# FACTORS INFLUENCING THE PERFORMANCE IN AGRICULTURAL SCIENCE IN SOME HIGH SCHOOLS IN THE LIMPOPO PROVINCE

by

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**A.P. Mavhungu**

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# ABSTRACT

## FACTORS INFLUENCING THE PERFORMANCE IN AGRICULTURAL SCIENCE IN SOME HIGH SCHOOLS IN THE LIMPOPO PROVINCE

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### a)     Objective

The aims of the study is to investigate the reasons or factors influencing the performance in agricultural science by grade 12 learners in some high schools in the Limpopo Province.

### b)     Research procedure

Data for the study was obtained by means of a coded questionnaires which was completed by 285 respondents from 25 schools in District 3 of the Limpopo Province. Data was analysed and the following statistical tests were used: multiway-frequency tables, correlation procedures and regression analysis.

### c)     Findings and conclusions

Agricultural science need to be viewed as important as other subjects in secondary schools. The findings of this research has revealed that the performance by learners in agricultural science is disappointingly low. There are factors that according to the literature review are believed to be contributory towards the high failure rate in agricultural science.

These factors were identified and include the following:

The teaching skills by teachers in agricultural science as compared to other subjects were found not to be good enough for the learning and teaching situation. The findings showed that there is inadequate supply of teaching materials and apparatus for agricultural science. This means that practicals cannot be done successfully. Agricultural science is a practical subject and failure to do practicals in the subject contributes towards the high failure rate. The attitude of teachers in the subject is not positive and the knowledge teachers disclosed as being perceived by learners as being below standard.

Learners doing agricultural science do not seem to be having any idea with regard to agricultural science as a prospect to future their career. Despite the practicals that are not being done in the subject by the schools very little is done in the form of taking learners to agricultural related institutions or other field excursions where learners need to see things practically. The majority of learners indicated that they did not choose to do the subject. The choice have been forced by the school curriculum, influenced by friends, or learners were told by their teachers to take the subject. A comparison was made between agricultural science and other subjects regarding the performance in those subjects and it was found that except for mathematics and physical science, learners are doing well in the other subjects.

Recommendations that were made includes more practical training and the in-service training of agricultural science teachers which could alleviate some of the problems that are contributing towards the high failure rate in agricultural science by learners in grade 12 of District 3 in the Limpopo Province.

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# CHAPTER 1

# THE PROBLEM AND THEORETICAL BACKGROUND INFORMATION

## 1.1    INTRODUCTION

"Agricultural Science is an integral part of the economic system and, by means of direct and indirect links, has an important influence on the economic and social activities in general, especially in respect of the industrial sector"(Van Rensburg, 1989:29).  Agricultural science needs to be viewed as important as other subjects in the secondary schools.  The effectiveness and feasibility of the teaching of the subject must be proper and various aspects of the instructional materials must be used.

FAO (1983 indicated that since 1960, the total school enrolment had grown faster in Africa than in any other developing region.  Since the greatest challenge at present is to generate adequate food production to sustain the increasing population, agricultural education plays an important role.  It is concluded that there is a need to rationalize the qualifications of agricultural manpower and the utilization of manpower.  There is a need for the improvement of the passing rate of agricultural science in District 3 of the Limpopo Province.  Fraser *et al*; (1990:60) stated that "perception as a didactic principle implies that instruction and learning can be effective only if representative facets of reality are placed within the reach of the learner.  The subject content should be perceptualized in such a way that details to be observed and perceived by the learner are converted into concrete facets of reality.   Perception and sensory awareness are requisites for effective and meaningful learning."

The high failure rate of the subject by the learners could have attributed to many factors ranging from lack of interest on the subject by the learners, poorly motivated learners, negative attitude, the curriculum which is not well constructed or supported with the teaching media/aids, learners not exposed to agricultural related institutions and insufficient stationery.

Agricultural science is not being viewed as important as other subjects in the secondary schools of District 3 in the Limpopo Province. The effectiveness and feasibility of the subject is not proper and various aspects of the instructional materials are not being used. FAO ( 1984: 45 ) indicated that the need to develop an awareness of the global nature of the agricultural industry is one of the major issues that learners must be made to understand.

Research done by Saidi (1999:31), in some parts of District 3 indicates that there are main environmental problems namely land degradation, solid waste disposal, invasion of alien plant species, deforestation and other poor management practices that have reached uncontrollable proportions. Tricart,J and Jonge ( 1992 : 67 ) indicated about the importance of ecogeography and rural management which is not being taken into consideration. Evidence is mounting that the natural infrastructure (soil, forests and water) upon which agriculture is critically dependent is in a rapid state of decline. It is therefore the purpose of this research to show the ways in which a view of education must improve such a structure on our practical decisions. FAO (1977:76) states that "land degradation is a process that lowers the actual and/or potential biological productivity of land where this decrease in productivity is the outcome of processes resulting from human activities rather than natural events."It is one of the environmental problems threatening the very basic life for many in South Africa; particularly in the former homelands and District 3 is no exception (Johnson & Lewis; 1995:45). Trollope, W.S.W ( undated ) emphesised the importance of pasture for our animals.

If an interest of the subject can be instilled to the youth, they will be sensitive to these problems. Motivating learners to have the love of nature is very important. Unless something is done to this effect, one cannot dream of seeing an improvement in the passing rate of the subject in District 3. Gardner (1990:5977), as quoted by Mutshekwana (1993:3) stated that the "training, retraining and updating of practising teachers are widely recognised world-wide as essential factors in the development of teacher quality. Teacher quality is a major factor contributing to improved learning outcomes of students. It is vital and appropriate that the education and training of practising teachers receive increasing attention, if lasting and meaningful change in the subject is to occur."Agricultural science is a

practical science subject and one of the research aims will be that of an of investigation into that area. Theory and practice must go hand in hand. That which is taught in theory must be applied and demonstrated practically to bridge the gap between theory and practice. Practicals enhance more understanding of the subject matter. Ornstein (1992:9) says that lack of practicals in a learning teaching situation gives rise to a limited scientific basis of teaching. "The practitioner must learn as a teacher to draw not only from his or her knowledge (which is grounded to scientific principles), but also from a set of personal experiences and resources that are uniquely defined and exhibited by the teacher's own personality and "gut"reaction to classroom events (which form the art of teaching)"Ornstein (1992:9).

True knowledge of teaching is achieved by practice and experience in the classroom. There is a problem of goal directed learning. Ornstein (1992:79) is of the opinion that education must be goal directed and centred. This must be the case with the subjects that are taken by the learners with agricultural science being amongst them. At the present moment agricultural science does not seem to be a subject which is goal directed. Positive attitudes towards the subject agricultural science seems to be lacking, hence the poor performance on the subject as a whole in District 3. The particular focus of this research is to investigate the problem areas that might be contributory factors towards the poor performance in the subject.

The findings will encourage and contribute towards the constructive thinking on how these problems could be alleviated. It is worth emphasising that the aim of the research is not only that of identifying problems but also solutions to those problems. The notion of progress in the subject is what the research is aimed at.

## 1.2 MOTIVATIONAL BACKGROUND TO THE STUDY

Thorpe and Schmuller (1954:63) stated that learning can be regarded as the total changes that occur in an individual as a result of his responses to representative stimuli, present or past.

Besides the high failure rate of agricultural science in grade 12, there are certain sectors of the ecosystems that are in a bad state. The research done by Saidi (1999:31) indicates that the former homeland of Venda has some worst cases of land degradation in the country. Parts of Tshakhuma, Tsianda and Lwamondo mountain areas are heavily degraded. Subsistence farming contributed to degradation in semi-arid areas of Nzhelele, Tshipise and other areas in the dry Limpopo Valley. Subsistence farming is practised in non-permitting environments. If this can go on unabated, poverty and hunger will be the main problems facing human mankind. The natural infrastructure/resources upon which agriculture is entirely dependent is not being taken care of, hence soil erosion, deforestation, overgrazing, veld fires and other mismanagement practices which have rendered parts of the District to reach uncontrollable proportions. Taiton,N.M; De Booysen,P Edwards ,P.J and Menties,M.T ( 1981: 78 ) emphesised the importance of veld management. This was also emphesised by Tiffen, D.W ( 1994: 45 ) with regard to the importance of environmental recovery.

According to Fairhurst (1999:31) "land degradation is a process that lowers the actual and/or potential biological productivity of land". FAO (1977:61) states that this decrease in productivity is the outcome of processes resulting from human activities rather than natural events. It is one of the environmental problems threatening the very basis of life for many in South Africa particularly in the former homelands (Wilson & Ramphele, 1993), and District 3 is no exception. Brutch (undated: 39) says that "an appreciation of soil and its potential for mankind may create a desire to avoid mismanagement of our soils and veld, our basic resources and to conserve what is beautiful and worthwhile in nature". It is the purpose of this study to identify learners perception of agricultural science in secondary schools of District 3 and to supply guidelines for the solutions of the problems and the causes of these problems.

## 1.3    LITERATURE REVIEW AND MOTIVATION FOR THE STUDY

The high failure rate of grade 12 learners in agricultural science as compared to other subjects in District 3 is alarming. There seems to be some contributory factors that are leading to the failure rate. Learners doing the subject seem not to be well

prepared to do the subject. They are doing the subject because it is one of the subjects in the curriculum, and / or it is within the mainstream of the subjects or they were told to do the subject by their teachers.

The interest for doing the subject does not seem to be amongst the learners who are doing the subject. The attitudes of teachers and other stake holders towards the subject does not seem to be very positive, hence poor motivation which gives rise to bad performance on the subject agricultural science.

Hirst and Peters (1979:95) states that "liking is a frequent occasion for the development of personal relationships in that it predisposes people to enter into them."Good environment is not being created for learners to have an interest in the subject. According to the research done by Goodland (1984:10), the findings were such that students expressed considerable liking of certain subjects than others. The subjects they like most are those that are science oriented. He also found out that teachers offering certain subjects appeared to occupy positions of declining significance in the lives of the learners. The picture that emerges is of classrooms becoming routinized with respect to instructional practices.

Leedy (1993:7) as quoted by Maumela (1995:9) states that "everywhere our knowledge is incomplete and problems are waiting to be solved. We address the void in our knowledge, and those unresolved problems, by asking questions and seeking answers to them. The role of research is to provide a method for obtaining those answers by inquiring into the parameters of the scientific method"

The lack of teaching media and subject apparatus seem to be another factor that contributes towards the poor performance in the passing rate of agricultural science by learners in grade 12.

This means that most of the teaching is based on theory. Agricultural science is a practical subject and some of the concepts need to be demonstrated practically. One of the research aims will be to investigate this area. Theory and practice must go hand in hand and it will bridge the gap between theoretical and practical knowledge. Practicals enhance more understanding of the subject matter. Ornstein (1992:9)

indicates that lack of practicals in a learning-teaching situation gives rise to a limited scientific basis of teaching. This could be the case with agricultural science as a subject in grade 12 in District 3 of the Limpopo Province. True knowledge of teaching is achieved by practice and experience in the classroom. Education must be goal directed and centred.

A good environment must be created for knowledge to be fostered on the part of the child. According to Vernon (1986:8) "an environment must be created which is stimulating enough for children to develop their abilities and satisfy their interests."He states further that "it is important that the child be happy in school, that his/her life develop from day to day with a feeling of achievement, that he/she consider himself/herself a person of work, that he/ she feels that he/she is understood and appreciated, and that s/he have opportunities to express his/her creative and artistic abilities."A negative attitude towards agricultural science by learners could play a role in the poor performance ands passing rate.

One could assume that teachers lack the skills of teaching the subject properly and professionally. Mastery of the subject matter to be taught is also one important aspect that is required for good teaching. Good skills in teaching are not important if the subject matter is not mastered by the teacher. Holmes and Group as quoted by Ornstein (1992:42) maintains that "pedagogical knowledge, and skills are as important than subject knowledge, and is best illustrated by the recent emphasis on cognitive psychology, with its focus on teaching methods, thinking skills, and student learning strategies."

Teachers' skills and strategies are very important in educative- teaching. True knowledge of teaching is achieved by practice and experience in the classroom. According to one researcher, "the knowledge that teachers came to have the most faith in and used most frequently to guide their teaching is consistent with traditions that have worked in the classroom area"(Ornstein; 1992:54). Teachers who lack good teaching skills cannot be expected to produce good results.

Educational planning, according to Bishop (1986:6) "must move increasingly into creation and testing out of new educational designs, involving fundamentally new systems of teaching and learning designed to achieve well-defined performance

specifications with great effectiveness."The teaching skills of teachers teaching agricultural science must be well looked into if improvement on the subject is needed. Professional competence is therefore to be judged not only by the ability to articulate in the classroom and defined moral principles but also by the end of year results. According to Carr & Kemmis, L (1986:44),"teachers' knowledge and good teaching skills provide a starting point for critical reflection."

Part of this research, therefore is that of providing teachers with the sort of concepts and insights that are required to formulate a coherent understanding of the nature and purpose of the educator's role. "Teaching is a professional occupation, on this view, because it is guided by a self-conscious understanding of basic educational principles, rather than by any narrow concern with instrumental or utilitarian goals and motives."(Carr & Kemmis, 1986:30). The role of the researcher in this study is not that of an external investigator providing solutions to educational problems with specific reference to agricultural science, but to assist teachers to arrive at sound practical judgements.

Ramsden (1992:3) as quoted by Matsheke (1993:15) maintained that "teaching is one of the most delightful and exciting of all human activities when it is done well but it is one of the most humiliating and tedious when it is done poorly."It is the purpose of this research that teaching must be given its correct status and be presented well which will probably give rise to a better performance and the passing rate in agricultural science as a subject in District 3.

Teaching and learning cannot be separated. Their inseparability underlines the concept or the notion of effectiveness. Griessel *et al* (1989:70) mentioned that it is the task of the school to lead the child as a complete human being to self-realization. Van Rensburg (1989:1) maintained that "the achievement of farmers have proved that judicious use of the soil, supported by knowledge and management skills not only makes it possible to achieve production records, but also ensures reliable production. The success of South Africa's agricultural scientists enable the country to fulfil a special role in respect of agricultural food production, not only in the Republic but in the whole of Southern Africa."This can be achieved through good educative learning

on the subject itself (i.e. agricultural science). Ad-hoc solutions will not work in the long run.

"Research is an attempt to reach reliable, credible, accurate, valid and objective findings and pronouncements"(Van Heerden; 1989:103 as quoted by Maumela 1998:9).

It is the purpose of this study to identify possible reasons for the poor performance and the poor image of agricultural science as a subject, in order to give some guidelines and recommendations. The main problem as indicated is the high failure rate of agricultural science as a subject in grade 12 in District 3 of the Limpopo Province. The high failure rate is a problem which have some causes or some factors that are working simultaneously, such as equipment shortages in schools and the use of teaching media are either inadequate or not present at all. Teltchik and Hamm (1998: 118) as quoted by Maumela (1998:9) mentions, that "there was an international agreement that teacher training in media education was either missing altogether or notably inadequate, apart from the fact that media education also suffers from adequate conceptual and theoretical base."Equipment shortages coupled with lack of subject knowledge on the part of teachers teaching the subject enhance this problem further. Lack of practicals gives rise to such a limited scientific basis of teaching. The teaching skills by the teachers are possibly not up to standard and this might give rise to poor motivation on the subject. Barron and Orwig (1995:4) as quoted by Maumela (1998:5) states, that agricultural science teachers in secondary schools are not able to apply the practical skills in a classroom situation, probably because they themselves are not media competent.

Many of the new networking technologies are extremely diverse and cannot be fully analysed by the teachers teaching the subject since they are not knowledgeable to use them. If teachers have problems on the subject itself, it is worse on the part of the learners. "Understanding requires matching materials to the learners abilities and prior knowledge. If students do not understand the materials, frustrations sets in, making learning more difficult"(Ornstein, 1992:394). There are no laboratory facilities to help students understand certain concepts learned in the classroom. There is also a lack of textbooks available to teachers and students. The gap between

theoretical knowledge and practical knowledge is in fact very high and needs to be bridged. Educational excursions on the subject are not being undertaken to the best of the subject. The teaching practice being applied does not lead to discovery learning by the students and the teaching is still more teacher centred. Most of the teachers teaching the subject are not qualified to teach the subject. "The teacher must consider which tasks contribute most to students' learning, and when it is appropriate to introduce these tasks so that students gain new insights and skills"(Eisner, 1983:8). This cannot take place on the part of teachers who are not qualified on the subject (i.e. agricultural science). Certain aspects like soil horizons, soil profile, artificial insemination, castration, dehorning and others need practical demonstrations or excursions so as to be observed. Eisner (1983:8) states that "if there is too much theoretical teaching on aspects that need practical demonstrations and fail to do those practicals, it becomes a problem. Little wonder that many teachers loose their pupils' interests after 10-15 minutes of instruction. Learners dose off, stare out of the windows or stare past the teacher or just pass time in classrooms."Learners cannot apply in practice what they are taught in theory. Practicals are important. "Scientific research provides humans with indisputable knowledge"(Kincheloe, 1991:7). Skills can only develop with practice. The availability and distribution of reference materials including textbooks in schools seems to be important. Lack of these materials could also contribute to the high failure rate of agricultural science in grade 12 of District 3 in the Limpopo Province and possible demotivate the learners who are doing this subject.

