EFFECTIVENESS OF ESP COMMUNICATION SKILLS IN IMPROVING LEARNER COMMUNICATIVE PERFORMANCE DURING TRAINING

BY

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DECLARATION

I, FOSTER MALILWE, do solemly declare that this dissertation, except in cases where quotations are made and in such cases acknowledgement of sources of the material has been indicated, represents my own work which has not been previously submitted for a degree at this or any other University.

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APPROVAL

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ABSTRACT

Prior to 1985 the communication skills syllabi of Zambia's Department of Technical Education and Vocational Training (D.T.E.V.T.) were biased towards general English as taught at secondary school. This was so despite the long standing policy of the Department to teach language skills aimed at meeting student academic and occupational requirements in their fields of specialisation. Because of this shortcoming complaints abounded from employers, students themselves and teachers.

In order to redress the situation, D.T.E.V.T. authorities in 1980 recruited a Key English Language (KELT) advisor to among other things design syllabi which would reflect specific learner needs in terms of study skills and language of work in their fields of specialisation, and to establish a staff development programme to enable communication skills teachers to comprehend the new syllabi and effectively function in using ESP methodology. This marked the birth of ESP communication skills in Zambia. The ESP communication skills syllabi were finally implemented in 1985.

Given the fact that the syllabi have been in use for over nine years and that no one has yet sought empirical evidence to establish their viability, this study therefore intends to find out if the syllabi are achieving what they are meant to achieve in terms of equipping trainees with necessary

language skills in order to function effectively during training. Such a study is important because it throws some light on the strengths or weaknesses of the syllabi and hence leads to suggestions how they could be improved.

The work is divided into four chapters. Chapter one is more of an introductory chapter giving the back ground of the communication skills programme in Zambia and finally condenses into a specific statement of the problem to be explored. Chapter two surveys some of the literature available on ESP communication skills. The third chapter elucidates the methodology employed during the study noting its strengths and limitations. The final chapter discusses and summarises the findings and makes recommendations.

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However, I remain solely responsible for any defects that are to be encountered in this work.

DEDICATION

THIS WORK IS DEDICATED TO MY

CHILDREN

WIFE

PARENTS

AND OTHERS WHO MATTER

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CHAPTER ONE

1. INTRODUCTION

1.1 BACKGROUND

The main responsibility of Zambia's Department of Technical Education and Vocational Training (DTEVT) is to provide manpower training for the country's needs in many spheres up to middle management level. The Department runs a number of institutions offering craft, technician, commercial and education level courses leading to the award of certificates, advanced certificates and diplomas. Eligible students in these institutions must be Grade Twelve (12) with an appropriate grade in English Language and any other subject appropriate to their field of study. Trainees in all courses receive tuition in English for Specific Purposes Communication Skills (ESPCS). At independence in 1964 the Zambian Government adopted English as the official language through which all official business in the numerous areas of national activity would be conducted. In 1965 the Government adopted English as the medium of instruction in all educational institutions and it is taught as a subject at all levels. Because of its status in Zambia, English plays a very important role in deciding certification and general progress in academic and employment spheres.

The 1981 DTEVT Syllabi acknowledged the fact that trainees in its institutions would be those who had been educated in the medium of English and had passed English at Grade Twelve level. In the DTEVT, Communication Skills in English is taught in place of general English taught at pre-tertiary level. This is with a view to helping trainees study effectively in their fields of specialisation. The Commission for Technical Education - forerunner to the DTEVT - in its statement of policy and intent (1969) stated that its trainees would be taught 'operational' English to help them effectively communicate in their areas of specialisation during training. This stand by the Commission showed the desire to use the English Language purposefully. This stand is still maintained by DTEVT.

However, the emphasis of using communication skills to understand the subject matter of the field of specialisation during training was weakened by the lack of corresponding material and methodology divorced from the general English Language learning and teaching approach. Syllabus modules had such objectives as to develop a love of reading for the pleasure it provides. To achieve such objectives grammar books and other texts not related to fields of specialisation were used.

1.2 What ESP is About

ESP is an approach to language learning in which all decisions on content and method of delivery are based on the learner's need for learning. Munby (1978) says ESP courses are those in which the syllabus content and materials are determined by prior analysis of the communicative needs of the learner. The two major categories of ESP are English for Occupational Purposes (EOP), in which the learner needs English to perform part of his overall occupational duties, and English for Academic Purposes (EAP), in which a learner needs English to pursue part of or all his studies.

In trying to clarify what ESP is about, Hutchinson and Waters (1987) look at its position in the general English Language Teaching (ELT) situation. The highest level in the ELT situation shows individual ESP courses of English for Medical Studies (EMS) or English for Technicians. These are divided into two main types of ESP, differentiated according to whether the learner requires EAP or EOP. At the next level are ESP courses by the nature of the learners' specialisations. The categories identified are English for Science and Technology (EST), English for Business and Economics (EBE) and English for Social Sciences (ESS). The following level shows ESP as a branch of English as a Second Language (ESL) and English as a Foreign Language (EFL) which are themselves the main branches of English Language Teaching. It is in the light of this analysis that ESP should be seen as an approach to language learning and teaching which is directed by specific and apparent reasons for learning.

1.3 THE ADVENT OF ESPCS IN DTEVT

The teaching of ESPCS in Zambia in general and DTEVT in particular is a relatively new phenomenon. The type of Communication Skills taught prior to 1985, despite the long standing policy of the Department and its forerunner the Commission for Technical Education, was directed towards general English and not towards specific subject specialisation requirements and subsequent occupational needs.

In order to redress the situation DTEVT took appropriate steps by recruiting a Key English Language Teaching (KELT) advisor in 1980 to design ESPCS syllabi, for each course, which would reflect learner needs in terms of study skills and language of work, and to develop teaching materials to accompany the syllabi. In May 1984 the new syllabi were ready and accepted by the DTEVT. In January 1985, all new trainees in DTEVT Institutions started on the new syllabi. The KELT project also included a comprehensive training programme locally and overseas for Communication Skills teachers to enable them to effectively function in using the ESPCS methodology.

1.4 STATEMENT OF THE PROBLEM

In the light of what has been outlined above, this study will aim at assessing the effectiveness of ESPCS in the DTEVT in meeting student communicative needs in their

areas of specialisation during training. The study will attempt to answer the question:
"Does ESPCS improve student communicative performance in their areas of specialisation during training?"

The answer to this question will determine whether or not the introduction of the new CS Syllabi has redressed the problems previously experienced.

1.5 HYPOTHESIS

The hypothesis to be advanced by this study will be that:-

> "Students exposed to the ESPCS significantly improve in communicative performance necessary in their fields of specialisation during training".

This hypothesis should be understood to mean that ESPCS has the capability to equip students with the necessary receptive and productive language skills that would improve their ability to gain maximum access to all available training materials that would in turn enable them to obtain or give information as may be required by their course of specialisation during training. The hypothesis, therefore, suggests that ESPCS is not an end but a means to an end.

1.5.1 OPERATIONAL HYPOTHESES

In order to test the 'stem' hypothesis at 1.5., the

following data identification operational hypotheses will be advanced for each sample.

i) The mean score of post-test 2 is significantly greater than that of pretest 1.

ii) The mean score of posttest 1 is significantly greater than that of pretest 1.

iii) The mean score of pretest 2 does not significantly differ from that of pretest 1.

iv) The mean score of posttest 2 is significantly greater than that of pretest 2.

v) The mean score of posttest 1 is significantly greater than that of pretest 2.

vi) The mean score of posttest 2 does not significantly differ from that of posttest 1.

