probably, the tenth grade students, conscious of the likelihood of being imminently pushed out of school, perceived careers in agricultural production as offering

job opportunities which were more certain in a situation of rising unemployment.

The relation found between students' attitudes toward careers in agricultural production and attitudes toward agricultural science as a school subject, suggested that attitudes toward the latter probably tended to transfer to careers in agricultural production. The conclusion could be supported by the other finding that curricular inclusion / exclusion of agricultural science appeared related to attitudes toward careers in agricultural production. Students learning agricultural science, apparently also scored on the whole, more than students not learning agricultural science. Thus the experience learning agricultural science could have had a positive differential effect on students' attitudes toward careers in agricultural production.

The urban / rural location of schools did not appear to be related to students attitudes toward careers in agricultural production. Students from rural schools however, on the whole had a higher mean attitude score for careers in agricultural production compared to urban students though the difference in the means was not statistically significant.

The socio-economic status of the students' homes could be having a differential effect on students' attitudes toward careers in agricultural production. Probably the class status of the parents tended to determine the kind

of influence sons received on attitudes toward careers in agricultural production.

The findings of the study could imply a need for further investigations into the precise nature of the apparent relations observed with special reference to directions and causal factors. Indications found include a possibility of predicting students' attitudes toward careers in agricultural production from attitudes toward agricultural science as a school subject.

The relation found between attitudes toward careers in agricultural production and curricular inclusion of agricultural science could imply that if causal factors were known, attitudes toward the careers could be influenced by manipulating the curriculum and other factors. The relation of career attitudes with socio-economic status could imply that students tended to be influenced differently by parents according to socio-economic status of the home.

Depth of understanding of factors influencing attitudes toward careers in agricultural production could enable control and manipulation of the factors. Success could mean increased flow of school leavers to the land, reduced unemployment and crime wave while food production and national income rise bringing more stability to homes and the nation. However, rural-home school leavers might respond to lima programmes more than urban home counter parts. If the trend remained like that, problems of

migration from rural to urban and classes within one society might not be solved so easily.

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APPENDIX A

AGRICULTURAL SCIENCE ATTITUDE SCALE
(ASAS) AND CAREERS TOWARD AGRICULTURAL
PRODUCTION ATTITUDE SCALE (CAPAS).

Introduction

Please note that this is not a test to determine your performance and future chances at school. This is a study of some problem affecting school leavers. This study is intended to contribute towards the solution of this problem. The statements below will seek your opinions on a number of issues about which some people agree and others disagree. There are no implied correct or wrong answers to these statements. Your name will not be asked for, so you need not have any fears that the opinions you express may in any way affect your future in school or anywhere else. Please therefore respond to all the statements freely and honestly as you feel. This will help us understand the school leaver problem we are studying.

Section A

At the end of each of the statements 1 to 52 there is a space for you to respond in ONE of the following ways:

If you strongly agree with the statement tick twice✓✓

If you agree with it, but not strongly tick once✓

If you cannot make up your mind put a question mark?

If you disagree with the statement put a crossX

If you strongly disagree with the statement put two crosses.

Example : We should all stop learning ..XX.. (This shows that I strongly disagree with this statement). NOW START !!

1. All students should be taught agricultural science

2. Most of what is taught in agricultural science is not useful

3. Agricultural science is the most interesting subject in the school

4. Agricultural science is too difficult

5. My country needs the agricultural science knowledge and skills taught in the schools
6. I think it is a waste of time for me to learn agricultural science
7. Man should study agricultural science for his own good
8. I should be happy to study agricultural science in the future
9. Agricultural science is not for me
10. We should stop teaching agricultural science in our schools
11. The agricultural science taught in schools does not add much more knowledge to what we already know
12. It is the agricultural knowledge and skills that should be most helpful to me if I am not selected for Form IV....
13. We should all read publications, books and magazines on farming
14. All people should be encouraged to do gardening as one of their hobbies
15. The radio programme on agricultural news is very interesting
16. When people talk about Rural Reconstruction Centres I feel like being there myself
17. The slogan 'back to the land' disturbs my feelings.....
18. Keeping animals like chickens should be made part of life for every Zambia
19. I prefer mental to manual work
20. Working with the soil all the time should be boring
21. In life, I should like to work in an office
22. Fortunate people are in jobs which do not make them dirty
23. I like working outside in the open air
24. One should be happier in a job in which one works with the brain than hands