They cannot learn the subject properly and they cannot make practical use of this subject when they leave school. This cannot even allow the schools themselves to act as examples for rural development with regard to agricultural related practices such as gardening, tree planting and others. Learners cannot be expected to perform better or even improve on their passing rate if they are still sharing textbooks.

Learners need to have a positive attitude towards the subject. If they do not have a positive perception on the subject as a whole, they might not be motivated. Routledge, M. and Paul, W.A, (1979:95) suggested that some kind of liking or attraction towards something is important. A person cannot develop a positive attitude towards something he or she does not like. "Interest is the sin qua non-for

affection and appreciation"(Gill, 1995:17). A positive interest gives rise to a positive attitude towards something. Teachers teaching the subject are most probably unable to apply in practice what they teach in the classroom situation. This is due to the lack of knowledge and professionalism on the subject. There is no professional competence amongst them thus contributing to poor performance by the learners in the subject. Learners are expected to obtain knowledge with regard to the demands made by different occupational fields in order to succeed in them and this can only happen if they are given this knowledge by knowledgeable teachers in the subject they offer. According to the research done at the University of Zimbabwe by Blackie,D. (1990:11) "the output of well trained agriculturists lies well below the need."To support agricultural science teachers to develop their skills and knowledge, the rendering of in-service training programmes could be a possible solution. There is only one in-service training centre in District 3 (i.e. Ramaano Mbulaheni Training Centre). "For the period 1990 up to 1994 attendance of in-service training courses was poor because of a lack of culture for teaching and low morale amongst the teachers and trainers at in-service training providing sites. This situation has not improved very much. In-service training provision in the whole Province is fragmented and uncoordinated with the different public- and non-governmental players continuing to play a dominant role"(Mutshekwane, 1989:3). Only one in-service training centre in District 3 is not enough to help all the teachers ranging from primary to secondary schools.

Research done by Lepper and his colleagues as quoted by Eisner, W.E, (1985:89) indicates that in a number of experiments that the use of extrinsic rewards create a set of expectations on the child's part. The research data further suggests that recognition and rewards for students accomplishment are a proven way of raising children's self-esteem. Teachers are lacking positive expectations about their students' learning abilities in agricultural science. They are not providing honest rewards and praise. It is the teacher's role to assure that each learner can be successful at something. There are no rewards or prizes to agricultural science learners and this dampen their future interests of pursuing with the subject.

Jacobs, N.W, (1991:48) mentions that "occupational choice is the result of conservative decisions made during specific phases in one's life."Learners are not

obtaining knowledge in this subject with regard to the demands made by occupational fields that are agriculturally oriented in order to succeed in them. They are not being helped to discover their talents in the field of agriculture and this is hindering their occupational interests. Learners doing agricultural science are not aware of what the subject they are doing can bring them to. Shipley *et al* (1968:12) mentions that the "subject matter should not be relegated by the teacher to a position of inferior importance or acquired by the learners as a form of incidental learning."Learners are not aware of the career choices that are agricultural science oriented. Educational and occupational information are not being provided and interpreted to learners in the field of agriculture. Learners are not guided to explore the educational and occupational possibilities in the field of agriculture hence knowing very little or none at all about vocations related to agriculture. Learners are not being made aware to understand their own potential with a view of making an educational or occupational choice of their own which is related to agriculture. Jacobs (1991:180) states that "to study means to learn purposefully and deliberately. Studying is therefore always a purposeful activity."Amongst the learners doing agricultural science, studying of this subject is not purposeful and deliberate since they are ill informed about career choices related to this subject. The learners' strength on the subject is not good because there is nothing motivating which makes the learners to be interested in it. They just do the subject with no career prospects attached to it. "The strength of coping with the subject arises from the children's interests. Teachers are not directing the children's interests to go beyond their immediate wastes"(Shipley *et al*, 1968:21). Subject preference contributes to the coping strength on the subject. This is most probably not the case with agricultural science learners on the subject. They most probably do not spend enough time studying the subject like they do in other subjects and few or no practicals are being done on agricultural science besides it being a practical subject by itself. Educative tours or excursions that are agriculture oriented are most probably not undertaken. This leaves the learners with very little information and knowledge of various kinds of agricultural science as compared to other subjects. Learners cannot apply in practice what they are taught theoretically. Learning theory without practicals is rendering the learning-teaching situation to be less effective thus also possibly contributing to the high failure rate of the subject. The educators do not regard the professional status of the subject as important. This is due to lack of vocational guidance on different fields that are related to agriculture.

Teachers are not offering opportunities for learners to become involved in agricultural related school and community activities.

There is a total failure of praise and opportunities for learners to increase their social, academic independence and responsibility. Career guidance is lacking and there is a perception that learners do not see agriculture as a subject with professional status.

*With this study it is trusted that the research will:*

i)        bring an interest of agricultural science to learners and also teachers teaching the subject

ii)       provide an account of media use with special reference to agricultural science grade 12 in District 3 of the Limpopo Province.

iii)      motivate teachers, teaching agricultural science, to attend in-service training courses that will help them to be capable of teaching the subject scientifically (that is applying practicals and undertaking excursions) and

iv)      motivate learners doing agricultural science by giving them awards/incentives on the subject and also making them aware of job opportunities related to agriculture.

# CHAPTER 2

# CONCEPTUAL FRAMEWORK AND HYPOTHESIS FORMULATION

## 2.1    CONCEPTUAL FRAMEWORK

The conceptual framework of this study looked into the following:

2.1.1    Ineffective motivation in the subject

- no awareness of job opportunities
- negative role model of the teacher, influenced by poor qualification
- negative status of teachers relative to other teachers in other subjects
- no incentives for learners in the subject e.g.
  a)  science Olympiad - expo
  b)  few or no bursaries
- negative attractiveness of job opportunities in agricultural science
- negative status of and negative attitude towards agriculture by peer group
- ineffective exposure (practicals / excursions)
- associated with hard labour

2.1.2    Agricultural science teachers are less enthusiastic about their subject and learners are not motivated.

2.1.3    There is usually no self choice of subjects – learners make wrong choices

2.1.4    Ineffective teaching of the subject by the teachers

- learners are not exposed to practicals in the subject
- teaching facilities are not fairly distributed
- insufficiently qualified teachers in agricultural science
- tendency to substitute agricultural science teachers with others who do not know agricultural science.

## 2.2    PROBLEMS AND OBJECTIVES

The problems to be investigated in this study are essentially the reasons for the generally poor performance by learners in agricultural science in grade 12 in District 3 of the Limpopo Province. Research done indicates that learners doing agricultural science are performing very poorly.

The objectives of the study are briefly as follows:

i)      To investigate the possible reasons for the poor performance of learners doing agricultural science as a subject.

ii)     To investigate the possible reasons for the poor recognition of agricultural science as a subject in the curriculum of secondary schools.

iii)    To investigate the image of agricultural science related options as a career prospect with grade 12 learners.

## 2.3    FORMULATION OF HYPOTHESES

The conceptual framework suggests a number of a general hypothesis about agricultural science as a subject as perceived by learners in grade 12 of District 3 of the Limpopo Province.

The following hypotheses were formulated:

1.      Learners doing agricultural science in grade 12 are not sufficiently motivated.

2.      The attitudes of both the teachers and the learners towards the subject are not very positive.

3.      The curriculum of agricultural science in secondary schools is not well constructed and/or supported with teaching media (apparatus).

4.      Practicals and excursions in the subject are not undertaken.

5.      Agricultural science teachers are not enthusiastic about their subject.

6.      Insufficient use of media by agricultural science teachers results in a low pass rate.

# CHAPTER 3

# METHODOLOGY

## 3.1 INTRODUCTION

This chapter outlines the methodology used in the research and conceptualisation of the problems as stated in the hypothesis.

The choice of the study area, orientation and planning of the survey over a period of two years, the information sources, questionnaire design, sampling and interviewing procedure and analysis of data are discussed.

## 3.2 PLANNING OF THE STUDY

The planning of the study started in August 1996 and was completed in July 1997. Several visits were made to different schools in order to obtain an insight into the school situations and to establish a good contact with grade 12 learners. The Regional Office was visited and permission was granted to visit schools in District 3 of the then Northern Province (today the Limpopo Province).

## 3.3 CHOICE OF THE RESEARCH AREA

The area, namely District 3 of the Limpopo Province was selected and the selection was based on accessibility and also on the schools that are offering agricultural science as a subject in grade 12. Within District 3, a stratified sampling was done on the basis of ecological variation and degree of urbanisation.

For purposes of good collaboration, the District Office in District 3 was visited and a letter requesting to visit schools was submitted. Permission was granted for the research to take place in schools in District 3 of the Limpopo Province. A letter directed to the inspection areas of District 3 was given so as to allow the researcher an access to visit the schools. Schools were visited and principals were given the letter

of consent from the department. The principals informed the respective teachers offering agricultural science in grade 12.

According to Murphy and Sprey (1989:68) "it is important to take time to explain the survey properly to the respondents as this will greatly influence the extent to which they will be prepared to co-operate later."

Agricultural science teachers therefore played an important role by introducing the researcher to the learners and an explanation to the learners was done to make them aware of what is expected of them. They were informed that the purpose of the study would benefit the Department of Education as a whole.

## 3.4 QUESTIONNAIRE DESIGN

Questionnaires were designed to suite the level of understanding of learners in grade 12. Questionnaires were kept short and to the point.

They were constructed in order to collect information in the following:

i)      personal details
ii)     experience and
iii)    planning/organising

They were made specific and clear. (See appendix A)

The questionnaires were designed to deal with three aspects independently. Interviews were conducted in the classrooms but each learner completed his/her own questionnaire independently. It took between one and a half to two hours to complete the questionnaire.

## 3.5 THE SURVEY

The research was planned over a three year period within the region and a stratified sampling was done on the basis of ecological variation and degree of urbanisation.

Learners were consulted and they completed the questionnaires. The learners who were interviewed were from four different areas of District 3. In total, there were 285 respondents and 25 schools which formed part of the survey.

Learners wrote their names and the names of their schools they are attending on the questionnaires. Random sampling was chosen amongst the schools selected.

## 3.6    DATA ANALYSIS

The data was analysed as follows:

- the data was analysed by the Department of Statistics (University of Pretoria)

- there was initial computer tabulation and it was easy to get general acceptance of the survey data.

- statistical tests used were multiway-frequency tables, correlation procedures and regression analysis.

# CHAPTER 4

# PERFORMANCE IN AGRICULTURAL SCIENCE

## 4.1 INTRODUCTION

The general accepted way of assessing performance is end of year examination results. However, some authors like Fourie (1991: 53) believe that too much importance is attached to examination results. They also maintains that "drilling is stressed and educative principles are sacrificed. Often the emphasis is on facts rather than on the understanding of the subject matter. Competition between schools is encouraged because each school wants to do better than the next and in this context, good results are everything. As a result, the aims of education on the subject are not realized."

Good performance is what every learner would like to achieve in the subjects he or she is doing. There are however, a number of factors that contribute to good performance in the subjects. Some of these factors are positive and some are negative. The positive factors will motivate learners to have an interest in the subjects thus contributing to good performance in those subjects because of increased effort into those subjects. The negative factors are expected to have the opposite effect.

## 4.2 PERFORMANCE IN AGRICULTURAL SCIENCE

An overview of learners' performance is given in Table 4.1 below.

As shown in Table 4.1, the performance of learners doing agricultural science is disappointingly low. This is shown by the finding that 66,3% failed, (< 40%) and as many as 36,6 percent got less than 25 percent.

The poor performance in agricultural science needs to be judged in the context of other subjects. A comparison of the performance in agricultural science and that in other subjects is given in Table 4.2.

Table 4. 1:    Frequency distribution of agricultural science learners according
to final year examination results (grade 12)

| Results Categories (Marks in%) | No of learners (n) | Percentage learners (%) |
|---|---|---|
| 0 – 25 | 53 | 36.6 |
| 26-39 | 43 | 29.7 |
| 40-49 | 27 | 18.6 |
| 50-59 | 19 | 13.0 |
| 60-69 | 3 | 2.1 |
| ≥ 70 | 0 | 0.0 |
| **TOTAL** | **145** | **100.0** |

Table 4. 2:    Percentage distribution of learners according to final ((actual)
examination results in the various subjects

| Subjects | Results categories | | | | | |
|---|---|---|---|---|---|---|
| | ≤ 25% | 26-39% | 40-49% | 50-59% | 60-69% | ≥ 70% |
| Venda | 0.0 | 0.0 | 0.0 | 45.0 | 46.0 | 9.1 |
| English | 0.9 | 11.46 | 16.0 | 40.9 | 26.1 | 4.6 |
| Afrikaans | 1.1 | 31.6 | 38.8 | 23.8 | 4.4 | 0.0 |
| Biology | 4.0 | 19.0 | 48.7 | 24.6 | 3.5 | 0.0 |
| P/Science | 18.0 | 44.0 | 34.8 | 2.0 | 2.0 | 0.0 |
| Maths | 26.6 | 42.5 | 16.6 | 9.1 | 5.0 | 0.0 |
| Agric.Sci | 36.6 | 29.7 | 18.6 | 13.0 | 2.1 | 0.0 |
| Geograph | 0.5 | 29.2 | 49.2 | 16.4 | 4.4 | 0.0 |
| H/Econ | 0.0 | 16.6 | 50.0 | 33.3 | 0.0 | 0.0 |
| B/Econ | 0.0 | 0.0 | 18.2 | 18.2 | 54.5 | 9.1 |
| Economic | 0.0 | 0.0 | 0.0 | 50.0 | 20.0 | 30.0 |
| Account | 0.0 | 0.0 | 28.5 | 28.5 | 28.5 | 14.3 |
| Tech.Dra | 0.0 | 0.0 | 50.3 | 50.0 | 0.0 | 0.0 |
| Bib.Stud | 0.0 | 2.7 | 8.3 | 30.5 | 55.5 | 2.7 |

The poor performance in agricultural science is evident from the fact that agricultural science has the highest percentage of learners obtaining less than 25 percentage namely, 36.6 compared to mathematics which has 26.6% and physical science which has 18.0%. The poor performance in agricultural science is further confirmed by the fact that not one learner achieved a result of 70 percent or more. The comparative poor performance in agricultural science is particularly evident from the mean scores or percentages given in Table 4.3.

**Table 4.3:** Expected/estimated and actual performance of all subjects

| Subjects | Results categories | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ≤ 25 | | 26 – 39 | | 40 – 49 | | 50 – 59 | | 60 - 69 | | ≥ 70 | |
| | Expect | Actual | Expect | Actual | Expect | Actual | Expect | Actual | Expect | Actual | Expect | Actual |
| Venda | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 8.75 | 45.0 | 19.0 | 46.0 | 70.5 | 9.1 |
| English | 0.9 | 0.0 | 0.0 | 11.46 | 4.10 | 16.0 | 2109 | 40.9 | 34.2 | 26.1 | 38.8 | 4.6 |
| Afrikaans | 2.8 | 1.1 | 0.55 | 31.4 | 20.0 | 38.8 | 40.5 | 23.8 | 23.3 | 4.4 | 12.77 | 0.0 |
| Biology | 3.0 | 4.0 | 0.0 | 19.0 | 2.0 | 48.7 | 24.3 | 24.6 | 31.8 | 3.5 | 38.8 | 0.0 |
| Physical Science | 7.2 | 18.0 | 0.0 | 44.0 | 2.9 | 34.8 | 24.6 | 2.0 | 23.1 | 20.0 | 42.0 | 0.0 |
| Mathematics | 2.0 | 26.6 | 2.8 | 42.5 | 22.1 | 16.6 | 27.1 | 9.1 | 19.2 | 5.0 | 25.7 | 0.0 |
| Agric. Science | 1.9 | 36.6 | 0.6 | 29.7 | 5.81 | 18.6 | 21.94 | 13.0 | 27.1 | 2.1 | 42.48 | 0.0 |
| Geography | 2.1 | 0.5 | 0.0 | 29.2 | 7.6 | 49.2 | 18.6 | 16.4 | 331.3 | 4.4 | 40.1 | 0.0 |
| Home Economics | 0.0 | 0.0 | 16.6 | 16.6 | 33.3 | 50.0 | 16.6 | 33.3 | 16.6 | 0.0 | 0.0 | 0.0 |
| Business Economics | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 27.0 | 18.2 | 27.2 | 54.5 | 45.4 | 9.1 |
| Economics | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | 50.0 | 40.0 | 20.0 | 30.0 | 30.0 |
| Accounting | 0.0 | 0.0 | 10.0 | 0.0 | 20.0 | 28.5 | 30.0 | 28.5 | 30.0 | 28.5 | 10.0 | 14.3 |
| Technical Drawing | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 50.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Biblical Studies | 3.4 | 0.0 | 3.4 | 2.7 | 20.6 | 8.3 | 27.5 | 30.5 | 17.2 | 55.5 | 27.2 | 2.7 |

Burger (1985:2) is of the opinion that something seems to have gone wrong with teaching of agricultural science. His study is further reinforced by Graven and Steyn (undated) who mention that a failure rate of up to 90 percent in agricultural science is not uncommon in Higher Grade.