1.6 RATIONALE

Any syllabus that is implemented is suppcsed to be purposeful. Whether cr not the purposes for which such a syllabus is meant are achieved may not always be apparent.

A need therefcre arises for the evaluation of such a syllabus.

Evaluation is a process that pervades curriculum decision making. The very act of deciding on content, activities and sequencing materials requires one to consider and evaluate the utility of other alternatives.

Eisner (1979) notes that the conclusion that a new programme is needed is a consequence of having judged that there is inadequacy in the old one and that a new one holds promise for significant educational gain. Because of the realisation that the communication skills syllabi the DTEVT was offering its trainees were ill-conceived and hence inadequate for meeting their academic and subsequent occupational needs, a new syllabus - ESPCS was introduced.

Any instructional programme, if it is to pay dividends, must be properly organised and implemented with the guidance of rational principles. The syllabus should contain a set of clearly articulated objectives which serve as a criterion for subsequent decision making. The objectives should be generated from data that identify the needs of the learner and the situation in which he operates and will operate. These objectives must be teachable and attainable by instructional means. Above all the syllabus must posses the means to evaluate the degree to which it has attained its stated objectives.

The notion of evaluation, though an old one, is not a commonly understood term by those involved in the teaching and training of other people. In a very broad sense evaluation in training can be used to refer to the process of obtaining information usually for trainers and administrators about effects of training

activities. It may be conducted by use of evaluation devices such as tests or examinations to measure an infinite number of training aspects.

For the purpose of this study, however, evaluation is the measurement of the extent to which a given group of learners have mastered communicative language skills that have been imparted to them in a carefully organized training programme over a specified period of time for a specific purpose of a particular field of specialisation during training.

It must be borne in mind that ESPCS courses are those where syllabi and teaching - learning materials are determined by prior analysis of the communicative needs of the learner. For example the communicative needs of a personal secretary may include taking dictation, recording telephone messages and drafting official correspondence such as memoranda and letters. Evaluation in ESPCS should therefore be in line with the requirements of the trainee during and after training. Allison and Webber(1984) observe that a specification of what to test involves listing tasks that the learner should be able to perform. In a course of communication skills for academic purposes, examples of tasks might be to recognise and to note down main points in a lecture or written text, to read a specialist text in order to locate and/or extract specific information, or to find and

consult texts in the library. The learner's ability should be tested as directly as possible using realistic tasks. Direct testing of relevant abilities is an ideal by which we may approximate the learners' capability by asking them to carry out specialist target oriented activities in a test situation.

In other words the evaluative tests must be communicative. Wesche (1983) is of the view that communicative tests test competences other than grammar; they test abilities of target language needs, performance in a range of situations and for particular objectives. These tests must be broad-based by being accountable for in the communicative competence objective. This broad base must also be taken into account in the range of situations emphasising that communicative testing must be context based; this context must be within the envisaged target situation. Alderson (1988) notes that performance orientation is justified in the sense that language testing is beginning to show increasingly authentic purposes for language use in that the tasks learners have to carry-out on tests increasingly reflect the sort of things they might have to do with the language in the real world. As mentioned earlier on, this study is interested in evaluating whether the ESPCS in DTEVT is meeting, during students' training, the objectives for

which it was implemented.

It is summative evaluation and product evaluation in the sense that we are looking at results at the end of a specific period of tuition; formative and process evaluation in that the exercise covers only part of a continuum. The outcome at the end of this period could be used to redefine goals and modify the teaching process. Since no such study has been undertaken from the time the syllabi were implemented, the study is relevant for the purpose of obtaining empirical evidence on whether communication skills of trainees in their areas of specialisation do actually improve. Relevant conclusions will be drawn and recommendations to relevant authorities and other interested parties will be made.

1.7 Scope and Limitation of the Study

In view of the novelty of the teaching of ESPCS in the DTEVT institutions, the study would have yielded more fruit if all institutions and fields of specialisation were included in the inquiry. This could not be done due to costs that would have been involved given the fact that the institutions are scattered all over the country. Because of this the study confined itself to Trades Training Institutions of the Department and two areas of specialisation.

Since the study is only interested in the communicative performance of trainees during training, it therefore

means that the results can only be generalised to the target population within the confines of the Institutions during training. It should also be noted that this study is not looking at the performance of trainees in the content material of their subjects of specialisation since it is not a joint team teaching evaluating project with a specialist subject teacher. Hence its results should only be generalised in terms of communicative performance in the areas of specialisation.

CHAPTER 2

2. REVIEW OF RELATED LITERATURE

2.1 Origins of ESP

It is not secret knowledge that the advent of ESP has been partly attributed to technological and commercial demands dictated by the post world war II era in which scientific, technological and commercial activities on an international scale demanded an international language. These demands naturally fell on English being the language of the world's leading Industrial power - USA. Many people wanted to learn the language as a key to international currencies and technology. People like business men wanted to sell their products, technicians wanted to read instructional manuals, doctors wanted to keep abreast with latest developments in their fields and students, whose courses of study included textbooks and journals only available in English. As a result pressure was exerted on the language teaching profession to design courses tailored to meet the various specific needs of learners.

Developing concurrently with technological and commercial demands on English was the shifting of emphasis of linguistic studies from defining the formal features of language usage to discovering how language is actually used in a communicative event (Widdowson: 1978). The discovery that language use varies considerably in a number of ways from one context to another led to the emergence of the view that there are differences in say the English of Commerce and that of Engineering or Medicine.

This realisation naturally fitted in the development of English courses for specific groups of learners.

Also gaining ground was the view that the English needed for a particular group of learners could be identified by analysing the linguistic characteristics of the language of their area of work or study.

Developments in educational psychology played a part in the rise of ESP by emphasising the central importance of the learners and their attitude towards learning. Learners were seen to have different needs and interests which would have a bearing on their motivation to learn and consequent effectiveness of this learning. This lent support to the relevance of the courses in which learner needs and interests were paramount. Allen and Widdowson (1978) observe that a need had arisen to specify the aims of learning more clearly since the language had been increasingly required to take an auxiliary role at the tertiary level of education. They further note that English had been called upon to provide learners with the basic ability to use language to receive and convey information associated with specific studies. This was especially so in developing countries where important information was not available in indigenous languages.

Because the learners' needs vary from course to course, differences in language syllabi can be expected. Consequently collaborative efforts between the language and

subject specialists become vital.

The nature of their collaboration would include an analysis of the nature of the language use in both subject texts and the tasks learners are expected to perform. A basic assumption of this analysis is that language use in specialist textbooks and the expected performance of students is different from what is covered in general English. Munby (1978) makes learner centredness part of his ESP definition, contrasting the goals of its courses with non-learner centred criteria. In so doing he is saying that a learner has reasons for wanting to learn English and that these reasons constitute his specific needs and purposes. In handling such a learner, the teaching process should consider his reasons for learning and hence aim at satisfying them. The learner, therefore, is an important variable that should not be ignored when planning an ESP course.

This argument leads to another important aspect of ESP, i.e. the need to carry out a learner needs analysis before a teaching programme can be drawn up. Awareness of the learner's needs and type of communication he is likely to engage in can help course designers to map-out an appropriate programme to help realise his objectives.