25. Our secondary schools should give priority to preparing students for university than for careers in agricultural production
26. Form III school leavers would be putting their education to better use if they train afterwards for careers in agricultural production
27. Educated people should not be given work that will make them dirty
28. Working on the land to produce crops and animal products for an income, should be the main aim of our education....
29. Even university graduates should go back to the land to use their knowledge for raising agricultural production...
30. I feel that it is better to try and settle more school leavers in agricultural production than in Form IV places
31. Only people with lower education than Form III should be sent to train for agricultural production
32. People should not expect Form III school leavers to take up careers which involve manual work
33. I prefer some one to employ me than to be self-employed...
34. Self-employment should lead to more success than being employed if one works hard
35. I do not mind living in a rural or urban area if I earn a good income
36. To make a better success of our independence we should spend more money improving rural conditions than building beautiful towns
37. Living in a rural area is just not for me
38. I should enjoy holidays in the rural areas
39. In a career, one must not seek to be rich quickly but a security of income after hard work over a long time....
40. With sufficient loan facilities to start small scale farming, I should be happy to take up a career in agricultural production

41. Most Form III school leavers should be able to earn a better income on the land than in offices
42. We should import more agricultural equipment with our limited foreign exchange than buy educational materials...
43. If I were unemployed, I should prefer to be settled on the land than be a job seeker in town
44. I just like animals in general
45. Everybody should try to produce the food they need than buy it
46. If I do not gain a place in Form IV, I should like to be trained for agricultural production
47. I should like a job as an extension officer helping rural people to produce more food than work in an office in town
48. Unemployed school leavers should be forced to take up training to become small scale farmers or members of co-operatives
49. We should sell cars at much higher prices to enable tractors to be sold cheaply
50. I should not mind taking up farming if land and loans are available
51. For sometime in my life, I should like to make a living on the land
52. We should all take an interest in agricultural production for the good of our country

Section B

To be able to understand and inteprete more correctly the opinions you have given, we need to know some facts about yourself and your home background without your giving us your name. Just tick the option which applies to you in the following or write what is requested as the case may be.

53. What is your age ?
54. Are you learning agricultural science ? Yes No
55. Did you yourself choose to learn or not learn it ? Yes No

56. Write down the name of your present school
57. Did you choose this school in particular because it teaches or does not teach agricultural science? Yes No
58. Did you choose this school in particular because it is located in the rural or urban area as it is? Yes No
59. Since starting grade 1 to the present day in which area have you lived for most of the time ? Rural or Urban
60. Do you know how you can be helped by the government to take up a career in agricultural production if you had to leave school after Form III ? Yes No
61. Describe briefly but clearly the work which your parent or guardian does
62. What is his profession or educational qualifications ?
63. Some Zambians are rich, while others are managing fairly well and the rest are still poor. Tick one of the following classes to which you think your family most probably belongs : (a) Rich (upper class)
(b) Managing fairly well (middle class)
(c) Struggling and still poor (lower class)
64. Tick those items in the following list which you have at home :-
- | | |
|---------------------|--------------------|
| Television set | Cook steward |
| Telephone | Gardener |
| Private car | |
| Refridgerator | |

Thank you very much. All this information will be kept confidential. We wish you every success in your school work !!!

APPENDIX B

PILOT STUDY INTERNAL CONSISTENCY TEST SUMMARY
DATA FOR ITEMS SELECTED FOR THE MAIN STUDY.

ASAS SCALE					CAPAS SCALE				
Item No on Pilot	Item No on final scale	TS * total X_t on item	BS ** total X_b on item	$X_t - X_b$ ***	Item No on Pilot	Item No on final scale	TS * total X_t on item	BS ** total X_b on item	$X_t - X_b$ ***
1	1	159	130	29	38	27	173	145	28
5	2	172	145	27	39	28	151	99	52
6	3	138	88	50	40	29	169	128	41
7	4	146	116	30	42	30	104	65	39
8	5	174	117	57	43	31	162	124	38
9	6	179	147	32	45	32	157	118	39
11	7	164	134	30	46	33	167	136	31
13	8	162	127	35	48	34	168	140	28
14	9	155	130	25	49	35	157	114	43
16	10	180	153	27	50	36	145	109	36
17	11	173	146	27	51	37	131	106	25
19	12	163	122	41	52	38	157	95	62
CAPAS SCALE					54	39	164	139	29
21	13	164	127	37	55	40	169	134	35
22	14	166	121	45	56	41	161	96	65
23	15	166	139	27	59	42	99	63	33
24	16	152	79	73	60	43	167	133	34
25	17	158	118	40	61	44	148	115	33
27	18	163	110	53	62	45	167	130	37
28	19	130	94	36	63	46	170	118	52
29	20	163	93	70	64	47	169	101	68
30	21	135	84	51	65	48	146	84	62
32	22	133	107	26	66	49	132	87	45
33	23	153	97	56	68	50	155	121	34
35	24	139	94	45	69	51	166	134	32
36	25	152	105	47	70	52	175	149	26
37	26	167	129	38					