The above table shows the results estimated by the learners and the actual results the learners got in the examinations in different subjects. As already mentioned 36.6% of learners got less than 25%. This is the highest percentage for all subjects.

If one determine the rank order of the subjects according to the percentage received by learners in that subject it clearly indicates that the higher the result category, the lower the rank order of agricultural science versus the other subjects and vice versa.

In future chapters, the information in Table 4.3 will be discussed in depth.

## 4.3    OVERESTIMATION OF PERFORMANCE

The poor performance in agricultural science could be attributed to the fact that learners are not aware of their weaknesses or poor performance and consequently expect unrealistically higher marks. In Table 4.4 an overview of learners' estimated and actual performance in agricultural science is given.

**Table 4.4:    Learner's estimated and their actual performance in agricultural science**

| Percen-tage Ca-tegory | Estimated Performance | | | | Actual performance | | | |
|---|---|---|---|---|---|---|---|---|
| | Frequen-cy (n) | Percen-tage (%) | Cum. frequency (Cum. N) | Cum. Percentage | Frequen-cy (n) | Percen-tage (%) | Cum. frequency | Cum. percentage |
| 0-25 | 3 | 1.9 | 3 | 1.9 | 53 | 36.6 | 53 | 36.5 |
| 26-39 | 1 | 0.6 | 4 | 2.5 | 43 | 29.7 | 96 | 66.2 |
| 40-49 | 9 | 5.8 | 13 | 8.3 | 27 | 18.6 | 123 | 84.8 |
| 50-59 | 34 | 21.94 | 47 | 30.24 | 19 | 13.0 | 142 | 97.8 |
| 60-69 | 42 | 27.1 | 89 | 57.34 | 3 | 2.0 | 145 | 99.8 |
| ≥ 70 | 66 | 42.58 | 0 | 0.0 | 0 | 0.0 | - | - |
| Total | 155 | 99.92 | 155 | 100.0 | 145 | 100.0 | - | 100.0 |

The above Table 4.4 compares the estimated and the actual performance in agricultural science by the learners in grade 12 in their final year examinations. Only 1.9 percent of the agricultural science respondents (Table 4.4) were expecting to get a percentage of < 25%, but ultimately 36.6 percent fell into that category. Similarly, 91.62 percent expected a mark of more than 49 percent but only 15,1 percent achieved it.

Here is evidence of a significant difference between estimated and the actual results, indicating that learners in agricultural science have very unrealistic expectations. This overestimation of their ability can be regarded to be one of the causes contributing towards their poor performance. The possible poor performance by learners could, if they are aware of it, be used to motivate learners towards more inputs and harder work. If on the other hand, they are not aware of their shortcomings, due to an irrational overestimation of their expected performance, this is unlikely to happen. Evidence of the possible effect of learners' unrealistic assessment of their own performance is found in the correlation between the actual performance and the degree of overestimation.

This difference is illustrated in Table 4.4 and also Table 4.2. A total of 42 learners (27.1%) were expecting to get a total result of between 60 to 69% while the actual total result was only four learners (2,3%). This will be discussed in the next chapters. A better overview of this discrepancy is presented in Table 4.5 which shows the varying degrees of overestimation.

**Table 4.5:    Overestimation of performance in agricultural science**

| Percentage overestimation | No of respondents (n) | Percentage (%) |
|---|---|---|
| 0 – 5 | 25 | 17,6 |
| 6 – 10 | 3 | 2.1 |
| 11 - 20 | 15 | 10.6 |
| 21 – 29 | 27 | 19.0 |
| ≥30 | 72 | 50.7 |
| **Total** | **142** | **100.0** |

Table 4.5 shows clearly an overestimation of the results by the learners. The extent to which learners overestimated their actual performance is shown by the fact that 50,7% of the respondents expected to get at least 30 percent more in agricultural science than

they actually received. Only 19,7% had a reasonably accurate estimation of their ultimate performance in that they overestimated their performance by less than 10 percent.

## 4.4   COPING STRENGTH (APTITUDE)

Another indication of the learners' perception of their own ability to cope was obtained by asking respondents to assess their aptitude. These findings are shown in Table 4.6. If they understand and know their coping strength, they will be in a position to spend more time on the subjects they experience difficulties with and less time on those they cope easily with. Failure to know their coping strength could be an indication of a problem.

**Table 4.6:    Coping strength in agricultural science**

| Categories of aptitude | Frequency (n) | Percentage (%) | Cumulative frequency | Cumulative percentage |
|---|---|---|---|---|
| 1.   Very poor aptitude | 12 | 7.8 | 12 | 7.8 |
| 2.   Poor aptitude | 26 | 16.9 | 38 | 24.7 |
| 3.   Reasonable aptitude | 43 | 27.9 | 81 | 52.6 |
| 4.   High aptitude | 39 | 25.3 | 120 | 77.9 |
| 5.   Very high aptitude | 34 | 22.1 | 154 | 100.0 |
| **Total (N)** | **154** | **106.0** | - | - |

Regarding agricultural science 47,4% of the learners indicated their aptitude to be high and very high. When comparing this aptitude and the learners' performance in the subject in Table 4.1 the discrepancy becomes apparent since only 2.1% achieved a final mark of more than 60%. Only 24.7% of the learners judged their aptitude to be poor to very poor whilst more than 80 percent had a final mark of less than 50 percent (Table 4.1).

It is possible that the misperception of learners regarding their aptitude, or their inability to correctly assess their aptitude, was a contributing factor to their poor performance. This is a further indication of many learner s' inability to correctly assess their own capability. In Table 4.7 the coping strength in other subjects are

**Table 4.7:**     Coping strength performance categories in various subjects

| Subjects | Respondents per coping strength categories (aptitude) | | | | | | | | | | Weighted values | Ranking order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Very low | | Low | | Reasonable | | High | | Very high | | | |
| | n | % | n | % | n | % | n | % | n | % | | |
| Venda | 2 | 1.0 | 5 | 2.5 | 13 | 6.0 | 33 | 16.2 | 151 | 74.0 | 4.6 | 2 |
| English | 6 | 2.9 | 14 | 6.9 | 52 | 25.5 | 81 | 39.7 | 51 | 25.0 | 3.7 | 7 |
| Afrikaans | 18 | 11.4 | 42 | 26.6 | 43 | 27.7 | 35 | 22.2 | 20 | 12.7 | 3.0 | 13 |
| Biology | 13 | 6.8 | 15 | 7.9 | 47 | 24.6 | 84 | 44.0 | 32 | 16.0 | 3.5 | 11 |
| P/Science | 2 | 3.1 | 11 | 16.9 | 19 | 29.2 | 16 | 24.6 | 26 | 26.2 | 3.7 | 7 |
| Mathematics | 25 | 18.9 | 22 | 16.7 | 36 | 27.3 | 27 | 20.5 | 22 | 16.7 | 3.0 | 13 |
| Geography | 14 | 8.3 | 18 | 10.7 | 30 | 17.8 | 66 | 39.1 | 41 | 24.3 | 3.6 | 9 |
| Agric. Science | 12 | 7.7 | 26 | 16.9 | 43 | 27.9 | 39 | 25.3 | 34 | 2201 | 3.4 | 12 |
| B. Economics | - | - | - | - | 1 | 11.1 | 3 | 33.3 | 5 | 55.6 | 4.4 | 3 |
| Economics | - | - | 1 | 11.1 | - | - | 6 | 66.7 | 2 | 22.2 | 4.0 | 4 |
| Home Econ | - | - | - | - | - | - | 7 | 100.0 | - | - | 4.0 | 4 |
| Accounting | - | - | 1 | 11.1 | 3 | 33.3 | 3 | 33.3 | 2 | 22.2 | 3.6 | 9 |
| Tech Draw | - | - | - | - | - | - | - | - | 2 | 100.0 | 5.0 | 1 |
| Bib. Studies | 8 | 33.3 | 9 | 25.0 | 4 | 16.7 | 4 | 16.7 | 2 | 8.3 | 4.0 | 4 |

presented in order to allow a comparison with the coping strength in agricultural science.

According to the findings in Table 4.7, and judging specifically on the weighted values regarding coping strength, the coping strength in agricultural science is among the lowest (12th position out of 14 subjects), surpassed only by mathematics and Afrikaans.

In the case of mathematics which is generally accepted to be a difficult subject, this is understandable. However, in Afrikaans there appears to be a contradiction, since the general performance (Table 4.2) in Afrikaans is among the best position. This contradiction can be attributed to a general dislike of Afrikaans. This same contradiction is evident in agricultural science and could be an indication of its low popularity.

The percentage distribution of learners according to the mean coping strength in all subjects are shown in Table 4.8. The correlation between coping strength and performance (expected and actual results) in the various subjects are shown in Table 4.9 and 4.10.

**Table 4.8:    The percentage distribution of learners according to mean coping strength in all subjects**

| Categories of coping strength | Frequency (n) | Percentage (%) |
|---|---|---|
| Very poor aptitude | 15 | 14.4 |
| Poor aptitude | 16 | 15.4 |
| Reasonable aptitude | 15 | 14.4 |
| High aptitude | 31 | 30.0 |
| Very high aptitude | 27 | 26.0 |
| TOTAL | 104 | 100.0 |

As far as the mean coping strength in all subjects is concerned, 56.0% of the respondents indicated their aptitude to be high and very high. Only 29.8% of the respondents indicated their aptitude to be poor and very poor while 14.4% indicated their aptitude to be reasonable. These findings resemble those in Table 4.6 and shows that the perceived coping strength in agricultural science is marginally lower.

**Table 4.9:** Correlation between perceived coping strength and performance (actual and expected results) in different subjects

| Subject | Expected results | | Actual results | |
|---|---|---|---|---|
| | Correlation | P-value | Correlation | P-value |
| Venda | 0.27 | 0.002 | 0.27 | 0.003 |
| English | 0.38 | 0.001 | 0.10 | 0.001 |
| Afrikaans | 0.35 | 0.001 | 0.30 | 0.003 |
| Biology | 0.25 | 0.001 | 0.26 | 0.04 |
| Physical Science | 0.25 | 0.05 | 0.17 | <0.001 |
| Mathematics | 0.45 | 0.001 | 0.26 | 0.001 |
| Agricultural Science | 0.09 | 0.27 | 0.37 | 0.001 |
| Geography | 0.24 | 0.001 | 0.10 | 0.01 |
| History | - | - | - | - |
| Home Economics | 0.34 | 0.02 | 0.07 | 0.35 |
| Business Economics | 0.31 | 0.04 | 0.53 | 0.03 |
| Economics | 0.44 | 0.02 | 0.58 | 0.30 |
| Accounting | 0.78 | 0.01 | 0.35 | 0.05 |
| Techical Drawing | - | - | - | - |
| Bib. Studies | 0.41 | 0.05 | 0.28 | 0.01 |

There is no clear tendency regarding the relationship of coping strength and the expected and the actual performance. In agricultural science the correlation between the coping strength and the expected performance is not significant (r = 0,09; p = 0.27) as shown in Table 4.9 while it is highly significant (r = 0.37; p = 0. 001) in the case of the actual results. The possible explanation for this is that the lower assessment of coping strength in agricultural science may be associated with a "dislike"of the subject as mentioned earlier. However, the inconsequence in the case of other subjects could also be an indication of poor reliability as far as learners responses are concerned.

There is according to Table 4.10 no correlation (r = 0.10; p = 0.76) between the expected and the actual results in agricultural science, while a highly significance correlation exist for biology (r = 0.33; p = > 0.002). Learners expected to do well in agricultural science but they did not do well while in biology they expected to do well and the actual results confirm it. This is also the result with regard to all the other subjects where there is an indication of a correlation or significance or a highly significance correlation between the expected and the actual results.

Table 4.10:    Correlation between expected results and the actual results

| Subjects | Correlation | P-value |
|---|---|---|
| Venda | 0.16 | 0.07 |
| English | 0.07 | 0.03 |
| Afrikaans | 0.23 | 0.01 |
| Biology | 0.33 | <0.002 |
| Physical Science | 0.19 | 0.025 |
| Mathematics | 0.14 | 0.12 |
| Agricultural Science | 0.10 | 0.76 |
| Geography | 0.10 | 0.08 |
| History | - | - |
| Home Economics | 0.27 | 0.03 |
| Business Economics | 0.17 | 0.03 |
| Economics | 0.56 | 0.03 |
| Accounting | 0.60 | 0.02 |
| Technical Drawing | - | - |
| Biblical Studies | 0.15 | 0.04 |

## 4.5    CORRELATION BETWEEN EXPECTED / ESTMATED RESULTS VERSUS COPING STRENGTH IN AGRICULTURAL SCIENCE.

Table 4.7 shows the coping strength by the learners on the subject compared to the expected results. Despite the coping strength where 25% of the learners indicated a low aptitude, learners still expected to perform well in the subject. Learners' perception of their coping strength which is relatively low might have contributed towards the poor performance in the subject and there might be some other contributory factors having a negative influence on the coping strength. There is however, no correlation between coping strength and expected results ($r = 0.09$; $p= 0.27$).

## 4.6 CORRELATION BETWEEN COPING STRENGTH AND ACTUAL PERFORMANCE IN AGRICULTURAL SCIENCE

In agricultural science 47,4% (see Table 4.6) of the learners indicated their aptitude to be high and very high on the subject. If one compares this aptitude and the learners' performance on the subject in Table 4.1, one can see that there is a problem on the subject itself. Only 27,9% (see Table 4.6) of the learners indicated their aptitude to be

reasonable and the remaining 24,7% (see Table 4.6) of the learners have shown their aptitude to be poor to very poor on the subject. A total of 66% of the learners did not pass the subject while 53% indicated an acceptable coping strength. One might therefore arrive at the conclusion that the poor aptitude on the subject might have contributed towards the poor performance on the subject.

In Table 4.9 the coping strength and the actual performance indicated a highly significance correlation (r = 0.37; p = 0.001) which confirms that the poor coping strength did have a negative effect on the actual results.

## 4.7 COPING STRENGTH IN VARIOUS SUBJECTS AND EXPECTED AND ACTUAL RESULTS

### 4.7.1 Introduction

The ability to cope with the subject matter is very much important. It enables learners to succeed in the subject matter. The basis of mastering learning, and similar forms of teaching such as adaptive instruction and individualized instruction, is to make certain that adequate learning and mastery of certain concepts and skills have taken place, usually through practice. Lack of academic success in earlier grades hinders the learning of more difficult material and damages a students' perception on what he or she is capable of learning. This is an evidence to most of the subjects like mathematics that is not well taught in the lower grades. Coping with the subject must start at lower grades which will also bring an interest to that particular subject. The ability to do well in the subject is therefore related to coping in that particular subject. Next, a discussion of learners coping strength in various subjects.

### 4.7.2 Coping strength in Tshivenda

In Tshivenda, 90,2% (Table 4.7) of the learners indicated that they have a high to very high aptitude in coping with the subject. It is of no surprise why many learners performed exceptionally well in the subject as this will be seen in the next chapters. Only 9,9% of the learners indicated their coping strength to be reasonable, low and very low. This is one of the subjects where learners had shown a very positive

aptitude. The positive aptitude on the subject might have contributed towards the exceptional good performance as it will be seen in the oncoming chapters.

The weighted value for Tshivenda (Table 4.7) is 4.6 and the subject is number 2 in its ranking position. When comparing the coping strength and the expected results as shown in Table 4.2, one expected a positive and significance correlation between coping strength and the expected results.

Table 4.9 indeed, indicates a highly significance correlation between the coping strength and the expected results in Tshivenda ($r = 0.27$; $p = 0.002$). One can conclude that the good coping strength in Table 4.7 and the highly significant correlation regarding the expected results might have contributed positively towards the high passing rate where a highly significant correlation ($r = 0.27$; $p = 0.003$) between coping strength and the actual results was found (see Table 4.9).

### 4.7.3 Coping strength in English

In English, (Table 4.7) 64,7% of the learners indicated that they have a high to a very high aptitude. Only 25,5% of the learners indicated a reasonable aptitude on the subject. The remaining 9,8% of the learners indicated their aptitude to be low and very low. This differs to that of agricultural science where only 47% learners indicated an aptitude of high to very high. Table 4.7 indicates the weighted value for English to be 3.7, English holding position 7 out of 14 subjects in ranking order. Judging from the findings in Table 4.7 it indicates a good aptitude in English.