ESP therefore is purposeful and is targeted at the successful performance of occupational and/or educational

roles. It is learner centred in that it is based on analysis of the student's needs in order to lay down a programme that will help the learner realise his goals. It is target centred in that the linguistic skills needed in the target activity may be identified so that the learning - teaching programme is tailored in a way that will equip the learner with these required skills.

The LSP approach to language teaching is also concerned with rhetorical functions, that is, how sentences are combined in discourse to produce meaning in terms of communication for which language is intended. These functions according to Johnson and Morrow (1981) are uses to which language is put, such as requesting or giving information, seeking permission, expressing approval, etc. Research in rhetorical analysis concerns itself with identifying organisation in texts and to specify the linguistic means by which patterns are signalled. It is assumed that rhetorical functions in text organisation differ significantly

between specialist areas of use.

Communication is usually realised according to situation. Communicators may fail to communicate exchange of information takes place in an inappropriate context or circumstance. There are linguistic realisations which when used in inappropriate contexts do not enable participants in the discourse to communicate. In the light of this, Munby (1978) observes that it is by looking at situations in which the learner will need to use English that we can decide which functions to teach. This distinguishes ESP from traditional methods of language teaching based on the teaching of grammatical structure. This should however not be mistaken to mean that ESP completely iguores the teaching of grammar; language structure is part of the foundation for communication. When considering what use language can be put to, the following should be noted:- language activities, language situation, language functions and the four language skills (listening and speaking, reading and writing). Munby (1978) refers to these as means of communication, language setting, language purpose and language skills respectively.

Materials production and development is an important requirement for the success of an ESP course.

appropriate materials in line with the learner's needs must be made available. Unlike in general English where a general course book can function, in ESP, topics and situations whose language relates to the learner's area of specialisation are needed. Consequently the ESP teacher has to produce teaching materials appropriate to the learner's needs. Robinson (1980) argues that topics and situations must be inter-linked and relevant to the learner's area of specialisation. Having said, this it is necessary to examine the development process of an ESP course.

2.2 Developing an ESP Course

It should be noted that commitment to establishing a specific purpose language teaching course, whatever the administrative level at which this decision is made, usually arises out of either dissatisfaction with the existing state of affairs or awareness of the emergence of a new need. For example the joint decision by the Mexican and British governments to fund development of a specific purpose language teaching programme at undergraduate level at the Mexican University arose out of the observation that the general language programme then in operation was not training students to a level of proficiency in English deemed necessary for university studies

(Mackay and Palmer 1981). In Kenya at the Kenyatta University College (KUC) a KELT post was established to help students having problems in studying in English (ELT Documents 116, 1983). A similar situation led to the emergence of the DTEVT ESP programme under the auspices of KELT project. Any type of ESP programme development whether completely original or an alteration of the existing one must be justified in terms of the needs it fulfills. A needs assessment aimed at determining the extent to which there is genuine need for the programme must be carried out. The task essentially involves the objectives set for the programme. Firstly the clients must be identified. Secondly it is necessary that the objectives are stated, not in terms of enabling objectives but in terms of outcomes or performance objectives. Having done this it is essential that the communicative needs of the clients, in this case learners, for whom the programme is being prepared as well as a survey of available physical resources at hand is carried out. Once the rationale for the programme has been expressed, it is advantageous to include a phase of publicising the programme to all those who are centrally or peripherally involved. The aim is to make those who may become affected aware of the changing circumstances and encourage a diverse range of feedback.

In determining the learner's target situation needs, care has to be taken to distinguish real current needs from future hypothetical needs. These should be distinguished from student desires or wants, and teacher created needs. Hutchinson and Waters (1987) note that in carrying out needs analysis the target situation must be looked at in terms of necessities, lacks and wants. Necessities are the type of needs determined by the demands of the target situation. There is also need to determine what the learner already knows in order to determine what necessities he lacks. Wants are what the learner would like to do with the language independent of the specific requirements of the situation for which the needs analysis is being carried out. It is necessary that the course designer and the ESP teacher are aware of these differences and take account of them in materials design and methodology. Learning needs in terms of how to maximise potential of the learning situation in order to acquire required skills should also be considered.

Once a needs survey has been done the syllabus designer moves to what Yalden (1983) calls description of purpose. Information gathered during the first stage of syllabus development is incorporated into it after analysis. The question to be asked and answered here

is what should the learner ideally be able to do after successfully completing the instructional programme? The objectives must be written in such a way that there is no ambiguity in their formulation and description so that they can be measured and evaluated. The objectives must state the language skills required, the field of discourse, the level of formality and the constraints under which performance will be required. Once the general syllabus type has been decided upon one goes on to produce what Alexander (1975) calls a proto syllabus in which description of language and language use to be covered in the programme is carried out.

There is however no single model of syllabus design universally agreed upon. Syllabus designers have concluded that what is required is a more flexible approach in which designers should feel free to emphasise those components which a given situation may demand.

Yalden (1983) says the best way to describe a classroom experience which closely approximates an environment of real language use is through the use of the term communicative, and that syllabuses designed for such should thus be called communicative. Choice among available options has to be made depending on the learner's

objectives or those set on his behalf.

In order to provide guidelines for specification of learner needs in terms of syllabus specification required to service these needs, Munby (1978) came up with what he called Communicative Needs Processor (CNP). Here a detailed communicative needs profile for whoever the syllabus is being devised is given. Briefly the summarised profile has the following categories: participant, purposive domain, setting, interaction, instrumentality, dialect, target level, communicative event and communicative key.

On the basis of information provided by the needs analysis, the teacher or material writer may select appropriate samples of the target language that adequately represent the characteristics of the target language and the associated demands it will place on the user.

The final phase of developing a programme is evaluation. A distinction should be made between formative and summative evaluation. The former is carried out during the life of a course and the results obtained can be used to modify what is being done. The latter is carried out when the course or project is finished. Robinson (1991) suggests a further distinction between process and product evaluation. Process

evaluation is concerned with teaching and learning process or strategies, and administrative and decision making process. Product evaluation looks in particular at student product such as examination results.

Kea (1983) suggests a link between formative and process evaluation on the one hand, and summative and product evaluation on the other. The research problem under discussion has characteristics of both.

Alderson (1979) notes that evaluation is an integral part of the instructional process. A student has a definite target, namely adequate performance in a study or work situation, and therefore both at the outset and end of an ESP course there is need to know how near the student is to achieving adequate performance in real life situation. As materials developers, ESP practitioners should ask themselves whether their courses are producing intended results: if not how can they be improved or replaced for better effect.

If there are discrepancies between the intended achievement and what is actually achieved, materials and teaching approaches may be revised and in some cases description of purpose is re-examined with a view to establishing whether or not it should be altered in the light of the results obtained, or discarded completely. It is from this point that the process can be restarted.

2.3 Previous Research

Elsewhere studies have been undertaken to try and assess or evaluate the viability of the specific purposes language teaching. One such example is a project in Mexico (Mackay,1980) to trace the case history of a project in English for science and technology, to show steps and decisions involved in preparing and teaching one type of English for science and technology to University beginners at National Autonomous University of Mexico. The project involved co-operation with the faculty of Veterinary Medicine and Animal Production to provide their students with particular varieties of English language learning skills that would be most useful during their specialist studies. The materials and course of instruction lasting thirteen weeks - like the current study - were evaluated in terms of student ability to read and understand professional discourse in their field of study. The tests were constructed not to compare the achievement of one student with another but to demonstrate their effectiveness at extracting information from texts written in English. Tests were conducted before, during and after instruction using material from their specialist field. Analysis of results showed a 90% improvement over the period of the course.