* TS means Top scoring see p. 31

** BS means Bottom scoring p. 31

*** See page 31

APPENDIX C

SUMMARY OF DATA FOR COMPUTING RELIABILITY COEFFICIENTS
FOR ASAS AND CAPAS USING DATA FROM THE MAIN STUDY.

(a) SUMMARY DATA FOR COMPUTATIONS

Scale	Number of items	Number of SS	$\sum t$	$\sum t^2$	$\sum (tt)^2$	$\sum x^2$
ASAS	12	666	33580	151363	95017472	1711850
CAPAS	40	666	102062	439870	2.66915×10^8	15875106

Where: t represents the score per item per subject;
 tt represents total score per item for all subjects (SS);
 X is total score per subject on the scale.

b) SUMMARY OF RESULTS OF COMPUTING RELIABILITY
COEFFICIENTS FOR ASAS AND CAPAS .

Scale	Source of variance	df	ss	ms	F ratio	$r_{tt} = 1 - \frac{V_e}{V_{ind.}}$
ASAS	Items	11	1575.9	143.3	146.97	0.59
	Individual SS ($V_{ind.}$)	665	1561	2.35	2.4	
	Residual(V_e)	7315	7133	0.975		
	TOTAL	7991	10186			
CAPAS	Items	39	9759	250.2	195.47	0.86
	Individual SS ($V_{ind.}$)	665	5863	8.82	6.87	
	Residual(V_e)	25935	33233	1.28		
	TOTAL	26639	48855			

B. Interaction of individual subjects with individual items is taken as an estimate of error variance. In the item-subjects table design of data used for calculations, there is only one score for each subject in each cell and consequently 'within cell' variance was assumed to be zero.

APPENDIX D

RANK ORDERS OF TOTAL (COMPOSITE) SCORES OF ALL
SUBJECTS PER ITEM ON SCALES ASAS AND CAPAS.

(N = 666)

ASAS

ITEM NUMBER ON QUESTIONNAIRE	COMPOSITE TOTAL SCORED BY ALL SUBJECTS ON ITEM	AVERAGE COMPOSITE SCORE	RANK
1	2624	3.985	9
2	2981	4.476	4
3	2139	3.211	12
4	2567	3.854	11
5	3125	4.692	3
6	3147	4.725	2
7	2678	4.021	8
8	2683	4.029	7
9	2631	3.950	10
10	3166	4.754	1
11	2969	4.458	5
12	2850	4.279	6

CAPAS

13	2672	4.012	19
14	2758	4.141	15
15	2850	4.279	10
16	2265	3.400	33
17	2811	4.220	13
18	2580	3.874	23
19	2170	3.258	35
20	2565	3.851	24
21	2036	3.057	38
22	2293	3.443	32
23	2326	3.492	29

CAPAS (Continued)

ITEM NUMBER ON QUESTIONNAIRE	COMPOSITE TOTAL SCORED BY ALL SUBJECT ON ITEM	AVERAGE COMPOSITE SCORE	RANK
24	2094	3.144	37
25	2323	3.488	30
26	2877	4.320	6
27	3027	4.545	1
28	2379	3.572	25
29	2825	4.242	12
30	1809	2.716	39
31	2860	4.294	8
32	2642	3.967	21
33	2774	4.165	14
34	2970	4.459	3
35	2754	4.135	17
36	2655	3.986	20
37	2251	3.380	34
38	2474	3.715	26
39	2755	4.137	16
40	2962	4.447	4
41	2617	3.929	22
42	1770	2.658	40
43	2843	4.269	11
44	2331	3.500	28
45	2877	4.320	6
46	2853	4.284	9
47	2742	4.117	18
48	2313	4.473	31
49	2122	3.186	36
50	2344	3.520	27
51	2899	4.353	5
52	3013	4.524	2