The estimated results as indicated in Table 4.3 was very high in the subject where 99% of the learners estimated to get a pass rate of between 40 - $\geq$70%. Table 4.9 shows a highly significance correlation between the coping strength and the estimated results ($r = 0.38$; $p = 0.00$). The majority of learners indicated that they have a high aptitude for English and also expected to do well. This positive attitude towards the subject resulted in a good pass rate where 87.6% of learners passed the subject.

Table 4.9 shows a highly significance correlation between coping strength and the actual performance (r = 0.10; p= 0.001). A good positive coping strength might have contributed towards the good performance in the subject.

### 4.7.4 Coping strength in Afrikaans

In Afrikaans, 38,0% of the learners indicated their aptitude on the subject to be low and very low (Table 4.7). Only 27,2% indicated their aptitude on the subject to be reasonable, while the remaining 34,9% indicated their aptitude on the subject to be high and very high. Although the aptitude in Afrikaans was fairly good, the weighted value in the subject is 3.0 and it is only in ranking position 13 (see Table 4.7).

The coping strength in Afrikaans according to Table 4.7 shows that 62,6% of the respondents showed their aptitude to be reasonable, high to very high. Their estimated performance in the subject was very high. A total of 96.5% of learners estimated to get a percentage pass rate of between 40 - ≥70% (Table 4.3).

Table 4.8 indicates a highly significance correlation (r = 0.35; p = 0.00) regarding estimated performance and the coping strength which might have contributed towards a good performance in Afrikaans with a pass rate of 67%.

Table 4.9 shows a significance correlation (r = 0.30; p = 0.03) between coping strength and the actual results in the subject. Despite a possible dislike in the subject, the relative good coping strength in the subject expressed by learners might have contributed towards the good performance in the subject.

### 4.7.5 Coping strength in Biology

In Biology 60,8% of the learners indicated their aptitude on the subject to be high and very high. Only 24,6% indicated their aptitude to be reasonable on the subject whilst the remaining 14,7% of the learners indicated their aptitude to be low and very low. Learners indicated clearly a positive aptitude on the subject while according to the weighted value (3.5) in Biology (Table 4.7) it held position 11 in ranking order.

According to Table 4.3, the perceived / estimated results by the learners indicated that 96,9% will receive a pass rate of between 40 - ≥70%. In Table 4.9 there is highly significance correlation between the coping strength and the expected results in Biology (r = 0.25; p = 0.00). This once again confirms that learners with a high aptitude towards the subject expected to do well.

With regard to the actual results where 76.8% learners' passed the subject (Table 4.2) there is a significance correlation (r = 0.26; p = 0.04) between the coping strength and the actual performance in biology as indicated in Table 4.9. A good coping strength might have contributed towards a good performance in the subject as compared with agricultural science where the coping strength was not good.

### 4.7.6   Coping strength in Physical Science

In physical science, (Table 4.7) 50,8% of the learners indicated their aptitude to be high and very high. Only 29,2% indicated their aptitude to be reasonable on the subject while the remaining 20,0% of the respondents indicated their aptitude to be low and very low on the subject. Learners doing this subject have shown a good and positive aptitude on the subject.

A total of 92.6% of the learners estimated that they will pass the subject while 80% indicated a positive aptitude towards the subject. A difference of only 12.6% exist between estimated results and coping strength and in Table 4.8 there is a significance correlation (r = 0.25; p = 0.05) between the coping strength and the estimated results in physical science namely the higher the coping strength the higher the estimated results.

However, only 38.8% of the respondents passed the examination in physical science (Table 4.2) whilst 80% of the respondents indicated a positive attitude towards the subject.

### 4.7.7 Coping strength in Mathematics

In mathematics 37,2% of the learners / respondents have shown their aptitude to be high to very high on the subject (Table 4.7). Only 27,3% indicated their aptitude to be reasonable on the subject. The remaining 35,6% has shown their aptitude to be low and very low on the subject. One concludes from this finding that the aptitude in mathematics is relatively high.

According to Table 4.3, 94.1% of the learners expected to pass the subject. A total of 64.5% of learners indicated a coping strength of reasonable, high and very high (Table 4.7). The difference between the coping strength and the estimated results was 29.6% which is very wide. The weighted value in the subject is 3.0 which is very low. The ranking position of the subject (Table 4.7) is 13 together with Afrikaans, and it is even lower than agricultural science.

Table 4.9 shows that there is a highly significance correlation between the coping strength and the expected results in mathematics ($r = 0.45$; $p = 0.00$). The higher the coping strength the higher the expected results.

The actual results as shown in Table 4.2 indicated that 30.7% of the learners got a pass rate between 40 - 69%. There is a difference of 33.8% between the coping strength and the actual performance on the subject. The correlation between the coping strength and the actual performance was not good.

Table 4.9 shows a highly significance correlation between the coping strength which is low and the actual performance in mathematics ($r = 0.26$; $p = 0.001$). The actual performance in the subject was very low and it can be compared to agricultural science by its high failure rate.

### 4.7.8 Coping strength in Geography

In Geography 63,4% of the learners have shown their aptitude to be high to very high (Table 4.7). Only 17,8% of the learners has shown an aptitude to be reasonable on the subject. The remaining 19,0% of the learners has shown their aptitude to be low to

very low on the subject. The aptitude shown by the majority learners in Geography is however positive.

Table 4.7 indicates the weighted value of 3.6 and it came position 9 in the ranking order out of 14 subjects.

The estimated performance between 40 – 70% as shown in Table 4.3 was 97.6%. Their estimations on the results and their coping strength are very high with a difference of only 16.4%. The correlation between the coping strength and the estimated performance is good and Table 4.9 shows that there is a highly significant correlation ($r = 0.24$; $p = 0.00$) between the coping strength and the estimated results in Geography.

According to Table 4.2, 70% of the learners showed a pass rate of >40%. Both the coping strength and the actual performance on the subject were very high. The differences between the coping strength and the actual performance are 11.2%. One can therefore conclude that the correlation between the coping strength and the actual performance is fairly good. This is reinforced by Table 4.9, which shows that there is a significance correlation ($r = 0.10$; $p = 0.01$) between the coping strength and the actual results in geography. A good coping strength might have contributed towards good results.

### 4.7.9   Coping strength in Home Economics

In home economics 100% of the learners have shown their aptitude on the subject to be high (Table 4.7). While in Agricultural science only 25.3% of the respondents indicated their aptitude to be high on the subject. The weighted value in the home economics is subject is 4. The subject held position 4 in the ranking order (see Table 4.7).

A total of 66.5% of the learners estimated their performance of between 40-69, as indicated in Table 4.3. Learners to a certain extent under estimated their performance although Table 4.9 shows that there is still a positive and significant correlation ($r = 0.34$; $p = 0.02$) between the coping strength and the estimated results.

According to actual results in Table 4.3 there is 83,3% learners who indicated a high aptitude towards the subject, while 100% learners indicated a high aptitude towards the subject.

### 4.7.10 Coping strength in Business Economics

In Business Economics 88.9% of the learners have shown their aptitude to be high to very high on the subject (Table 4.7). Only 11.1% have shown their aptitude to be reasonable.

The weighted value of the subject is 4.4 and the subject held position 3 in the ranking order (Table 4.7). Learners did very well in Business Economics compared to their performance in Agricultural Science.

Table 4.7 shows the coping strength (reasonable, high and very high) in Business Economics to be 100%. According to Table 4.3, 100% of the respondents expected to pass the subject. Both the coping strength and the estimated performance are very high and it is confirmed with a significance correlation ($r = 0.31$, $p = 0.04$) between the coping strength and the estimated performance in Business Economics (Table 4.9). The correlation is exceptionally good.

Table 4.10 shows that there is a good and significance correlation ($r = 0.17$, $p = 0.02$) between the estimated results and the actual results, as well as between coping strength and the actual results ($r= 0.53$; $p = 0.03$) Table 4.9.

### 4.7.11 Coping strength in Economics

In Table 4.7, 88.9% of the learners have shown their aptitude on the subject to be high to very high. Only 11.1% of the learners have shown their aptitude on the subject to be low. The aptitude shown in Economics is exceptionally high. The weighted value of economics (Table 4.7) is 4 which is better than in agricultural science where the weighted value is 3.4%. Economics held position 4 in the ranking order whilst Agricultural Science held position 12 out of 14 subjects. The coping strength as shown in Table 4.7 is 88.9%. According to the estimated results as shown in Table

4.3, 100% learners expected to pass the subject. Table 4.9 shows that there is a significant correlation (r = 0.44; p= 0.02) between the coping strength and the estimated results in economics. The actual results as shown in Table 4.3 indicate a 100% pass rate with 30% distinctions. There is however no correlation between the coping strength and the actual results in Economics (r = 0.58; p = 0.30) as indicated in Table 4.9. Learners therefore underestimated their performance by 11%.

## 4.7.12 Coping strength in Accounting

In accounting (Table 4.7) 88.8% learners have shown their aptitude on the subject to be reasonable, high and very high. The remaining 11.20% indicated their aptitude on the subject to be low. The aptitude of learners in accounting was very high. Ninety percent of the learners estimated that they will pass the subject and according to Table 4.9 there is a significance correlation (r = 0.78; p = 0.01) between the estimated results and the coping strength in accounting.

The actual performance (Table 4.2) shows a pass rate of 99.8% with 14,3% distinctions and according to Table 4.9 there is a significant correlation between the coping strength and the actual results in accounting (r = 0.35; p = 0.05).

## 4.7.13 Coping strength in Technical Drawing

In technical drawing 100.0% of the learners indicated their aptitude (copying strength) on the subject to be very high. This aptitude is very high compared to agricultural science where it is only 22,1%. The weighted value of the subject is 5.0 (Table 4.7). The subject's ranking position is number 1 out of 14 subjects. 50% of the learners estimated to pass the subject while 100% actually passed the subject in the final examination. There was however only two respondents in this category.

## 4.7.14 Coping strength in Biblical Studies

In biblical studies only 25.0% of the learners indicated their aptitude to be high to very high. Only 16.7% of the learners have indicated their aptitude to be reasonable on the subject. The remaining 58.3% have shown their aptitude to be low and very

low on the subject. The aptitude by learners in this subject was exceptionally low. The weighted value in the subject is 4 (Table 4.7) and the ranking position of the subject is number 4 out of 14 subjects. Not withstanding a low aptitude, 92.5% of the learners expected to pass the subject (Table 4.3), while 97% actually passed the subject. Learners underestimated their coping strength. A significance correlation ($r = 0.15$; $p = 0.04$) was found between the estimated and the actual results.

## 4.8 SUMMARY OF THE PERFORMANCE IN VARIOUS SUBJECTS

Good performance is the ultimate goal of every learner doing the subjects. Ornstein (1992:382) declares that "expectancy is the degree to which the learners expect to succeed at learning and sees success as being under his or her control. Satisfaction is the level of outcome and learners' satisfaction in performing tasks."Academic performance is very important. Ornstein (1992:680) goes on to say that "lack of academic success hinders learning and damages a students' perception on what he or she is capable of learning."The performance by learners in the various subjects differ from subject to subject.

### Tshivenda
Table 4.3 shows the differences between expected and the actual performances found in different subjects. Only 2 learners which forms 0.9% were expecting to fail. The performance in Tshivenda was exceptionally good with a 100% pass rate. A total of twenty distinctions which makes 9.1% were recorded.

### English
In English the overall performance was good. Of the total number of learners who wrote the examination, only 27 failed (12,4%) while a pass rate of 87.6% was achieved. The expectations were high and so were their actual performance on the subject. A total of 4.6 percent distinctions were recorded in English.

### Afrikaans
A pass rate of 67% was achieved in Afrikaans. No distinctions were achieved and recorded by the respondents in Afrikaans.

*Biology*

In biology only six learners expected to get <25% but the actual results showed 8 learners getting a percentage of <25%. There was no single learner who expected to get between 26-39% but the actual results shows that 38 learners had fallen in that category which is 19.0%. A total number of 53 learners expected to get between 40-69% but the actual results show that 153 learners happen to fall in that category. When one refers to the aptitude the learners indicated an aptitude of 61.1% which is high to very high one concludes that good work was done on the subject. The passing rate of the subject was 76.8% which is exceptionally good but no distinctions were achieved.

*Physical Science*

In physical science the expectations was very high. Of the 69 learners interviewed, 5 learners expected to get <25% in their results. The actual results shows that 9 learners got that percentage which forms 18% of the learners who performed poorly. Not a single learner expected to get between 26-39% but on the actual results 22 learners got that percentage. This makes 44% of learners who performed fairly. 19 learners did very well with a percentage pass rate of 38%. One can say that the performance was fairly good. 48,6% of the learners indicated their aptitude to be high to very high in the subject.

*Mathematics*

In mathematics the pass rate (between 40 - >70%) was 30.70% which is not better than that of agricultural science. No distinction was achieved. The aptitude shown by the learners in mathematics correspond very much with the actual results.

*Geography*

A pass rate of 70% was achieved in the subject while no distinction was achieved.

*Home economics*

In home economics 83.3% passed the subject with a pass rate of between 40-70%. No distinction was recorded in the subject.

*Business Economics*

In business economics, the expectations were very high and so was the actual results obtained. 88,9% of the learners had indicated their aptitude on the subject to be high to very high. The actual results confirms it with a 100% pass rate while 9.1% of learners achieved distinction.

*Economics*

In economics the pass rate was excellent (100%) and 3 distinctions were recorded.

*Accounting*

In accounting a 100% pass rate and one distinction was recorded.

*Technical Drawing*

In technical drawing, a 100% pass rate was recorded.

*Biblical Studies*

In biblical studies the performance was very good with a 97.3% pass rate. No distinction was recorded.

# CHAPTER 5

# DETERMINANTS OF PERFORMANCE

## 5.1    INTRODUCTION

There are factors that may play a role in the performance in the subjects by learners. Some of those factors are positive and they may play a motivative role for good performance.  Other factors are negative thus influencing poor performance in the subjects.  It is very important to try and identify those factors that determine the performance so that something can be done.  Glaxton (1990:7) states that "people are concerned that learning in school is less successful or more difficult, or more quickly forgotten."This is true and some supplementary reading needs to be done by the learners at home.  Glaxton (1990:8) goes on to say that "the best education and of our attempts to improve it must lie on an accurate understanding of the process of learning."Reading by the learners themselves is therefore very important.  Reading with interest in the subjects can influence positive performance on the subjects.

## 5.2    TIME SPENT ON DIFFERENT SUBJECTS

Learners indicated different hours that they spend reading at night (or after normal school hours) on different subjects.  There are certain subjects where more hours are spent and subjects where less hours are spent for reading purposes at night.

In Table 5.1 the average number of hours spent on reading after hours by learners are indicated.

**Table 5. 1:** Number of average hours spent by learners in different subjects per week after normal school hours

| Subjects | Learners% | Hours spent per week | Learners% | Hours per week |
|---|---|---|---|---|
| Tshivenda | 97 | 60-180 | 3 | 240-360 |
| English | 85 | 60-204 | 15 | 240-660 |
| Afrikaans | 100 | 60-180 | - | - |
| Biology | 58.7 | 60-180 | 41.3 | 240-360 |
| P/ Science | 44 | 60-180 | 56 | 240-360 |
| Mathematics | 57.1 | 60-180 | 42.9 | 240-360 |
| Agricultural Science | 58.1 | 60-180 | 41.9 | 240-360 |
| Geography | 72.2 | 60-160 | 27.8 | 240-740 |
| Home Economics | 100.0 | 60-300 | - | - |
| Business Economics | 100.0 | 120-360 | - | - |
| Economics | 100.0 | 120-360 | - | - |
| Accounting | 100.0 | 60-360 | - | - |
| Technical Drawing | - | - | - | - |
| Biblical Studies | - | - | - | - |

In Tshivenda, 97% of the learners indicated that they spend between 60-180 additional hours of reading per week. While 3% of the remaining learners doing Tshivenda indicated that they spend between 240-360 additional hours of reading per week. It is of no wonder to see a passing rate of 100% on the subject (see Table 4.2) whilst 90.2% learners (Table 4.7) also indicate a high to very high aptitude.

In English, 85% of the learners indicated to be spending between 60-204 additional hours of reading per week whilst only 15% spend 240-660 hours of reading at night. The passing rate on the subject as indicated in Table 4.2 is 87.6%.

In Afrikaans learners indicated that they spend 60-180 additional hours of reading per week. The passing rate on the subject was 67%.

In biology 58.7% of the learners indicated to be spending between 60-180 additional hours reading per week whilst 41.3% of the learners indicated to be spending between 240-360 additional hours of reading per week. The aptitude indicated by the learners on the subject was positive and the passing rate as indicated on Table 4.2 was 76.8%. Learners improved so much on the subject since their high aptitude was only 61.1%.

The more hours spent may indicate an interest on the subject or the difficulties with regard to the understanding of that subject.

In physical science the additional hours spent by the 44% of learners reading, ranges between 60-180 while 66% of the learners indicated to be spending between 240-360 additional hours of reading per week.