In Kenya, at the Kenyatta University College (KUC), despite a seemingly ideal English Language background

of first year degree entrants (a situation obtaining among the sample in this study) a KELT post was instroduced in 1979 in the Department of Education Communication and Technology one of whose objectives was to help students having problems in communicating and studying in English overcome them. An initial survey among lecturers indicated that the majority of the respondents felt that particular student weaknesses lay in the field of study skills, inability to follow up library and reference materials, note taking from lecturers and making notes from written sources, presenting of papers and participating in tutorials. These views were confirmed by tests conducted on a cross section of that year's undergraduate entrants (Drury 1983). In view of this University authorities gave consent to the introduction of an Intensive 13 week service English pilot course to a group of diploma level first year students.

Emphasis was put on reading skills, writing skills, reference skills, and note taking and making skills. For assessment purposes pretests, post-tests and a student evaluation questionnaire were included. At the end of the project, post-test results showed a general overall improvement over pretest results.

The student evaluation questionnaire revealed that ... an improvement on the language skills imparted by the course transferred ... to their other University subjects. Teaching staff expressed similar views. The report which followed the findings of the study received a favourable response from the Faculty of Education Board, and a process of general implementation of a service English course for all first year entrants was put in motion. O'Keeffe (1983) observes that studying a wide range of language needs in pre-experience technical and vocational courses in a second language situation gives a major insight into the problem of multiple syllabus designing in that though different occupations need specific syllabuses, these syllabuses are rarely unique. Technical words will differ from subject to subject but the language skills and functions, and the events and activities for which these language skills and functions are used, are usually common to a large number of occupations.

In view of the discussion we shall now take a look at the ESPCS syllabi that the DTEVT uses to achieve the communicative needs of its trainees and how these determine the teaching procedure. A look will also be taken at the senior Secondary School English Syllabus to determine its similarities and/or differences with its DTEVT counterpart. This will help in deciding whether or not the secondary school syllabus can adequately equip the prospective trainees while still at secondary school with appropriate English Language communicative skills necessary for them to carry out specialised studies at tertiary level without an ESPCS input. The outcome of the comparison will determine whether or not the ESPCS input is necessary at all.

2.4 DTEVT ESPCS Syllabi

The DTEVT has two types of ESPCS syllabi - the study skills syllabus and the language of work syllabus. The study skills syllabus details the specific

communicative skills necessary for the learner to function effectively during training. This module aims at developing the specific communicative skills necessary for the student to:-

(a) Study effectively through attending lecture by:

(i) Listening
(ii) Note-taking
(iii) Questioning
(iv) Re-writing notes

(b) Study privately through:

(i) Reviewing notes
(ii) Seeking further information from the library, colleagues and lecturers.

(c) Writing assingments through:

(i) Planning
(ii) Writing and checking of work.

(d) Writing tests and examinations through:

(i) Preliminary reading of questions
(ii) Selecting
(iii) Answering questions
(iv) Checking written answers.

(e) Participation in seminars and consultations through:

(i) Preparatory reading

(ii) Listening to colleagues and lecturers

(iii) Oral presentation of prepared topics

(iv) Note taking.

The language of work syllabus aims at developing communicative skills necessary to function in the field of specialisation during training and after graduating during the course of performing technical tasks, working with colleagues, subordinates and supervisors, dealing with the general public and contributing to the smooth running of the unit.

2.4.1 Profile of Communicative Needs in the Syllabi

(i) Participants: Normally males and females with ages ranging from 20-25. Predominantly Zambians but with occasional foreign students. The first language of the students is usually one of the Indigenous languages of Zambia but the student will have been educated through the medium of English and has at least a pass in English at school certificate level.

(ii) Purpose: ESPCS is a compulsory subject in all DTEVT programmes and is taught to help trainees in their studies and to prepare them for the field of work.

(iii) Setting: English is the medium of instruction and is also used among students both for work and socially. The Psychological setting is intellectual, technologically sophisticated, formal and heirarchical. Students will need language skills appropriate to this setting.

(iv) Interaction: Students will use English with Lecturers, fellow students, library and administrative staff. The students will need the English language to function in the following situations -

Learner to instructor, advisee to advisor, and group member to group member.

(v) Form of English: The student will need all four language skills, listening and speaking, writing ing and reading.

The syllabi and profile of communicative needs of a specific group of learners outlined above reflect a serious attempt to make the content of a communication skills programme as relevant as possible to the needs of the learners as far as realising their aims during and after training is concerned.

It also shows that an equally serious consideration has been given to the identification of linguistic skills needed in the target activities. Selinker, Trimble and Vroman (1972) noted that the more closely

a second language teaching programme was based on identifiable needs and the uses to which a specific group of learners would put the language skills, the more effective and hence successful the course would be. This is the rationale underlying specific purposes language teaching.

2.4.2 Procedures in ESP

There is very little difference in the way of teaching between ESP and General English language Teaching. They have both adopted the Communicative approach. The only difference may be that ESP can base activities on the students' specialisms and that activities can have a trully authentic purpose related to the students' target needs. Strevens (1988) notes that ESP methodology conforms to the same model of language learning and teaching as does any other form of language teaching. This entails the basic teaching activities namely shaping the input, encouraging the learners' intention to learn, managing the learning strategies and promoting practice and use.

As used in syllabus development, 'process' refers to how instruction is carried out and learning is achieved. The three major areas from which its are organisation of language content which brings about certain activities, the roles that teachers and learners take on during the learning process and the type of

activities and tasks learners engage in. Phillips (1981) suggests four key methodological principles. These are the manner in which tasks are rendered accessible to the student (reality control), meaningful generating of tasks by students' special purpose, authenticity and tolerance of error.

All approaches to language learning have placed some degree of emphasis on process. Barnes (1977) observes that most teachers' sense of how well their teaching is going has always been based upon the products of their teaching. What has been missing has been the means of monitoring what actually happens in the lesson (process). This has been caused by the difficulties inherent in both participating as a teacher in a lesson and at the sametime observing what happens in it.

In effecting the ESP teaching process,no single principle or practice can be valid for all situations. This perception applies to the issue of how far the ESP teacher should be an expert in the student's specialism. Also to be taken into account is whether the trainees have experience in their field of specialisation. However, one thing an ESP teacher can do is to collaborate in one way or another with content specialists. This type of collaboration is what is known as team teaching. Another form of collaborative

teaching is the subject language integration in which the materials being taught are derived from an earlier collaboration between the language and subject teacher.

Dudley-Evans (1983) notes some benefits of team teaching. These are giving a student opportunity to see how he will measure up to the requirements of his specialism, enabling the language teacher to see at first hand what the students are doing in the specialist course and to learn of the way in which communication takes place in a given subject and providing a feedback to the subject teacher on how well he has been communicating with his students.

An important first condition for team teaching to succeed is that both specialist and language departments or individuals must recognise that there is a problem which requires some form of collaboration between them to solve it. Johns and Dudley-Evans (1980) suggest that a clear framework must be agreed upon in advance for the pattern of activities, and the responsibilities of each side defined.

2.5 Senior Secondary School Syllabus

The current senior secondary school provisional English language syllabus has four general aims-that by the end of Grade 12 pupils should be able to:

- effectively use English in social communication;
- use the English language skills needed in other

subject areas;

- use English effectively in the field of work;
- use English effectively in full time or part time tertiary education. The syllabus has four components - listening, speaking, reading, and writing, each of which has certain terminal objectives.

2.5.1 Listening and Speaking

By the end of Grade 12 pupils should be able to:

- understand and speak English well enough to function effectively in the world of work and in tertiary education;
- communicate effectively and appropriately in English in various social contexts;
- understand and speak English at an acceptable international standard
- appreciate the difference between spoken and written English.

2.5.2 Reading

By the end of Grade 12 pupils should be able to:

- understand the different types of reading material which they are likely to meet both inside and outside school;
- read efficiently at a speed appropriate to the text and to the purpose of their reading;
- read for enjoyment;
- read critically and make discriminating judgements.

Another useful method based on the same rationale as

that of the integrated approach is the use of project work. This gives the pupils the opportunity to put into practice many language skills such as reference, note-making, interviewing, note-taking and composition.

2.5.3 Writing

This section comprises continuous writing, summary, note-making and note-taking. By the end of Grade 12 pupils must be able to:

- produce the kinds of writing which are required for personal non-academic use;
- produce the kinds of writing which are likely to be required in tertiary education or in the field of work;
- produce the kinds of writing which are required in other subjects;
- organise their writing material in a logical manner with an appropriate introduction and conclusion;
- express in writing their personal ideas, thoughts etc. with clarity and fluency;
- write in appropriate register;
- select relevant information from a written/ spoken source, take notes and write a prose summary;
- write with only minor lexical and grammatical errors.

2.5.4 In order to achieve the aims and terminal objectives, two methodologies are used. These are the communicative approach, and the text based integrated approach. The Communicative Approach recognises the need for language learners to use the language in order to become proficient. Pupils must be aware of the way the language works and what forms are correct and acceptable in different circumstances. In order to develop their confidence pupils must be provided with opportunities to use language effectively in meaningful situations.

The text based integrated approach entails a series of lessons comprising a unit which centres around a written text and must be appropriate in a variety of ways/as such interest, level of difficulty and appropriateness, and must cover a wide range of language use and topics from a variety of sources. The method is integrative in the sense that different language skills are practised at the same time. Project work is an equally useful method.

2.6.5 It is evident from the outline that the Secondary School Senior English Syllabus is communicative and that the teaching methodology is identical to that of ESTCS. The syllabus, we are told in the preface, is a result of careful investigation of pupils' English language needs and thorough examination of

recent developments in the TESL. A factor that deserves mention is that despite the communicative orientation of the syllabus, it is stated in the introduction that the syllabus is intended to prepare pupils for joint Examinations for the school certificcate and GCE in English language. This implies that the course is not intended to be of specific service to other subjects pupils take and any studies they may intend to pursue, despite the mention in the terminal objectives (2.5.3) that pupils must produce the kinds of writing that are required in other subjects, tertiary education or field of work. Such a situation is certainly at variance with the ideals of ESPCS.

Another factor which needs noting is that by the very nature of the level at which it is applied the syllabus is not targeted at any particular field of specialisation, a situation that perhaps renders it ineffective in meeting learning requirements of highly specialised fields which require the services of specifically tailored CS courses. The fact that it is indicated that the syllabus came about as a result of investigating pupils' language needs at that level, and examination of recent developments in TESL implies that the Senior Secondary School Syllabus, communicative though it may be, is more general than that of ESP. It must also be noted that ESP is actually a branch of ESL (Hutchinson and Waters 1987).

The secondary school syllabus therefore cannot effectively achieve at tertiary level what ESPCS can. In fact the secondary school syllabus is biased more towards English for social sciences - ESS - because it appears not to differ much from the more traditional humanities general English. It is targeted at general academic competence rather than specific specialism.

CHAPTER THREE

3. METHODOLOGY

3.1 Population

The population of the study was derived from the Department of Technical Education and Vocational Training (DTEVT) students and were just starting the first year of study in Secretarial and Craft courses.

3.1.1 Sample

The sample of the study comprised one secretarial and one craft class of trainees from selected Trades Training Institutes. These were first year students just starting training, having completed Grade 12 with at least a pass in English language and other subjects relevant to their field of study.

3.1.2 Sample Selection

Judgement or purposive sampling was used to select the institution from which the sample was derived. This method is based on the judgement of the researcher regarding the characteristics of a representative sample. A sample is chosen on the basis of what the researcher thinks to be an average person. The strategy is to select units that are judged to be typical of the population under investigation. The institutions selected, Kabwe Trades Training

Institute and Livingstone Trades Training Institute, are the largest of the nine in DTEVT and offer both secretarial and a large variety of craft courses. In turn one institution, Kabwe Trades, was selected at random.

Random sampling without replacement was used to select the sample of one craft class - Automotive mechanics. Of the two Secretarial courses run by DTEVT, Shorthand typing and clerk typing the former was selected. The idea of having a sample from both craft and secretarial fields was to try and assess if what was trues of the ZCSC syllabus in one field was true in another.

3.2 Research Design

The study employed analysis of variance (ANOVA) two factor experimental design with repeated measures on the same elements.

One of the primary purposes of experiments in which the same subject is observed under each of the treatments is to provide a control of differences between subjects. In this type of experiment

treatment effects on a subject are measured relative to the average response made by the subject on all treatments (Winer, 1970). In this sense each subject serves as his own control - responses of individual subjects to the treatments are measured in terms of deviations about a point which measures the average responsiveness of that individual subject. Hence variability due to differences in the average responsiveness of the subjects is eliminated from experimental error.

One advantage of the repeated measures pretest, post test design is the control of subject heterogeneity. In a single factor experiment, when independent groups of subjects are present in different conditions, it is likely that the groups will differ significantly on whatever attribute we wish to measure. These between group differences which are a natural outcome of random assignment of subjects to different conditions would be superimposed on whatever treatment effects we may have produced by experimental manipulation. But if we selected one group of subjects and have all of them serve in one treatment condition, any differences observed among the different treatment conditions by and large reflect the effect of the treatment alone.

A notable disadvantage of repeated measures single group design is the possibility of carryover effect.

However in this study this disadvantage is eliminated because there is only one condition of treatment intervening between the two sets of tests - that of no treatment. So, whatever the outcome, it is almost certainly a result of that treatment.

One other reason why the study employed a repeated measures pretest, post-test single group design was administrative.

The ESPCS syllabus had already been implemented full scale and hence the Institution's Administration would not have tolerated the idea of having samples in which control groups would have lost a whole term of study.

3.3 Instrumentation

3.3.1 Treatment

The study entailed preparation of a scheme of work (see appendix A and B) based on the ESPCS syllabus for each sample to cover the 13 weeks duration of the first term of the academic year. Normal teaching times and hours were adhered to as required by the syllabus.

3.3.2 Instruments

For each sample four criterion written tests served as research tools. Two tests served as pre-treatment tests while the other two served as post-treatment tests. These tests were constructed to assess the

extent to which ESPCS improves student communicative performance in their field of specialisation during training after being subjected to the treatment. Deliberate attempts were made to have the tests for both samples test as much as possible the same skills. The assessment aimed at finding out if the independent variable ESPCS instructional material (Treatment) had any significant effect on the dependent variable, communicative performance relevant to the trainees' field of specialisation during training. The scores obtained before the application of the treatment served as the moderator variable.