In mathematics, 57.1% of the learners spend between 60-180 additional hours of reading whilst 42% of the learners indicated to be spending between 240-360 additional hours of reading per week. The aptitude of learners on the subject was not very high. No wonder the passing rate of the subject is only being fair. (see Table 4.2).

In agricultural science 58.1% of the learners indicated to be spending an additional 60-180 hours of reading per week whilst 41.9% indicated to be spending between 240-360 additional hours of reading per week. Table 4.2 indicated that there is a high failure rate on the subject which means that the hours spent reading at night are not enough or the learners are reading things they do not understand. Fifty two percent of the learners had indicated their aptitude on the subject to be high to very high which is fair. Learners need to improve the passing rate on the subject and this means that they are supposed to improve studying the subject. Interest on the studying of the subject must be instilled.

Glaxton, G. (1990:8) states that "others blame the subject matter for being difficult or not structured well enough or the teacher for not explaining things clearly enough or for having expectations that are too low. The learners' minds are the only point of contact between what the school is offering and what they will take away with them in the way of comprehension, capability or quality. It is only by understanding accurately what is going on in the learners' minds as they sit in classes that we can see what effects these hypothesized causes and influences are really having."Reading related material on the subject at home involves an interest in the difficulties on that particular subject. If less hours are being spent on the subject learners have problems on, then there will be no understanding of the subject matter hence the poor performance on this subject. Lack of understanding of the subject and lack of enough

time being spent on the subject can therefore be regarded as contributory factors towards the high failure rate of the subject. In geography 72.2% of the learners indicated to be spending between 60-160 additional hours of study whilst 27.8% spend between 240-740 additional hours of study. The results in geography as indicated on Table 4.2 are very good. The aptitude of 61.7% of the learners indicated to be high to very high. The learners had a positive aptitude on the subject and the additional hours they spend could be seen in the results.

In home economics the additional hours spent by learners for studying the subject was between 60-300 hours and there was an outstanding pass rate of 100%. Learners seem not to be having problems in Home Economics hence the outstanding performance on the subject as indicated in Table 4.2.

In business economics, 100% of the learners indicated to be spending between 120-360 additional hours of studying the subject. Their actual results was outstanding with an excellent pass rate of 100% including one distinction.

In economics 100% of the learners indicated to be spending between 120-360 additional hours of study and their actual results were a 100% pass rate with three distinctions. Their results were excellent and they seem to understand their subject exceptionally well. Their aptitude was also very good since 90% indicated their aptitude to be high to very high.

In accounting 100% of the learners spent between 60-360 additional hours of studying the subject after normal school hours. Their results were outstanding with a 100% pass rate and one distinction.

Learners doing commercial subjects performed very well with outstanding results (100% pass rate). The time spent for studying commercial subjects are more or less the same as that used on agricultural science. This means that there is a problem in Agricultural Science since a high failure rate was recorded. Learners doing science subjects did well, but not as well as those in commercial subjects. Learners doing the general group of subjects also did well. agricultural science once again can therefore be singled out as the subject where learners performed poorly or unsatisfactorily.

## 5.3 NUMBER OF YEARS DOING AGRICULTURAL SCIENCE

Some of the learners doing agricultural science are doing it for the first time, and others are repeating the subject. Of the learners interviewed, 33.5% are doing the subject for the first time, 47% for the second time, 17.4% for the third time whilst 1.1% is repeating the subject for the fourth time. One can therefore conclude that there is a problem with the subject itself, because 65.5% are repeating the subject either for the second, third and even fourth time.

According to Ornstein, A.C (1992:680) "lack of academic success in a grade hinders learning of more difficult material and damages a students' perception on what he or she is capable of learning."

Although co correlation between the numbers of years spent doing the subject and the actual results was found, $(r = 0.102; p = 0.21)$ indications are that the higher the percentage of learners repeating ( 65.5 % ) the subject, the poorer the actual results. It is therefore necessary that something urgently needs to be done to improve the pass rate in agricultural science.

## 5.4 NUMBER OF PRACTICALS DONE IN AGRICULTURAL SCIENCE

Rogers as quoted by Gill,.H (1995:33) sees experimental learning as involving both hemispheres of the brain, the sequential and the creative.

This is reinforced by Ornstein (1992:329) who states that "practice must follow understanding and can enhance understanding. Students will learn more easily and remember longer if they practice what they understand or have learned through prior classroom experiences. At the same time understanding can be further increased through practice."Kicheloe,J.L (1991:7) mentioned that "scientific research provides humans with indisputable knowledge".

agricultural science as a subject has got different aspects or topics that need special attention with respect to practical training in the topics. The topics include soil

science; vegetables production; field crop production; animal husbandry; fruits and other crop production.

### i)     Practicals in soil science

In soil science 80.4% of the learners indicated that they did not do any practicals. Only 19.6% of the learners indicated to have done practicals in soil science.

### ii)    Practicals on vegetable production

Of the learners interviewed 91.8% indicated that they have not done any practical work in vegetable production while only 8.2% indicated to have done practicals in vegetable production.

### iii)   Practicals on field crops

92.4% of the learners indicated that they never had any practicals on field crops. Only 7.6% have shown to have done practicals on field crops. This further explains the problems with regard to practicals that are supposed to be done in the subject since it is a practical subject.

### iv)    Practicals on animal husbandry

Gill (1995:33) states out that "experimental learning receives its primary evaluation from the individual learner, not from the external source, since only the person involved knows if learning is meaningful, which in some way transform the learner in an irrevocable fashion."

As many as 90% of the learners indicated that they did not do any practicals on animal husbandry. Certain aspects in animal husbandry like dehorning; castration; docking; and artificial insemination need practicals. While only 10% of the learners showed that they did some practicals on animal husbandry one can conclude that learners in animal husbandry were not really informed and / or empowered to be able to do something.

v)     **Practicals on fruit production**

86.3% of the learners indicated that they did not do any practicals on fruit production. Only a small percentage (13.7%) of learners are exposed to practicals and this again could have contributed towards the high failure rate of the subject. Ornstein,A.C, (1992:9) reinforces this statement by saying that "practicals give rise to the scientific basis of teaching. A student who has difficulty in attaining a specific level of performance, or mastery, can improve by working on the necessary prerequisites through practice."

The deviations that do emerge tend to reveal that certain subjects, like agricultural science, when it is being more lecture and textbook oriented and involving a very little participation of learners in decisions affecting their learning and it leads to less learners enthusiasm, more time on instructions, and less on practicals. It is of no surprise that the performance on the subject is in fact very low.

## 5.5     PEER GROUP ATTITUDE

Peer group attitude has some influence which can be negative or positive. To be accepted is good amongst the peer group (Vernon, 1969:8). The attitude of fellow learners towards learners taking agricultural science are being demonstrated in Table 5.2.

**Table 5. 2:     Perceived attitude percentage by peer group towards learners taking agricultural science**

| Attitude categories | Frequency | Percentage |
|---------------------|-----------|------------|
| Negative | 63 | 39.4 |
| Neutral | 72 | 45.0 |
| Positive | 25 | 15.6 |
| **Total** | 160 | 100.0 |

The attitude of learners who do not take agricultural science towards those doing agricultural science as a subject differ from positive, neutral to negative. Some 39.4% of the learners indicated the attitude of the non-agricultural science learners towards

agricultural science learners to be negative as indicated by the Table 5.2. This probably might have had a negative influence on the performance in the subject, since peers need to be accepted and be recognised as people of value by their peers. Dewey ,J.(1966:17) says that "association does not create impulses or affection and dislikes but it furnishes the objects to which they attach themselves."This statement was further echoed by Ornstein (1992:680) who says that "negative peer pressure is a problem. Learners do not need to be ridiculated or rejected by their peers."This might also be contributing towards the poor performance in the subject were a total of 72 respondents (45%) indicated that the peer attitude of the non-agricultural science learners is neutral whilst only 15,6% of the learners indicated that the attitude of peers towards them is positive.

Shipley *et al* (1968:7) mentions that "it is important that the child be happy in school, that his/her life develop from day to day with a feeling of achievement, that he consider himself a person of worth, that he feels that' he is understood and appreciated, and that he has opportunities to express his creative and artistic abilities."

## 5.6     CAREER OPPORTUNITIES IN DIFFERENT SUBJECTS

In Tshivenda, 62.5% of the learners have indicated the subject to be absolutely unimportant, and unimportant in their careers. The remaining 20.1% and 17.9% of the learners indicated the subject to be important to very important respectively in their careers.

In English 1.4%; 5.7%and 8.1% of learners indicated respectively the subject to be absolutely unimportant; unimportant and slightly important in their careers. The remaining 84.9% of the learners have indicated the subject to be important to very important in their careers.

In Afrikaans, 81.6% of the respondents indicated the subject to be unimportant to absolutely unimportant in their careers. Only 18.4% indicated the subject to be important in their careers.

In biology only 18.2% of the respondents have indicated that the subject is unimportant in their careers. The remaining 81.8% of the learners have indicated the subject to be very important in their careers.

In physical science only 6,0% of the learners indicated the subject to be absolutely unimportant, unimportant and slightly important in their careers. The remaining 94.0% of the learners indicated the subject to be important and very important in their careers. Eisner (1983:79) states out that "learning should be goal directed and focused."

In mathematics, 7.9% of the respondents indicated the subject to be absolutely unimportant and unimportant. Only 10.1% indicated the subject to be slightly important in their careers. The remaining 82.0% indicated the subject to be very important in their careers.

In agricultural science 43.1% of the respondents indicated the subject to be unimportant and absolutely unimportant in their careers. The remaining 56.,9% of the respondents indicated the subject to be important and very important in their careers.

In geography, 24.9% of the respondents indicated the subject to be absolutely unimportant and unimportant in their careers. The remaining 75.1% indicated the subject to be very important in their careers.

In business economics only 11.1% of the respondents indicated the subject to be unimportant in their careers. The remaining 88.9% of the respondents indicated the subject to be important to very important in their careers. This might have contributed on the 100% pass rate of the subject

In economics, only 10% of the respondents indicated the subject to be slightly important in their careers. 90% of the learners indicated the subject to be very important in their careers. This might have contributed on the performance of this subject were a 100% pass rate was recorded.

In accounting 100% of the learners indicated the subject to be important to very important in their careers. This might have contributed on the 100% pass rate of the subject. Career opportunities are very important with respect to the subjects done by the learners.

Ornstein,,A.C, (1992:79) mentions that "value clarification is designed to help persons overcome value confusion and become more positive, purposeful and productive."

In biblical studies, 69%; 17.2% and 13.8% of the respondents have indicated the subject to be absolutely unimportant; unimportant and slightly important respectively. This makes one to conclude that learners are doing the subject because it is amongst the subjects in their curriculum.

Eisner (1983:89) says that "subject must enable children to become mappers of their own educational journey, so that when they leave school they are in a position to persue goals and interests that are important to them."

According to Eisner (1985:13) "it is what teachers do in classrooms and what students experience that define the educational process. There must be conceived opportunities for learning."Eisner,W.E, (1983:293) further mentions that "research indicates that students learn more when their academic subjects are integrated with real - life experiences."And that learning should be goal directed and focused.

In Table 5.3 respondents indicated the importance and unimportance of the subjects to further their career opportunities.

According to Table 5.3, agricultural science is the only technical mentioned subject which is being perceived by respondents as a subject that will contribute very little to further their career opportunities and their perception could have had a negative effect on the overall performance by learners in agricultural science.

**Table 5.3:** **The importance and/or unimportance of subjects as career opportunities as perceived by respondents**

| Subjects | Degrees of importance to further career opportunities | | | |
|---|---|---|---|---|
| | Unimportant | Rank order | Important | Rank order |
| Tshivenda | 62.5 | 3 | 38.5 | 10 |
| English | 15.1 | 5 | 84.9 | 5 |
| Afrikaans | 81.6 | 2 | 18.4 | 11 |
| Biology | 18.2 | 6 | 81.8 | 7 |
| Physical Science | 6.0 | 11 | 94.0 | 2 |
| Mathematics | 18.0 | 7 | 82.0 | 6 |
| Agricultural Science | 43.1 | 4 | 56.9 | 9 |
| Geography | 24.9 | 6 | 75.1 | 9 |
| Business Economics | 11.1 | 9 | 88.9 | 4 |
| Economics | 10.0 | 10 | 90 | 3 |
| Accounting | - | - | 100 | 1 |
| Biblical Studies | 86.2 | 1 | 13.8 | 12 |

There is a highly significance correlation between the career choice by the learners doing agricultural science and the coping strength, $(r = 0.33; p = < 0.001)$. The more negative learners are towards the subjects as a career opportunity the poorer their coping strength. There is also a highly significance correlation between the career choice by the learners and the estimated results by learners doing the subject, $(r = 0.266; p = 0.001)$. There is however no correlation between career choice and the actual results by learners doing agricultural science, $(r = 0.07; p = 0.37)$.

# CHAPTER 6

# CHOICE OF AGRICULTURAL SCIENCE AS A SUBJECT

## 6.1. INTRODUCTION

Choice goes hand in hand with the liking of something. One can make a choice out of interest. Learners need to be given a chance to have a choice in the subjects they would prefer to do. Sometimes learners make no choice of their preference. They may choose a subject to please their peers or their teachers. They may also be influenced by the school curriculum or told to make that choice by their parents or their teachers. Hirst and Peters (1979:95) states that some kind of liking or attraction between the persons concerned is what must be present to convert such disclosures into a personal relationship.

## 6.2 REASONS FOR CHOOSING AGRICULTURAL SCIENCE

Learners were asked the reasons for having chosen agricultural science. Their reasons are summarised in Table 6.1

Table 6. 1:    Frequency distribution according to choice

|  | Reason | Frequency | Percentage |
|---|---|---|---|
| 1. | Forced | 3 | 1.53 |
| 2. | Influenced | 51 | 26.02 |
| 3. | Forced, curriculum | 49 | 25.00 |
| 4. | Agriculture is easy | 8 | 4.08 |
| 5. | Own decision | 85 | 43.37 |
| Total | | 196 | 100.00 |

Goodland, J. (1984:29) mentions that "learners must be given a chance to make a choice. If not, teachers will frequently perceive themselves as confronting difficult problems of less motivated students. Some of our classrooms are loaded with youth who have no wish to be there, whose aim is not to learn but escape from learning."

A total of 43,4% of learners (Table 6.1) indicated that they have decided on their own to do agricultural science. Because of this it can be expected that these learners will have a positive attitude towards agricultural science. The same can probably apply to most of the 26,0% that choose agricultural science because of being influenced by friends, parents and teachers. This is also an indication that peer influence can play an important role amongst the learners.

Peer pressure can however also be a problem amongst the learners because they may end up doing things they do not have an interest in. The rest of the learners (31%)did the subject either because it was in the school curriculum, it is an easy subject and / or they were forced by their teachers. This shows that there are some learners who do not have a definite goal or they lack guidance with respect to the subject that they choose. It shows that these learners are doing the subject without interest and this might be another factor contributing to the poor performance in the subject.

One can therefore conclude that only 43,4% of the learners did the subject because they had interest in the subject.

Although 43.4% (Table 6.1) of the respondents indicated that they took agricultural science as a subject out of their own choice, and that 50.7% of the respondents overestimated their results by more than 30%, learners do not make a choice because of their coping strength in the subject.

There is no correlation between the coping strength (overestimation) and the choice of the subject by learners (r = -0.001; p = 0.99).

Table 6.2 shows the distribution of agricultural science learners according to preference ranking order of agricultural science and the actual results obtained in agricultural science.

The above findings indicate a negative relationship between subject preference and performance (actual results) (r = -0.162; p = 0.07) which implies that learners with a higher preference for agricultural science as a subject, tend to perform poorer. This is somewhat against expectations and contradict hypothesis. One possible explanation

for this is that the more intelligent agricultural science learners were subjected to more force into taking the subject than the less intelligent ones.

**Table 6. 2:** **Distribution of agricultural science learners according to preference ranking order of agricultural science and the actual results obtained in agricultural science**

| Ranking order preferences | Actual results categories | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 0 – 22 | | 23 – 37 | | 38 – 45 | | 46 – 65 | | |
| | n | % | n | % | n | % | n | % | |
| 1 | 8 | 61.54 | 4 | 30.76 | 0 | 0.00 | 1 | 7.69 | 100 |
| 2 | 9 | 42.86 | 3 | 14.29 | 3 | 14.29 | 6 | 28.57 | 100 |
| 3 | 7 | 30.39 | 8 | 34.78 | 7 | 30.44 | 2 | 8.7 | 100 |
| 4 | 6 | 20.00 | 11 | 36.66 | 7 | 23.33 | 6 | 20.00 | 100 |
| 5 | 11 | 47.83 | 4 | 17.39 | 8 | 34.79 | 2 | 8.70 | 100 |
| 6 | 3 | 20.00 | 6 | 40.00 | 3 | 20.00 | 3 | 20.00 | 100 |

According to Table 4.3 learners overestimated their results in agricultural science and a highly significance correlation ($r = 0.23$; $p = 0.004$) was also found between learners preference of the subject and expected performance. Therefore learners who indicated a preference for the subject overestimated their performance.