3.3.3 Reliability

The reliability of a test is the extent to which the results can be considered consistent or stable (Brown, 1988). This is a necessary characteristic for any good test. For it to be valid at all, a test must first be reliable as a measuring instrument. In ensuring the reliability of a test one must take into account the extent of the sample material selected for testing.

The larger the sample, i.e. the more tasks the testees have to perform, the greater the probability that the test as a whole is reliable. This will also indicate the extent of the learner's mastery of the various language skills which he will require for a particular purpose. In this study the reliability of the testing

instruments was achieved by administering parallel forms of tests to each of the groups under study. Similar versions of a particular test were constructed. This was complemented by the mark - remark method.

This kind of reliability denotes the extent to which the same marks are awarded by different markers. In this area the researcher got maximum co-operation from the teachers whose classes were used as samples during the preliminary survey and actual study. Where there were notable differences the two markers sat together and examined the scripts until consensus was achieved.

3.3.4 Validity

Brown (1988) defines test validity as the degree to which a test measures what it claims to be measuring. In other words the test must be a representative sample of the content of whatever it is claiming to measure. To establish validity of the tests in the study, strict adherence to the syllabus and scheme of work was ensured. The tests were examined by several communication skills teachers in the institutions where the preliminary survey and final study were carried out. Where recommended, appropriate amendments were made to the test items.

3.3.5 Item Analysis

Obtaining raw scores from subjects in a sample in

itself is not enough. It is important to find out how far the objectives of a test have been achieved. One such objective is how individual items comprising the test have performed. One of the immediate benefits of item analysis is to draw the attention of the test designer to the items which contain problems which escaped notice during construction of the test. The performance of the test items is of obvious importance in compiling future tests.

It is thus important to identify those items which were answered correctly and poorly by more able and less able students respectively. All items should be examined from the point of view of their difficulty level - facility value (FV) or their level of discrimination - discrimination index (D), between tests.

After item analysis the test can be adjusted to remove or modify unsatisfactory items and thus maximize the discrimination power of the test as a whole.

In this study the suitability of the test items was verified by a preliminary study on a class of craft and a class of secretarial students in Lusaka Institutions. Items found wanting were either discarded or modified. By and large the following were the findings of the preliminary survey:

The facility values (FV) and Discrimination Index (D) for the craft instruments (sample B) ranged from .48 to .59, and .53 to .61 respectively. For secretarial instruments (sample A) they ranged from .55 to .69 and .61 to .94 respectively. These results show that the adequacy of the instruments was within the acceptable range i.e. .3 to .7 for (FV) and .33 and above for (D), (Heaton 1988) or .25 to .75 FV, and .30 and above for (D), (Baker 1989) (See appendix K for (FV) and (D) formulae).

3.4 Problems

The first problem the researcher faced was administrative. It took time to convince the administrators of the Institute to give consent for the use of some of their trainees as 'guinea pigs'. They felt that the study would disrupt the smooth running of their programmes. Eventually, however, further explanation about the viability of the project and that they stood to gain as an Institution made them change their mind. Even then, consent was given only for two classes. Another reason that made them give consent was that the Institution had had a shortage of CS staff for sometime, so someone who would to some extent relieve the burden on the few CS staff was welcome. Materials production is an important aspect in the success of an ESPCS syllabus, hence secretarial services play a pivotal role in this success. But given the general

inertia among typists in the Zambian Civil Service it was not unusual not to have one's teaching material typed in good time. Even when it was, reprographic facilities were not readily available. Sometimes facilities outside the institution had to be made use of. As a result, in order to gain on time, the researcher had to sometimes rush through the work. To a lesser extent disruption of classes due to visits by civic or political authorities or lateness in preparation of meals due to water shortage or electric power failure once in a while disturbed the study. Absenteeism of sample subjects was also a source of concern. Some sample subjects reported late due to late receipt of acceptance letters since it was the beginning of a new academic year. Despite these short-comings the study went fairly smoothly.

3.5 Data analysis

For easy statistical computation only the results of the subjects who wrote all the tests in each sample were included in the analysis. As a result out of 23 and 18 secretarial and craft subjects respectively results of only fifteen of each were analysed.

The results of each sample in the study in relation to the effect of the non-availability and availability of the treatment variable on the dependant variable were analysed using an ANCVA single factor experimental design with repeated measures on the same subjects at

alpha .01. These sets of results were then re-analysed by an ANCVA two factor experiment with repeated measures on one factor.

The analysis entailed the use of paired samples. By using the paired samples technique as opposed to independent samples, sampling fluctuations for the paired data is much reduced. The reason for this is that the differences in the two samples are not obscured by the second sample being entirely different - independent - from the first one. WonnaCott and WonnaCott (1977) argue that it is desirable to design this pairing of observations into the sampling experiment whenever possible because it gives more leverage on the problem being investigated by virtue of the samples being the same.

It should be noted that the hypothesis being tested in this study was formulated on the assumption that all the variables were the same for each sample and that the only difference for each sample was that the first two tests were conducted prior to treatment while the last two were conducted after.

3.6 The study lasting 13 weeks was conducted as follows for each sample:

- First week of term - Pretest 1 administered
- Third week of term - Pretest 2 administered

- Fourth to Tenth week of term-Treatment administered
- Eleventh week of term - Post test 1 administered
- Thirteenth week of term - Post test 2 administered

The hypothesis which was advanced for each sample in the study was:

> Students exposed to ESPCS
> significantly improve in the communicative
> performance necessary in their fields of
> specialisation during training.

This hypothesis suggested that the mean test scores of the results after treatment for each sample should be significantly greater than the mean scores before treatment, hence suggesting the positive effect of ESPCS.

To test this hypothesis therefore it meant for each sample that, since we were using paired samples, the difference between the following pairs of means:

- Post test 2 and pre-test 1
- Post test 1 and pre-test 1
- Pre-test 2 and pre-test 1
- Post test 2 and pre-test 2
- Post test 1 and pre-test 2
- Post test 2 and post-test 1

had to be tested to determine if any significant difference existed between them.

CHAPTER FOUR

4. RESULTS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

4.1 Results

In this chapter the results of the study are presented and discussed and conclusions are made. For the sake of simplicity and clarity, the secretarial (short-hand typing) sample will be referred to as sample A, while the craft (Automotive mechanics) sample will be referred to as sample B. Pre-tests 1 and 2 and post tests 1 and 2 for each sample and all ordered pairs of means will be referred to as b_1, b_2, b_3, and b_4 respectively. Appendices M and N show the raw scores in the four tests for samples A and B.

In sample A out of the fifteen subjects, the difference between b_1 and b_2 is not more than ten in ten subjects. In sample B, the difference is not more than two in eleven. These differences indicate a condition of almost no difference in the subjects' communicative ability during the period between the two tests.

In b_3, six subjects in sample A improve by twenty or more points, and four subjects by between ten and seventeen. In sample B, nine subjects improve by twenty while the rest improve by at least ten.

The difference between b_3 and b_4 is at the most five points in eleven cases in sample A, and not more than

eight for the same number of cases in sample B. This seems to indicate a continued retention of skills acquired despite the withdrawal of the treatment.