There is no correlation ( $r = 0.01$; $p = 0.8$) between the coping strength and preference of the subject by the learners. In Table 6.3 respondents indicated their preference for all other grade 12 subjects in relation to agricultural science.

In Tshivenda 58.70 % of the respondents indicated the preference of the subject to be highest; second highest and third highest. The remaining 41.30% have indicated the preference on the subject to be fourth highest, fifth highest and sixth highest respectively.

Table 6. 3:    Respondents preference for other subjects versus agricultural
               science

| Subjects | Ranking of subjects | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | Total |
| | Highest Ranking Order % | Second Highest % | Third Highest % | Fourth Highest % | Fifth Highest % | Sixth Highest % | |
| Venda | 32.7 | 13.5 | 12.5 | 8.2 | 14.9 | 18.3 | 100. |
| English | 39.7 | 22.9 | 11.7 | 15.0 | 8.9 | 1.9 | 100 |
| Afrikaans | 4.6 | 9.8 | 7.2 | 7.8 | 17.0 | 49.7 | 96.10 |
| Biology | 22.2 | 29.1 | 26.1 | 12.3 | 4.9 | 5.4 | 100.0 |
| Physical Science | 55.4 | 27.7 | 9.2 | 1.5 | 4.6 | 1.5 | 100 |
| Maths | 27.3 | 21.6 | 12.9 | 10.8 | 12.9 | 14.4 | 99.0 |
| Geography | 12.3 | 17.0 | 17.0 | 24.0 | 17.5 | 12.3 | 100 |
| Agricultural Science | 10.2 | 16.4 | 18.7 | 23.4 | 19.5 | 11.7 | 100 |
| Home Economics | 50.0 | - | 50.0 | - | - | - | 100 |
| Business Economics | 31.3 | 25.0 | 18.8 | 12.5 | 6.3 | 6.3 | 100.2 |
| Economics | 28.6 | 14.3 | 23.8 | 14.3 | 14.3 | 4.8 | 100.1 |
| Accounting | 45.5 | 18.2 | 9.1 | 18.2 | - | 9.1 | 100.1 |
| Technical Drawing | 100.0 | - | - | - | | - | 100 |
| Biblical Studies | 23.1 | 7.7 | 7.7 | | 30.8 | 30.8 | 100.1 |

Agricultural science, (Table 4.7) reached only the 13th position with regard to the highest preference order in relation with all other subjects. It is only Afrikaans that sets in at a lower ranking position. According to Table 6.2, only 45% of the learners indicated that preference of the subject to be highest, second highest and third highest.

In English, 74.3% of the learners indicated the subject from highest; second highest and third highest respectively. The positive preference on the subject might have contributed on the good performance that have been shown by the results. The remaining 25.7% of the learners indicated the preference of the subject to be fourth highest; fifth highest and sixth highest respectively.

In Afrikaans, 21.6% of the learners indicated their preference to be highest, second highest and third highest. The remaining 78.4% indicated their preference to be fourth highest fifth highest, and sixth highest respectively. In the actual results, (Table 4.1) 67.0% of the learners passed the subject which is contrary to their less preference in the subject.

In biology, 77.4% of the respondents indicated their preference for the subject to be highest; second highest and third highest respectively. The remaining 22.6% rated

their preference as fourth highest; fifth highest and sixth highest respectively. This high preference on the subject might have contributed to the 76,6% passing rate of the subject.

In physical science, 92.3% of the learners has indicated their rating on the subject to be highest, second highest and third highest, The remaining 7.3% rated the subject to be fourth, fifth and sixth respectively. Table 4.2 indicates the percentage pass rate on the subject to be 82% while 90% (Table 5.3) indicated the subject important to further their career. The preference on the subject does have an influence on the performance of that particular subject.

In mathematics, 61.5% of the learners indicated their preference on the subject to be highest; second highest and third highest respectively. The pass rate in mathematics however was very low as indicated in Table 4.2 where only 30.7% of the learners passed mathematics. In Table 5.3, however, 82% respondents indicated the subject important to further their career opportunities.

In geography; 46.3% of the respondents indicated their preference on the subject to be highest, second highest and third highest. The remaining 53.7% indicated their preference to fourth; fifth and sixth respectively.

In business economics 75.1% of the respondents have indicated their preference on the subject to be highest; second highest and third highest respectively. This is the subject were a 100% pass rate was achieved with a distinction. Positive preference contribute towards good performance on the subject. The remaining 24.9% of the learners indicated their preference to be fourth highest; fifth highest and sixth highest respectively.

In economics, 66.7% of the learners have indicated their preference on the subject to be highest; second highest and third highest respectively. It is one of the subjects were a 100% pass rate with 3 distinction was achieved. The remaining 33.3% of the learners indicated their preference to be fourth highest; fifth highest and sixth highest respectively.

In accounting, 73.7% of the learners indicated their preference on the subject to be highest; second highest and third highest respectively. In this subject, a 100% passing rate with one distinction was found. The performance was exceptionally good. It definitely seems as if preference has got a positive influence on the performance of the subject.

Jacobs *N.W,* (1991:61) says that "if a learners' proposed occupation; course or subjects are consistent with potential and interests, he can work enthusiastically towards realizing his occupational ideals."

Learners expressed considerable preference of certain subjects above others. The subjects they preferred most are those that are science oriented except for agricultural science and commercial subjects and they performed well in those subjects. Rustin as quoted by Nelson (1994:153) states that "we are not sent into this world to do anything into which we cannot put our hearts. We have certain work to do for our bread; and that is to be done strenuously; other work to do for our delight; and that is to be done heartily; neither is to be done by halves or shifts; but with a will."

# CHAPTER 7

# PRESENTATION OF AGRICULTURAL SCIENCE

## 7.1 INTRODUCTION

The goal of learning, to learn, cannot be achieved with methods that are also trying to achieve some of the more conventional educational aims at the same time. This is an unpalatable psychological reality that it does no good to ignore, and that once faced, opens up interesting questions. The liking of the subject by learners can start due to the way in which the subject is being presented by the teacher. Disliking of the subject can therefore take place if the subject is not well presented to learners by the teacher. Teachers therefore play an important role to create or stimulate an interest among learners in the subjects they are presenting. In Table 7.1 respondents indicated their experience on the presentation of agricultural science as a subject.

**Table 7. 1:** Presentation of the subject as perceived by respondents

| Presentation categories | Frequency | Percentage |
|---|---|---|
| 1.  Too theoretical | 139 | 87.42 |
| 2.  Theoretical | 4 | 2.52 |
| 3.  Good balance | 7 | 4.40 |
| 4.  Fairly practical | 1 | 0.63 |
| 5.  Too practical | 8 | 5.03 |
| Total | 159 | 100.00 |

Table 7.1 indicates that there is no balance between the presentation of practicals and theoretical classes of the subject. An overwhelming majority (87.42%) of the respondents indicated that the presentation of the subject is too theoretical. Only 4,40% of the respondents indicated that there is good balance between the theory and the practicals in the presentation of the subject.

## 7.2 PRESENTATION OF THE SUBJECT VERSUS THE ACTUAL RESULTS (PERFORMANCE) IN AGRICULTURAL SCIENCE

According to the actual results (Table 4.2) the pass rate in the subject was a disappointing 33.7%, (i.e. a pass rate between 40 – 69%). The presentation of the subject is more theory oriented which means that learners are out of touch with practical matters related to the subject itself. Gill (1995:77) mentions that "skills can only develop with practice. When students exhibit the ability to think for themselves about the problems and theories of their subject, teachers will be able to feel that they are meeting their responsibilities". Failure of the practicals being performed might have been a contributory factor towards the high failure rate of the subject. One can conclude that presentation does have a negative bearing on the results outcome.

There is a significant correlation (r = 0.22; p = 0.02) between the presentation of the subject and the actual performance in the subject. The more theoretically (87.4%) the presentation of the subject, the higher the failure rate (66.3%). Failure of practicals being presented in the subject might have played a role in the failure rate of the subject as indicated in Table 4.3.

## 7.3 PRESENTATION OF THE SUBJECT VERSUS THE ESTIMATED RESULTS IN AGRICULTURAL SCIENCE

The presentation of the subject which is too theoretical oriented might have jeopardized the expectations to come to fruition.

There is a significance correlation (r = 0.23; p = 0.01) between the presentation of the subject and the estimated results. The more theoretically presented the higher the expectation to pass the subject.

According to the respondents ( Table 87.4 % ) the presentation of the subject is too theoretical and only 4.4 of the learners indicated the presentation to be of a good balance between theory and practical. The expected or estimated results shows that learners had high expectation which were not brought to fruition. A high percentage of learners (83.1%) estimated to pass the subject, therefore overestimating their actual performance in the subject.

Bishop (1986:15) mentions that "rational- empirical strategy is based on the assumption that men are guided by reason, that they are rational and so will respond to rational explanations and demonstrations". He goes on to say (1986:84) that "we made an effort to lead to learners to apply the principle in very simple and practical ways – to select seeds for planting, we guide them to share what they knew and the benefit of what they did to apply scientific principles, with their classmates and neighbours."

These appears to be lacking when one looks at the actual performance results and the way the subject was presented to learners. With regard to coping strength (aptitude) and the presentation of the subject by teachers, no correlation could be found (r = 0.09; p = 0.36).

## 7.4    AVAILABILITY OF APPARATUS VERSUS ACTUAL RESULTS IN AGRICULTURAL SCIENCE

Apparatus are very much essential for practicals. They help the learners to bridge the gap between theoretical knowledge in the classroom situation and the practical knowledge in real life situation. Efficiency and effectiveness is likely to be realised in the learning-teaching situation if apparatus that will be used during practicals in the subject are present.

A total of 84.0% of the learners indicated the apparatus to be insufficient while only 16.0% of the learners indicated the apparatus to be sufficient.

Kincheloe (1991:7) states that "scientific research provides humans with indisputable knowledge. "This statement was reinforced by McIntrye *et al* (1994:92) who mentioned that "learning through practice is generally more effective if it is supported by a competent and experienced practitioner."

There is an indication of a correlation (r = 0.129; p = 0.12) although not significant between the availability of apparatus and the actual results. The lower the pass rate, the more insufficient the apparatus. Conclusion could be reached that the absence of

apparatus in the subject might have contributed towards the high failure rate in agricultural science.

Despite the insufficient apparatus learners were still optimistic of performing well in the subject. This can be seen by their estimations whereby 49% estimated to get from 50 - 69,0% and above. The availability of apparatus versus overestimation by the respondents shows no correlation ($r = 0.1$; $p = 0.23$).

No correlation coefficient ($r = 0.04$; $p = 0.60$) however was found between the availability of apparatus and the coping strength in the subject. In conclusion, the insufficiency of apparatus did have a negative influence, although not very strong, on the final exam results.

# CHAPTER 8

# TEACHERS OF AGRICULTURAL SCIENCE

## 8.1 INTRODUCTION

The presentation of the subject to the learners can contributes to the performance in the subject itself. The contribution could be either positive or negative on the performance in the subject.

Gardner,M.W (1990:5977) says that "the training, retraining and updating of practising teachers are widely recognised world-wide as essential factors in the development of teacher quality." Teacher quality is a major factor contributing to improved learning outcomes of students. It is vital and appropriate that the education and in-service training of practicing teachers receive increasing attention, if lasting and meaningful change in the subject is to occur in District 3 of the Limpopo Province.

This is reinforced by Carr, W and Kemmis, L, (1986:31) who declares that "the professionalism of the teacher, therefore does not stem from skillful mastery of existing practical knowledge or an ability to apply scientifically accredited technical rules. Rather it emerges out of the fact that teachers, like members of other professions, profess an ethic. "Teachers need to know and understand the subject they are teaching and be able to impart that knowledge to the learners. It is of no use teaching for the sake of teaching and fails to realise the outcome. The positive outcome of learning is everybody's expectations in any teaching-learning situation.

## 8.2 THE QUALITY OF TEACHERS

### 8.2.1 Introduction

Teacher quality is important in any learning-teaching situation. It is among quality teachers where one expect to get quality education which will give rise to quality

learners in the subject. Quality teachers are essential for better results to be realised. The following table shows the teaching skills of the teachers and it is a reflection of the teacher quality in the subject.

**Table 8. 1:**  **Teaching (quality) skills of teachers in agricultural science as perceived by respondents**

| Categories of teacher's skills | Frequency | Percentage |
|---|---|---|
| Very good | 21 | 14.7 |
| Good | 28 | 19.6 |
| Mediocre | 42 | 29.4 |
| Poor | 31 | 21.6 |
| Very poor | 21 | 14.7 |
| Total | 159 | 100.0 |

According to Table 8.1, only 14.7% and 19.6% respondents indicated that the teaching skills of teachers in the subject are very good and good respectively. On the other hand a total of 65.7% of respondents indicated that the skills of the teachers presenting the subject is of an average and below standard.

The correlation (r= 0.24; p= 0.03) between the teaching skills by the teachers and the coping strength by the learners in the subject is significant. Learners overestimated their coping strength despite the poor teaching skills as perceived by the learners. The poor teaching skills were reflected by the poor results in the final examination despite the overestimation by learners of their perceived coping strength in the subject.

### 8.2.2  Correlation between teaching skills by teachers and the estimated results by the learners

There is a significant correlation (r = 0.19; p = 0.02) between the teaching skills by the teachers and the estimated results by the learners. The higher learners overestimated their results ( Table 4.5 )the poorer the teaching skills of teachers (Table 8.1).

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### 8.2.3 Correlation between teaching skills by teachers and the actual results by learners

There is an indication of a possible correlation ($r = 0.13$; $p = 0.12$) between the teaching skills and the actual performance in agricultural science. The poor teaching skills (65.9%) of the teachers in the subject as indicated in Table 8.1 might have contributed towards the poor performance (66.3% respondents did not pass) in the subject as indicated in Table 4.2.

In Table 8.2 the average teaching skills of teachers in other subjects are indicated as perceived by respondents (learners).

**Table 8. 2:   Average teaching skills of teachers in other subjects**

| Categories of teacher's skills | Frequency N | Percentage % |
|---|---|---|
| Very good | 36 | 27.4 |
| Good | 16 | 12.2 |
| Mediocre | 18 | 13.7 |
| Poor | 28 | 21.4 |
| Very poor | 33 | 25.3 |
| **Total** | **131** | **100.0** |

As shown by Table 8.2, 39.6% of the respondents indicated the teaching skills by the teachers in other subjects to be good and very good. While only 34.3% (Table 8.1) indicated the teaching skills of the teachers in agricultural science to be good and very good. Although the difference is not large there is still a difference.

Teacher quality is very important in every teaching- learning situation. Every subject area has its professional association that lists goals and important knowledge in its field. Teacher quality and mastery of the subject matter is therefore very important.

Goodland, J (1984: 120) says that teachers offering certain subjects appeared to occupy positions of declining significance in the lives of the learners. The picture that emerges is of the classroom routinalized with respect to institutional practices.

The current situation indicates a lack of good quality teachers in the subject. Nelson, D. (1994:84) suggested that teachers at high school level need a far more specialized knowledge of the subject they teach rather than the range of subjects needed by the primary school teacher. There is a lack of practicals in the subject and this gives rise to a limited basis of teaching. Research done by McIntyre *et al* (1994:70) indicates that under the pupil-teacher system, the culture of teaching had been and still located in the hands of teachers themselves. Teacher centred-ness teaching is still emphasised and that might be contributing towards lack of learning through practice. McIntyre *et al* (1994:73) go on to say that "learning through practice is generally more effective if it is supported by a competent, experienced practitioner".

Hirst *et al* (1972:1989) says that educating learners suggests developing a state of mind which is valuable and which involve some degree of knowledge and understanding. The understanding should not be too narrowly specialized.

## 8.3    KNOWLEDGE OF TEACHERS IN AGRICULTURAL SCIENCE

### 8.3.1  Introduction

The teacher's knowledge can have a positive or a negative influence on the performance by learners in the subject. Good teachers who understand the subject matter and present the subject positively make learners to understand the subject matter better.

The knowledge of teachers in agricultural science as perceived by respondents is indicated in Table 8.3.

According to Table 8.3, 33.9% of the respondents indicated that teacher knowledge in the subject is high and very high.

On the other hand, 66.0% of the respondents indicated the teacher knowledge in the subject to be fair, poor and very poor and this could have contributed towards the poor performance in the subject as indicated in Table 4.3.

## Table 8. 3: Knowledge of teachers in agricultural science

| Knowledge categories | Frequency N | Percentage % |
|---|---|---|
| Very highly knowledgeable | 20 | 12.3 |
| Highly knowledgeable | 35 | 21.6 |
| Fairly knowledgeable | 62 | 38.3 |
| Poorly knowledgeable | 31 | 19.1 |
| Very poorly knowledgeable | 14 | 8.6 |
| Total | 159 | 100.0 |

### 8.3.2 Correlation between the knowledge of teachers in agricultural science and the coping strength by the learners

As many as 66% of the respondents indicated that teachers reveal a fairly, poorly and very poorly knowledge while only 34% of learners indicated the teacher knowledge to be high and very high. There is a highly significance correlation ($r = 0.2$; $p = 0.008$) between the knowledge of the teachers on the subject and the coping strength on the subject by the learners. More than 50% (Table 4.6) of learners indicated a poor aptitude towards agricultural science and 66% indicated that teachers reveal a poor knowledge in the subject. This poor knowledge on the subject by the teachers might have contributed towards the poor coping strength by the learners on the subject.

### 8.3.3 Teacher knowledge versus the actual results in agricultural science

There is a relative strong indication of a correlation ($r = 0.14$; $p = 0.08$) between teachers' knowledge on the subject and the actual results. The poorer the teacher knowledge in the subject (66%) the higher the failure rate (66.3%) and therefore the poor performance by the learners in the subject as it is indicated in Table 4.3.

## 8.4 ATTITUDE BY TEACHERS TOWARDS AGRICULTURAL SCIENCE AS A SUBJECT

### 8.4.1 Introduction

Shipley *et al* (1968:7) states that: "it is important that the child be happy in school, that his life develop from day to day with a feeling of achievement, that he considers himself a person of worth, that he feels that he is understood and appreciated and that he has opportunities to express his creative and artistic abilities." A negative attitude towards a subject by teachers may contribute a negative attitude towards the subject by learners thus contributing towards poor performance in that particular subject. It is a common knowledge that a positive attitude contribute positively on the subject.

In Table 8.4 respondents indicate their perception of teachers attitude towards agricultural science as a subject.

Table 8. 4:    Teachers' attitude in agricultural science as perceived by learners

| Categories of teacher's skills | Frequency N | Percentage % |
|---|---|---|
| Very positive | 14 | 10 |
| Positive | 36 | 25 |
| Mediocre | 43 | 30 |
| Negative | 29 | 20 |
| Very negative | 21 | 15 |
| **Total** | **143** | **100** |

Table 8.4 shows that only 35% of learners perceived teachers that display a very positive to positive attitude in agricultural science. The rest of the respondents (65%) indicated the attitude of teachers in agricultural science to be mediocre, negative and very negative. The attitude displayed by teachers in the subject might have influenced learners not to have developed a positive attitude towards the subject, hence the poor performance of only 33.7% pass rate as indicated in Table 4.2.

## 8.4.2 Correlation between teachers' attitude and the coping strength of learners in agricultural science

There is a highly significance correlation ($r = 0.25$; $p = 0.002$) between the attitudes displayed by teachers in agricultural science and the coping strength by the learners in the subject. More than 50% of learners thought that they could not cope in the subject (indicating a reasonable to poor aptitude) and because of the mediocre and negative attitude of teachers (65%) in the subject, it contributed towards the poor performance in the subject by the learners as indicated in Table 4.2.

## 8.4.3 Correlation between the attitude of teachers and the estimated results by the learners

There is a significance correlation ($r = 0.17$; $p = 0.03$) between the attitude by teachers on the subject and the estimated results by the learners. Despite the negative attitude teachers display (65%) towards agricultural science, the majority of learners still overestimated their performance. The more negative teachers attitude, the higher the learners overestimated their performance.

## 8.4.4 Correlation between perceived attitudes of teachers and the actual results in agricultural science

There is a highly significant correlation ($r = 0.135$; $p = 0.007$) between the attitude of teachers towards the subject and the actual results. A total of 65% of respondents indicated that teachers display a negative to mediocre attitude and according to the actual results (Table 4.1), 66.3% of the learners did not pass the subject. The more negative the teachers attitude towards the subject, the poorer the actual results.

In Table 8.5 the average attitude of teachers, towards all the subjects as perceived by respondents, are presented.

The table indicates the average attitudes of teachers towards different subjects as perceived by learners. A total of 63% of the respondents indicated the teachers attitude to be positive to very positive, while 37% indicated the attitudes to be

mediocre, negative and very negative respectively. This indicate a much more positive attitude related to agricultural science where only 35% respondents indicated the teachers attitude towards the subject to be positive and/or very positive.

**Table 8. 5:    Average attitudes by teachers on different subjects**

| Categories | Frequency n | Percentage % |
|---|---|---|
| Very positive | 25 | 38.46 |
| Positive | 16 | 24.62 |
| Mediocre | 12 | 18.46 |
| Negative | 6 | 9.23 |
| Very negative | 6 | 9.23 |
| Total | 65 | 100 |

## 8.5    THE ENTHUSIASM OF TEACHERS IN AGRICULTURAL SCIENCE

### 8.5.1    Introduction

Enthusiasm goes hand in hand with the zeal to do something. If someone is highly enthusiastic about something, he / she will put more efforts on that particular thing in order to accomplish the goal. If teachers can show a high enthusiasm on a subject, it might motivate learners to be enthusiastic on that particular subject which can result in a good performance in that particular subject.

### 8.5.2    Enthusiasm of teachers as perceived by learners and the coping strength of respondents in agricultural science

The survey showed that 20% and 23% of the respondents indicated respectively, that teachers teaching the subject, are very enthusiastic to enthusiastic about the subject. The remaining 57,1% indicated the enthusiasm to be mediocre, unenthusiastic and very unenthusiastic. The less enthusiasm displayed by teachers on the subject might have resulted on the negative performance by learners in the subject as it is indicated in Table 4.3.

With regard to the enthusiasm disclosed by teachers versus the coping strength of learners, a highly significance correlation (r = 0.266; p = 0.0013) was found. The majority of learners (57.1%) perceived that teachers are unenthusiastic and 53% of the learners indicated their perceived coping strength in the subject to be only reasonable and poor. The more unenthusiastic the teachers, the poorer the aptitude of learners and this might have played a role in the performance in the subject by the learners.

### 8.5.3 Correlation between enthusiasm by teachers and the estimated results by the learners.

There is a significant correlation (r = 0.17; p = 0.03) between the enthusiasm on the subject by the teachers and the estimated results by the learners on the subject. Despite the negative enthusiasm by teachers, learners still overestimated their performance in the subject. The more unenthusiastic the teachers, the higher the overestimation of their performance by the learners and this could have had a negative influence in the actual results.

### 8.5.4 Correlation between teachers enthusiasm and the actual results by learners

There is a highly significance correlation (r = 0.1; p = 0.002) between the enthusiasm disclosed by teachers on the subject and the actual results by the learners. The poor enthusiasm disclosed by the teachers (57.1%) as it is indicated in 8.5.2 might have contributed towards the poor performance (66.3%) on the subject as Table 4.3 indicates. The more unenthusiastic the teachers, the poorer the performance by the learners in the subject.

# CHAPTER 9

# CONCLUSION AND RECOMMENDATIONS

## 9.1 CONCLUSION

The importance of agriculture in the economy of South Africa cannot be over-emphasized. The future success of a sound and sustainable agricultural sector as a major role player in the economy, however also depends on well-trained agriculturists and future farmers. This can only be started successfully if correctly implemented at secondary school level.

In the new Further Educational Training (FET) Curricula Framework agricultural science is one of only 35 subjects (one of the electives) from which learners can make a choice. There is a good potential for agricultural development in the Limpopo Province and there are 347 secondary schools in the Province offering agricultural science as a subject.

The poor performance of grade 12 learners in agricultural science in District 3 of the Limpopo Province is however a serious problem of concern. This problem need to be addressed urgently to ensure that agricultural development in the Province will be sustainable in future.

The research findings clearly reveal the poor performance by learners in the subject where 66.3% (Table 4.1) of the respondents did not pass the subject. This findings is in contrast with the estimated results where only 2.5% respondents estimated that they will not pass the subject. Nearly 70% (Table 4.3) totally overestimated their performance. This overestimation happened even when 47% respondents (Table 4.6) indicated that their coping strength (ability to cope with the subject) were high to very high. A highly significance correlation was found between learners' perceived coping strength and the actual results. The poorer the aptitude in the subject the poorer the actual results. The question then arises, what factors and/or aspects could have had an effect on the learners' pass rate in agricultural science? The main aim of this study

therefore was to identify possible factors and aspects that could have contributed towards the poor performance. Those factors need to be addressed to change the situation.

The study reveals the following findings:

*i)*        *Factors playing a possible role in the performance in the subject*

- *Time spent in additional reading*

Although no correlation was found between performance and time spend on additional reading in the subject, learners indicated clearly that they spend less time on additional reading in agricultural science as compared to subjects like biology.

- *Number of years doing agricultural science (repeating the subject)*

The majority of respondents (66.5%) are repeating the subject for the second time or more. There was no correlation ($r = 0.102$; $p = 0.2$) between number of years learners were doing the subject and actual results.

- *Number of practicals done in agricultural science*

A total of 80% respondents indicated clearly that no practicals were done in agricultural science, no correlation coefficient ($r = 0.01$; 0.8) was found between the actual results and the number of practicals done in agricultural science.

- *Peer group attitude towards agricultural science*

Only 15.6% respondents experienced a positive attitude by their peer group towards the subject. This negative attitude, whereby a person is not well accepted in what he or she is doing, by his or her peer group could have a negative influence on the actual performance by the individual.

- *Career opportunities in agriculture*

The findings reveal that according to 57% of the respondents, agricultural science is the only technical subject that will contribute very little to further their career opportunities.

- *Choice of agricultural science as a subject*

Only 43% of the respondents indicated that they, out of their own choice, have chosen to do the subject. A strong indication of a negative correlation ($r = -0.162$; $p = 0.07$) was found between learners preference for the subject and the actual results which implies that learners with a higher preference for agricultural science, tend to perform poorer. This is somewhat against expectations and contradict hypothesis. A positive explanation is that the more intelligent agricultural science learners were subjected to more force into taking the subject than the less intelligent ones.

- *Presentation of agricultural science*

An overwhelming 87% of the respondents indicated that the subject is presented too theoretically. A significance correlation ($r = 0.22$; $p = 0.02$) was found between the presentation of the subject and the actual results, meaning that the more theoretical the subject is presented, the poorer the results.

- *Availability of apparatus*

A total of 84% respondents indicated that the apparatus use in presenting the subject are insufficient and a weak correlation ($r = 0.129$; $p = 0.12$) was found between the availability of apparatus and the actual results.

ii)    **The role of teachers in agricultural science**

- *Quality of teachers*

Only 34% of the respondents perceived that the teaching skills (quality) of the agricultural science teachers are good, while in the other subjects 53% of the respondents perceived the teaching skills of those teachers to be good. Although not significantly, an indication of a correlation was found ($r = 0.13$;

p = 0.12) between teachers perceived teaching skills and the actual performance. The poorer the teaching skills, the poorer the actual pass rate in agricultural science.

- *Knowledge of teachers*

A total of 34% (Table 8.3) of the respondents indicated the knowledge of teachers in agricultural science to be high and even very high. A highly significant correlation was found between teachers' knowledge and the coping strength of learners. The less knowledgeable teachers are being perceived by learners, the poorer the aptitude of learners towards the subject.

A strong indication of a correlation (r = 0.14; p = 0.08) was also found between teachers' knowledge and the actual results. The less knowledgeable the teachers, the poorer the performance by learners in the subject.

- *Attitude of teachers towards agricultural science*

Only 35% of the respondents perceived that agricultural science teachers disclose a positive attitude towards the subject. A highly significant correlation (r = 0.25; p = 0.002) was found between the attitude disclosed by teachers and the coping strength in the subject as expressed by the learners. The more negative the attitude of teachers towards the subject the poorer the coping strength of the learners. A highly significant correlation (r = 0.135; p = 0.007) was also found between the attitude teachers disclosed and the actual results meaning, the more negative the attitude of teachers the poorer the pass rate.

- *The enthusiasm of teachers in agricultural science*

According to the respondents, only 43% of teachers teaching agricultural science is enthusiastic about the subject. A highly significant correlation (r = 0.1; p = 0.002) was found between teacher enthusiasm (as perceived by learners) and the actual results, meaning that the more unenthusiastic the teachers, the poorer the actual results.

To summarize the above findings:

i)    Evidence are found that learners totally overestimated their performance in the subject. Aspects such as absence of practicals and demonstrations; the negative attitude of the peer group towards agricultural science; agricultural science perceived as a subject not able to further ones' career opportunities; learners being forced to take the subject; the subject too theoretically presented and the unavailability of apparatus did have a negative influence on the actual performance by learners in the subject.

ii)   The poor quality (teaching skills); poor knowledge; negative attitude and the absence of enthusiasm of agricultural science teachers, as perceived by learners, also negatively influenced the actual results by learners in the subject.

The abovementioned findings clearly verify the hypothesis of the study.

## 9.2    RECOMMENDATIONS

It is hereby recommended that:

- Learners should be exposed to more practicals and demonstration excursions to bridge the gap between theoretical part and the practical part of the subject.

- Learners should be exposed to the different career opportunities within the agricultural sector. Vocational guidance must be given a high priority in secondary schools.

- Learners should not be forced at all to take agricultural science as a subject.

- There should be a good balance between theoretical and practical training in the subject.

- Schools presenting agricultural science as a subject should as a matter of urgency, be provided with the necessary apparatus (or buy the apparatus) and equipments to support the training programme.

- Only teachers who have qualified as agriculturists should present the subject.

- Teachers need to be re-trained in the technical aspects of agricultural science. This training must form an integral part of an ongoing in-service training that includes training in other teaching skills. It should form a part of a well structured staff development programme within secondary schools. Knowledgeable and enthusiastic teachers with good teaching skills will have a positive effect on the attitude of teachers towards the subject and this might certainly have a positive effect on the performance by learners in the subject.

- Finally, a follow up research study amongst agricultural science teachers could reveal valuable information to further strengthen and develops agricultural science in secondary schools. This could form a solid basis for agricultural training and therefore agricultural development in the Limpopo Province of South Africa.

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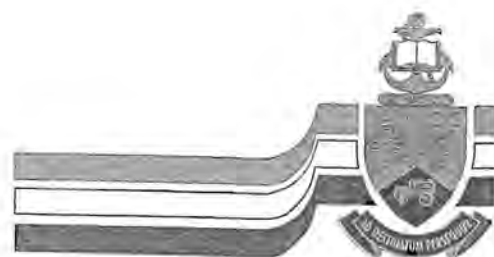
**UNIVERSITY OF PRETORIA**
**DEPARTMENT OF AGRICULTURAL ECONOMICS**
**AND RURAL DEVELOPMENT**

**QUESTIONNAIRES FOR GRADE 12 ( STD 10 )**
**LEARNERS / PUPILS DOING AGRICULTURAL**
**SCIENCE**

University of Pretoric

NAME...................................................................

RESPONDENT NO:

CARD NO:

SCHOOL NAME:..............................................