A general improvement is shown through eleven subjects in sample A, and ten in B improving in all the four tests. Whether this improvement is significant or not will be seen in the following analysis.

To try and answer the question the study addressed itself to in 1.4 entailed the advancement of the hypothesis in 1.5. In order to test the hypothesis in 1.5 an ANOVA model called repeated measures design was used. Repeated measures designs are those that incorporate several observations on one subject and the repeated measures dimension was the time variable, i.e. the different points in time the tests were administered - as indicated in 1.6 during the study. However, since the subjects consisted of two independent groups a mixed design that combined both repeated measures and independent groups within the same study had to be used. The actual design used was based on a two factor experiment with repeated measures on one factor at probability level 0.01 as described by Winer (1971 : 518).

TABLE 1

[illegible] RESULTING

[illegible]

SOURCE OF VARIATION	SUM OF SQUARES (SS)	DEGREES OF FREEDOM (df)	[illegible] (MS)	F
[illegible]	7328.86	29		
A([illegible])	200	1	[illegible]	.79
[illegible]	7128.86	28	254.60	
[illegible]	14600.97	90		
B([illegible])	10923	3	3641.01	83.49
AB	14.85	3	4.95	0.11
B×([illegible])	3663.09	84	43.61	

TABLE 2

APPLICATION OF THE NEWMAN KEULS METHOD ON TESTS OF ALL ORDERED PAIRS OF MEANS (AB COMBINED).

(i)

TESTS	b1	b2	b3	b4
ORDERED MEANS	45.46	47.87	65.01	66.30

(ii)

differences between pairs

	b1	b2	b3	b4
b1	-	2.41	19.55	20.84
b2		-	17.14	1845
b3			-	1.29
b4				-
		3.75	4.24	4.55
		4.500	5.088	5.46

(iii)

	b1	b2	b3	b4
b1	-	NS	**	**
b2		-	**	**
b3			-	NS
b4				-

FIGURE 1 MEANS

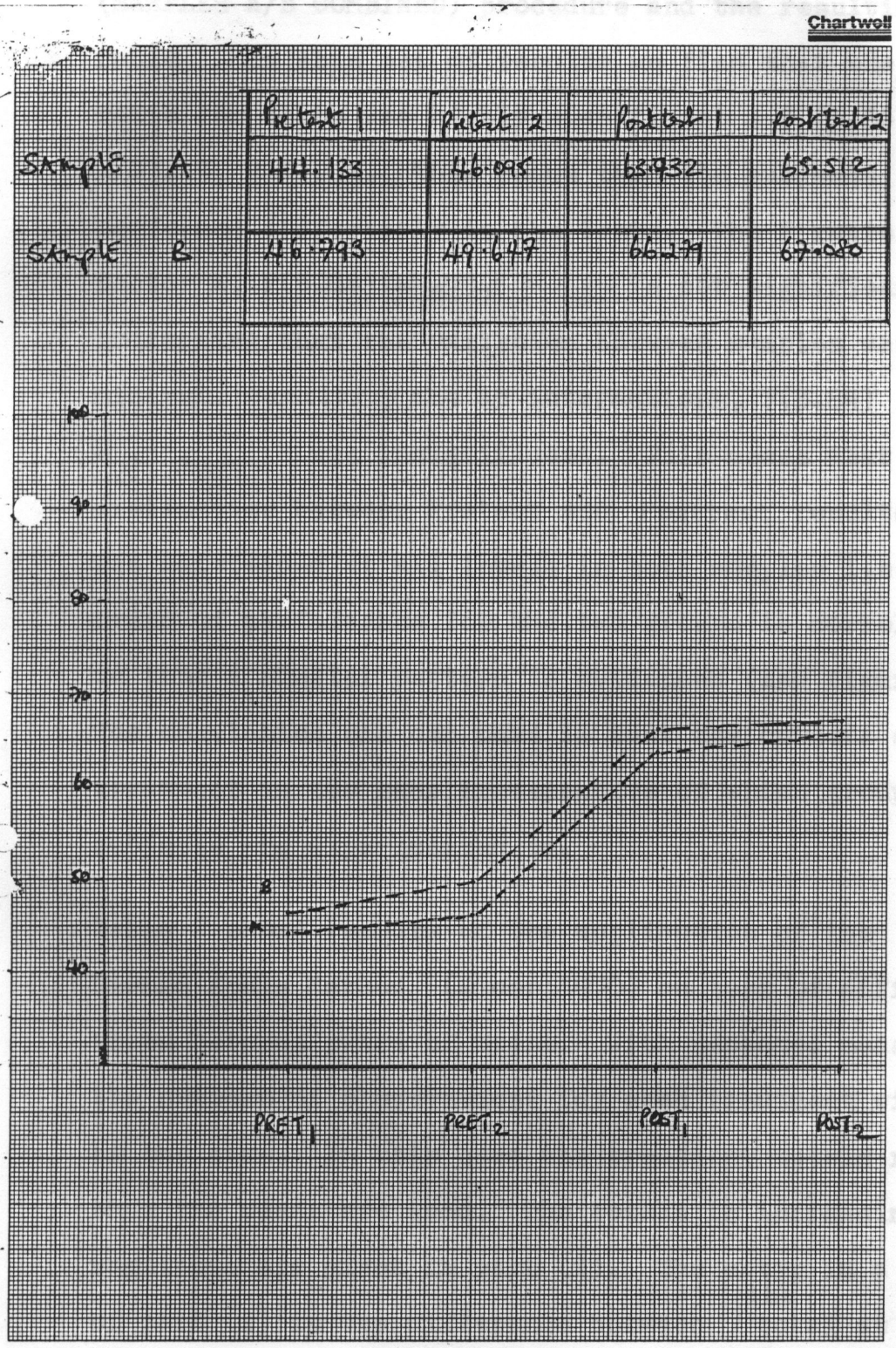


Table 1 shows the Summary of Two factor ANOVA (SAMPLES A/B COMBINED) procedure and the resulting F ratio. In this set of results we find that the F ratio for tests was highly significant : F (3.84) = 83.49, $P < .01$. This means that the subjects performed differently in the tests. The F ratio for factor A, F(3.84) = .79, is not significant indicating that the variation between samples was minimal. Similarly the AB interactions, F(3.84) = .11, was insignificant. This means that the distinction between Pretest and Posttest results was maintained at all levels in both samples i.e. the trend of performance for the two groups is correlated in that a similar pattern is evidenced (see figure 1). The conclusion one can make is that the outcome of the treatment is the same irrespective of which groups of subjects are experimented on.

Table 2 shows results of the application of the Newman Keuls Method (Winer:1970) on test of differences between pairs of means. With repeated measures the numbers of observations for each treatment will be the same. In this case the treatment totals rather than the means are used. The totals in increasing magnitude are given in part (i). The entry in a cell of part (i) is the difference between the / total at the head of a column and total to the left row. Critical values for the statistic $qr = \frac{T_i - T_j}{\sqrt{n MS_{res}}}$, where r is the

number of steps two totals are apart on an ordered scale, are given in part (ii). These values are obtained from the first three columns of tables for the 99th percentile point for the q statistic; the degrees of freedom of this q statistic are the degrees of freedom of Ms residual. Critical values for $T_1 - T_2 = q\sqrt{\frac{MS\ residual}{n}}$ are given in part (iii). In this case $\sqrt{MS\ residual} = 28.85$. Thus the entries in part (iii) are 28.85 times the corresponding entries in part (ii).