DISTRICT.......................................................

| NATURE: | URBAN | ( 1 ) |
| | SEMI URBAN | ( 2 ) |
| | RURAL | ( 3 ) |

VI

V2

V3

V4

V 5

## A. PERSONAL DETAILS

1. Sex:

| Male: | ( 1 ) |
| Female: | ( 2 ) |

V 6

2. How many times have you been doing agricultural science in grade 12?

| 1x | ( 1 ) |
| 2x | ( 2 ) |
| 3x | ( 3 ) |
| 4x etc | ( 4 ) |

V 7

3. Age of the respondent...

V 8

80

**5. Rate the subjects according to the degree you like them / preference**

Rating:     Highest              ( 1 )

            Second  highest      ( 2 )

            Third Highest        ( 3 )

            Fourth Highest       ( 4 )

            Fifth Highest        ( 5 )

            Sixth highest        ( 6 )

**Subjects:**

Venda / Tsonga / N. Sotho        [        ]

English                          [        ]

Afrikaans                        [        ]

Biology                          [        ]

Physical science                 [        ]

Biology                          [        ]

Mathematics                      [        ]

Agricultural science             [        ]

Geography                        [        ]

History                          [        ]

Home Economics                   [        ]

Business Economics               [        ]

Economics                        [        ]

Accounting                       [        ]

Technical Drawing                [        ]

Biblical Studies                 [        ]

6. **How would you rate your subjects according to the availability of apparatus or teaching materials?**

**Rating**:

| | | |
|---|---|---|
| More than sufficient | ( 1 ) |
| Sufficient | ( 2 ) |
| Insufficient | ( 3 ) |
| Very insufficient | ( 4 ) |

**Subjects:**

| Subject | | |
|---|---|---|
| Venda / Tsonga / N. Sotho | [ | ] |
| English | [ | ] |
| Afrikaans | [ | ] |
| Biology | [ | ] |
| Physical science | [ | ] |
| Biology | [ | ] |
| Mathematics | [ | ] |
| Agricultural science | [ | ] |
| Geography | [ | ] |
| History | [ | ] |
| Home Economics | [ | ] |
| Business Economics | [ | ] |
| Economics | [ | ] |
| Accounting | [ | ] |
| Technical Drawing | [ | ] |
| Biblical Studies | [ | ] |

7. **Rate the teaching skills of the teachers presenting the various subjects.**

**Rating:**  Very good    ( 5 )

Good        ( 4 )

Reasonable  ( 3 )

Poor        ( 2 )

Very poor   ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho       [

English                          [        ]

Afrikaans                        [        ]

Biology                          [        ]

Physical science                 [        ]

Biology                          [        ]

Mathematics                      [        ]

Agricultural science             [        ]

Geography                        [        ]

History                          [

Home Economics                   [        ]

Business Economics               [

Economics                        [        ]

Accounting                       [        ]

Technical Drawing                [        ]

Biblical Studies                 [

8. **How do you rate the standard of the various subjects ( all subjects ) in your school?**

|  |  |  |
| --- | --- | --- |
| **Rating:** | Very high | ( 5 ) |
|  | High | ( 4 ) |
|  | Fair | ( 3 ) |
|  | Low | ( 2 ) |
|  | Very low | ( 1 ) |

**Subjects:**

Venda / Tsonga / N. Sotho  [

English  [

Afrikaans  [

Biology  [

Physical science  [

Biology  [

Mathematics  [

Agricultural science  [

Geography  [

History  [

Home Economics  [

Business Economics  [

Economics  [

Accounting  [

Technical Drawing  [

Biblical Studies  [

9. **Rate the teachers offering the various subjects according to what you think their attitudes towards Agricultural Science are.**

| Rating: | Very positive | ( 5 ) |
| | Posetive | ( 4 ) |
| | Neutral | ( 3 ) |
| | Negative | ( 2 ) |
| | Very negative | ( 1 ) |

**Subjects:**

| | |
| --- | --- |
| Venda / Tsonga / N. Sotho | [ |
| English | [ |
| Afrikaans | [ |
| Biology | [ |
| Physical science | [ |
| Biology | [ |
| Mathematics | [ |
| Agricultural science | [ |
| Geography | [ |
| History | [ |
| Home Economics | [ |
| Business Economics | [ |
| Economics | [ |
| Accounting | [ |
| Technical Drawing | [ |
| Biblical Studies | [ |

10. **Rate the teachers teaching the various subjects according to the degree they are respected by pupils / learners.**

**Rating:** Very high respect ( 5 )
High respect ( 4 )
Fair respect ( 3 )
Low respect ( 2 )
Very low respect ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho    [

English    [

Afrikaans    [

Biology    [

Physical science    [

Biology    [

Mathematics    [

Agricultural science    [

Geography    [

History    [

Home Economics    [

Business Economics    [

Economics    [

Accounting    [

Technical Drawing    [

Biblical Studies    [

**11. Rate the knowledge of the teachers with special reference to the subjects they teach.**

Scale:  Very highly knowledgeable  ( 5 )
           Highly knowledgeable  ( 4 )
           Fairly knowledgeable  ( 3 )
           Poorly knowledgeable  ( 2 )
           Very poorly knowledgeable  ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho    [

English    [

Afrikaans    [

Biology    [

Physical science    [

Biology    [

Mathematics    [

Agricultural science    [

Geography    [

History    [

Home Economics    [

Business Economics    [

Economics    [

Accounting    [

Technical Drawing    [

Biblical Studies    [

**12. Rate the enthusiasm of the teachers in the different subjects.**

**Scale:**  Very enthusiastic       ( 5 )

Enthusiastic               ( 4 )

Neutral                    ( 3 )

Unenthusiastic             ( 2 )

Very unenthusiastic        ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho          [

English                             [

Afrikaans                           [

Biology                             [

Physical science                    [

Biology                             [

Mathematics                         [

Agricultural science                [

Geography                           [

History                             [

Home Economics                      [

Business Economics                  [

Economics                           [

Accounting                          [

Technical Drawing                   [

Biblical Studies                    [

## 13. Rate the subjects in terms of the awards that are won those subjects

**Scale:**  Very good  ( 5 )

Good  ( 4 )

Fair  ( 3 )

Poor  ( 2 )

Very poor  ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho  [

English  [

Afrikaans  [

Biology  [

Physical science  [

Biology  [

Mathematics  [

Agricultural science  [

Geography  [

History  [

Home Economics  [

Business Economics  [

Economics  [

Accounting  [

Technical Drawing  [

Biblical Studies  [

**14. Give the percentage ( % ) you are expecting to get at the end of the year in your various subjects**

**Subjects:**

Venda / Tsonga / N. Sotho     [

English     [

Afrikaans     [

Biology     [

Physical science     [

Biology     [

Mathematics     [

Agricultural science     [

Geography     [

History     [

Home Economics     [

Business Economics     [

Economics     [

Accounting     [

Technical Drawing     [

Biblical Studies     [

15. **Rate the subjects according to the provision of textbooks to those subjects**

**Scale:** Very good      ( 5 )

           Good           ( 4 )

           Fair/ Mediocre      ( 3 )

           Poor           ( 2 )

           Very poor        ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho      [

English      [

Afrikaans      [

Biology      [

Physical science      [

Biology      [

Mathematics      [

Agricultural science      [

Geography      [

History      [

Home Economics      [

Business Economics      [

Economics      [

Accounting      [

Technical Drawing      [

Biblical Studies      [

**16. How would you rate the subjects in terms of the availability of reference materials?**

**Scale:**  Well provided        ( 3 )

Partially provided    ( 2 )

Poorly provided       ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho        [

English        [

Afrikaans        [

Biology        [

Physical science        [

Biology        [

Mathematics        [

Agricultural science        [

Geography        [

History        [

Home Economics        [

Business Economics        [

Economics        [

Accounting        [

Technical Drawing        [

Biblical Studies        [

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## 17. Rate the subjects in terms of their importance for career choice opportunities

**Scale:**

| | |
|---|---|
| Very important | ( 5 ) |
| Important | ( 4 ) |
| Slightly important | ( 3 ) |
| Unimportant | ( 2 ) |
| Absolutely unimportant | ( 1 ) |

### Subjects:

Venda / Tsonga / N. Sotho     [

English     [

Afrikaans     [

Biology     [

Physical science     [

Biology     [

Mathematics     [

Agricultural science     [

Geography     [

History     [

Home Economics     [

Business Economics     [

Economics     [

Accounting     [

Technical Drawing     [

Biblical Studies     [

**18. Rate your aptitude or strength in coping with the various subjects ( all subjects )**

**Scale:**  Very high aptitude    ( 5 )
High aptitude    ( 4 )
Reasonable aptitude    ( 3 )
Poor aptitude    ( 2 )
Very poor aptitude    ( 1 )

**Subjects:**

Venda / Tsonga / N. Sotho    [

English    [

Afrikaans    [

Biology    [

Physical science    [

Biology    [

Mathematics    [

Agricultural science    [

Geography    [

History    [

Home Economics    [

Business Economics    [

Economics    [

Accounting    [

Technical Drawing    [

Biblical Studies    [

**19. In the various subjects, put down the numbers of hours you spend per week reading at night when you are back from school, not counting the actual class time**

**Subjects:**

Venda / Tsonga / N. Sotho      [

English      [

Afrikaans      [

Biology      [

Physical science      [

Biology      [

Mathematics      [

Agricultural science      [

Geography      [

History      [

Home Economics      [

Business Economics      [

Economics      [

Accounting      [

Technical Drawing      [

Biblical Studies      [

# KEY SCALE QUESTIONS ( 04 – 11 )

## SUBJECTS

| | Q.4 | | Q.5 | | Q.6 | | Q.7 | | Q.8 | | Q.9 | | Q.10 | | Q.11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Venda/Tsonga/N.Sotho | | V 9 | | V24 | | V39 | | V54 | | V71 | | V86 | | V101 | | V116 |
| English | | V10 | | V25 | | V40 | | V55 | | V72 | | V87 | | V102 | | V117 |
| Afrikaans | | V11 | | V26 | | V41 | | V56 | | V73 | | V88 | | V103 | | V118 |
| Biology | | V12 | | V27 | | V42 | | V57 | | V74 | | V89 | | V104 | | V119 |
| Physical Science | | V13 | | V28 | | V43 | | V58 | | V75 | | V90 | | V105 | | V120 |
| Mathematics | | V14 | | V29 | | V44 | | V59 | | V76 | | V91 | | V106 | | V121 |
| Agric. Science | | V15 | | V30 | | V45 | | V60 | | V77 | | V92 | | V107 | | V122 |
| Geography | | V16 | | V31 | | V46 | | V61 | | V78 | | V93 | | V108 | | V123 |
| History | | V17 | | V32 | | V47 | | V62 | | V79 | | V94 | | V109 | | V124 |
| Home Economics | | V18 | | V33 | | V48 | | V63 | | V80 | | V95 | | V110 | | V125 |
| Bus. Economics | | V19 | | V34 | | V49 | | V64 | | V81 | | V96 | | V111 | | V126 |
| Economics | | V20 | | V35 | | V50 | | V65 | | V82 | | V97 | | V112 | | V127 |
| Accounting | | V21 | | V36 | | V51 | | V 66 | | V83 | | V98 | | V113 | | V128 |
| Tech.Drawing | | V22 | | V37 | | V52 | | V67 | | V84 | | V99 | | V114 | | V129 |
| Biblical Studies | | V23 | | V38 | | V53 | | V68 | | V85 | | V100 | | V115 | | V130 |

Respondent no.       V 69

V70

Card no.

# KEY SCALE QUESTIONS ( 12 – 19 )

## SUBJECTS

| SUBJECTS | Q.12 | | Q.13 | | Q.14 | | Q.15 | | Q.16 | | Q.17 | | Q.18 | | Q.19 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Venda/Tsonga/N.Sotho | | V 131 | | V148 | | V163 | | V178 | | V193 | | V208 | | V225 | | V 240 |
| English | | V132 | | V149 | | V164 | | V179 | | V194 | | V209 | | V226 | | V241 |
| Afrikaans | | V133 | | V150 | | V165 | | V180 | | V195 | | V210 | | V227 | | V242 |
| Biology | | V134 | | V151 | | V166 | | V181 | | V196 | | V211 | | V228 | | V243 |
| Physical Science | | V135 | | V152 | | V167 | | V182 | | V197 | | V212 | | V229 | | V244 |
| Mathematics | | V136 | | V153 | | V168 | | V183 | | V198 | | V213 | | V230 | | V 245 |
| Agric. Science | | V137 | | V154 | | V169 | | V184 | | V199 | | V214 | | V231 | | V246 |
| Geography | | V138 | | V155 | | V170 | | V185 | | V200 | | V215 | | V232 | | V247 |
| History | | V139 | | V156 | | V171 | | V186 | | V201 | | V216 | | V233 | | V248 |
| Home Economics | | V140 | | V157 | | V172 | | V187 | | V202 | | V217 | | V234 | | V249 |
| Bus. Economics | | V141 | | V158 | | V173 | | V188 | | V203 | | V218 | | V235 | | V250 |
| Economics | | V142 | | V169 | | V174 | | V189 | | V204 | | V219 | | V236 | | V251 |
| Accounting | | V143 | | V160 | | V175 | | V 190 | | V205 | | V220 | | V237 | | V252 |
| Tech.Drawing | | V144 | | V161 | | V176 | | V1191 | | V206 | | V221 | | V238 | | V253 |
| Biblical Studies | | V145 | | V162 | | V177 | | V192 | | V207 | | V222 | | V239 | | V254 |

Respondent no.    V 146

Card no.    V 147

Respondent no.    V 223

Card no.    V 224

20. **Do you like Agricultural Science as a subject ?**

Like it very much     ( 5 )

Like it              ( 4 )

Neutral            ( 3 )

Dislike it         ( 2 )

Dislike it very much   ( 1 )

21. A. **How many practical did you have in Agricultural Science in the following sections / topics? ( That is in Std 9 and 10 / Grade 11 and grade 12 )**

| Topic | | |
|---|---|---|
| Soil Science | | V256 |
| Vegetables | | V257 |
| Field crops | | V 258 |
| Anima; husbandry / nutrition | | V259 |
| Fruits | | V 260 |
| Others............................................... | | V 261 |

21. B **Indicate the quality of practicals that you have done ( See 21. A )**

| | | |
|---|---|---|
| Very good | ( 5 ) | V 262 |
| Good | ( 4 ) | V 263 |
| Fair | ( 3 ) | V 264 |
| Poor | ( 2 ) | V 265 |
| Very poor | ( 1 ) | V 266 |

**21.C. How many practicals would you have preferred to have done?**

| Soil Science | | | V267 |
|---|---|---|---|
| Vegetables | | | V 268 |
| Field crops | | | V 269 |
| Animal husbandry / nutrition | | | V 270 |
| Fruits | | | V 271 |
| Other............................................................ | | | V 272 |

**22.A. How many practicals per year did you do in the following subject?**

| Biology | | | V 273 |
|---|---|---|---|
| Physical Science | | | V 274 |
| Mathematics | | | V 275 |
| Geography | | | V 276 |
| Technical Drawing | | | V 277 |

**22.B. How many practicals would you have liked to have done in the following subjects?**

| Biology | | | V 278 |
|---|---|---|---|
| Physical Science | | | V 279 |
| Mathematics | | | V 280 |
| Geography | | | V 281 |
| Technical Drawing | | | V 282 |

**23. How do you rate the quality of practicals using the following scale?**

Scale: Very good ( 1 )

Good ( 2 )

Fair ( 3 )

Poor ( 4 )

Very poor ( 5 )

**Subjects:**

| | |
|---|---|
| Home Economica | V 283 |
| Biology | V 284 |
| Physical Science | V 285 |
| Mathematics | V 286 |
| Geography | V 287 |
| Technical Drawing | V 288 |

**24 On how many excursions to Agricultural related institutions have you been during the last two years?**

V 289

V 290

V 291

**25. How many of these excursions were, from an educational point of view:**

| | | |
|---|---|---|
| Very good | | V 292 |
| Good | | V 293 |
| Reasonable | | V 294 |
| Poor | | V 295 |
| Very poor | | V 296 |

**26. As an Agricultural Science pupil / learner, what is your experience on the attitude of other learners who do not do Agricultural Science towards you?**

**Scale:** It is positive ( 3 )

It is neutral ( 2 )  V 297

It is negative ( 1 )

**27. How do you rate the presentation of Agricultural Science by teachers using the following scale:**

**Scale:**

| 1 | 2 | 3 | 4 | 5 | V |
|---|---|---|---|---|---|

Too theoretical          Good balance          Too practical

## 28. List in order of status the following professions:

**Scale:**

| | | |
|---|---|---|
| Very high status | ( 5 ) |
| High status | ( 4 ) |
| Reasonable status | ( 3 ) |
| Low status | ( 2 ) |
| Very low status | ( 1 ) |

**Professions:**

| | |
|---|---|
| Agricultural Officer | V 299 |
| Engineer | V 300 |
| Social Worker | V 301 |
| Lawyer | V 302 |
| Teacherd / Educator | V 303 |
| Police Officer | V 304 |
| Motor Mechanic | V 305 |
| Chemist | V 306 |
| Artisan | V 307 |
| Horticulturist | V 308 |
| Other, specify............................................... | V 309 |

29. **Are you able to apply in practice that which you are being taught in agricultural science?**

Scale: Yes       ( 3 )

      Partially       ( 2 )                          **V 310**

      No          ( 1 )


30. **Which of the following applied to mostly to you as far as your choice of Agricultural Science as a subject was concerned?**

Decided on my own                              ( 6 )

Influenced by friends/teachers/parents        ( 5 )

Forced by subject choice in the school        ( 4 )

Agric. Science was the easiest subject in the school    ( 3 )       **V 311**

Forced by teachers to take it                    ( 2 )

Others, specify...................................      ( 1 )


31. **What is your Agricultural background?**

Grown up on the farm          ( 1 )

Parents live on the farm        ( 2 )                 **V 312**

Work on the farm during holidays ( 3 )

Used to work on the farm       ( 4 )

## PLANNING / ORGANISING

**32. What do you intend doing when you finish school?**

Tertiary education    ( univ )     ( 6 )

Tertiary education    ( diploma)    ( 5 )

Clerical                       ( 4 )

Artisan                       ( 3 )            **V 313**

Private                       ( 2 )

Others, specify .................... ( 1 ).............................

.................................................................

.................................................................       **V 314**

.................................................................

**33. If you were given the opportunity to further your qualifications at the University, which speciality would you follow/ choose?**

**Ranking order of preference:**

Highest preference ( 1 )

Second preference ( 2 )

Third preference    ( 3 )

Fourth preference  ( 4 )

Fifth preference    ( 5 )

**Specialisation**

| | |
|---|---|
| **Agricultural Science** | V 315 |
| **Medicine** | V 316 |
| **Natural Science** | V 317 |
| **Economic Science** | V 318 |
| **Engineering** | V 319 |
| **Law** | V 320 |
| **Social Science** | V 321 |
| **Other, specify**................................. | V 322 |

34. What do you think must be done to improve the passing rate of Agricultural

Science?

..............................................................................................................................

..............................................................................................................................

V 323