Figure 1 shows the trend of performance for both samples over the same period. Below are shown the tested data identification operational hypotheses for all ordered pairs of means.

4.1.1 All Ordered Pairs of Means

i) The mean score of b_{4s} is significantly greater than the mean scores of b_{1s}

HO: $b4s = b1s$

HI: $b4s > b1s$

The computed q statistic = 20.34

The critical q statistic = 5.46

$\therefore$ We reject the H_0 since the computed q statistic is greater than the critical q value.

ii) The mean score of b_{3s} is significantly greater than the mean score of b_{1s}

HO: $b3s = b1s$

HI: $b_{3s} > b_{1s}$

The Computed q statistic = 19.55

The critical q statistic = 5.088

$\therefore$ We reject the H_0 since the Computed q statistic is greater than the critical q value.

iii) The mean score of b_{2s} does not significantly differ from that of b_{1s}

HO: $b_{2s} = b_{1s}$

H1: $b_{2s} > b_{1s}$

The Computed q statistic = 2.41

The critical q statistic = 4.50

$\therefore$ We do not reject the H_0 since the Computed q statistic is less than the critical q value.

iv) The mean score of b_{4s} is significantly greater than the mean of b_{2s}

HO: $b_{4s} = b_{2s}$

HI: $b_{4s} > b_{2s}$

The Computed q statistic = 18.43

The critical q statistic = 5.46

$\therefore$ We reject the H_0 since the Computed q statistic is greater than the critical q value.

v) The mean score of b_{3s} is significantly greater than the mean score of b_{2s}

HO: $b_{3s} = b_{2s}$

HI: $b_{3s} > b_{2s}$

The Computed q statistic = 17.14

The critical q statistic = 5.088

$\therefore$ We reject the H_0 since the Computed q statistic is greater than the critical q value.

vi) The mean score of b_{4s} does not significantly differ from the mean score of b_{3s}.

HC: $b_{4s} = b_{3s}$

HI: $b_{4s} > b_{3s}$

The Computed q statistic = 1.29

The critical q statistic = 5.46

$\therefore$ We do not reject the H_0 since the Computed q statistic is less than the critical q value.

*Note in (iii) and (vi) for both samples and all ordered pairs of means the HC: corresponds to the original claims because the claims entail a condition of no significant difference.

4.2 Discussion

In order to answer the question:

"Does ESPCS. improve student communicative performance in their fields of specialisation?"

the hypothesis:

"Students exposed to ESPCS significantly improve in communicative performance necessary in their fields of specialisation during training"

was advanced. In order to test the validity of this claim six data identification operational hypotheses were advanced at 1.41 for samples A and B, and for all ordered pairs of means for the two samples. Statistical testing confirmed all these hypotheses, as shown at 4.1.1 for both samples as being statistically significant. The acceptance of operational hypothesis (iii), that the mean of b_{2s} does not differ from that of b_{1s} seems to indicate that at the beginning of the course, the subjects' communicative performance remains about the same up to the time they start undergoing the ESPCS syllabus. Given the fact that the grand mean scores for samples A and B are 45.12 and 48.22 respectively, which is a pass at school certificate level, one can conclude that both samples have a fair level of communication skills at the outset of training. This tallies with one of the requirements ESPCS practitioners recommend, that a satisfactory language base must exist before the learner takes up his studies in the field of specialisation. Allen and Widdowson (1978) observe that the learner of ESP has probably done a general English Course at School and wishes to extend or adapt his competence to his particular field of interest. In this regard the Zambian Education system prepares learners fairly adequately in English as a subject and medium of instruction from primary school up to the time they enter tertiary level.

The confirmation of operational hypotheses (i), (ii), (iv) and (v) which claim superiority of the mean of b_4 over b_1, the mean of b_3 over b_1, the mean of b_4 over b_2 and the mean of b_3 over b_2 respectively seems to indicate that there is substance in the claim that a valid case for the utilisation of ESPCS does exist. It has also been shown for both samples that there is no significant difference between the mean of b_4 and that of b_3. This seems to indicate that there is a high degree of retention of the skills and corresponding performance acquired through the treatment variable even after the variable has ceased. This being the case, one may conclude

that constant use of these skills would further entrench them and that this entrenchment would be consolidated by continuing the programme up to the end of training in the field of specialisation.

The results cannot be attributed to anything else other than the treatment variable. Fears that they may have been influenced by extraneous variables should be minimised. There was no danger of carryover effect because there was only one condition of treatment intervening between the sets of tests - that of no treatment. The subjects were not aware that they were being used as 'guineapigs'. In fact the researcher was assumed to be a member of staff at the Institute. Because of this, the Hawthorne effect, i.e. that the subjects were pleased to be included in the

study and that results of the investigation are more closely related to this pleasure than to anything that occurs in the research, does not occur. The lack of awareness on the part of the subjects that they were under investigation meant that the danger of subject expectancy whose ultimate aim would be to please the researcher by trying hard to enable him achieve his goals did not arise.

Mortality was overcome by ensuring that only the subjects who sat for all the tests had their scores included in the data analysis. There was also nothing to indicate that any of the subjects may have had any experiences (maturation) that may have had any significant effect on their performance apart from the treatment variable.

The results of this study have a lot in common with those of the studies carried out in Mexico (Mackay, 1980) and Kenya (Drury, 1983). In the three cases, learners at the beginning lacked adequate English Language skills to effectively study in their fields of specialisation. Remedial measures taken to improve their language skills through teaching the varieties of language most useful in their specialist studies showed that the results of summative evaluation were superior to those of the formative one. There was also a general satisfaction from lecturers and learners themselves, that the remedial measures had improved their skills. The treatment variable is the only thing that can be attributed to the improvement.

4.3 Conclusion

This study has shown how, because of the unsatisfactory Communication Skills syllabi in BTEVT, in meeting student training needs, steps were taken to redress the situation in the area of Service English courses.

This was through the recruitment of a [illegible] advisor to design syllabi that would reflect specific learner needs in terms of study skills and language of work. These syllabi were eventually implemented in January, 1985 for all new entrants in the various fields. The objective of the study was to find out if there was any worthwhile gain in the utilisation of these syllabi. This objective was achieved through giving selected student samples Pretests followed by an instructional programme based on the syllabi under discussion. This was followed by Post-tests.

Analysis of data obtained showed that there was a significant difference between the mean scores of the tests given before treatment and those of the tests given after. The latter mean scores were superior. Given the confirmation of the data identification operational hypotheses and hence the major hypothesis advanced in 1.5, the question that the study set out to answer was in the ultimate analysis answered in the affirmative: that ESPCS do indeed improve student communicative performance in their areas of specialisation.

There are of course many problems to be ironed out in the preparation of specialised courses with a clearly identifiable need for proficiency in certain language skills. Although revision of the ESPCS syllabi may

be necessary from time to time depending on the course content of particular areas of specialisation, the results of this study do strongly suggest that there is a significant advantage in utilising the ESPCS syllabi. This observation is given credence by the outcome of the Mexican case study and the study carried out at the Kenyatta University College discussed in 2.2. In these studies because of the communicative deficiencies noticed in students, the need was seen to take remedial measures in the form of Service English courses for specific areas of specialisation. These measures are shown to have yielded positive results.

One might wonder if there is any justification for ESPCS if the subjects had a fair level of communicative ability before treatment. The author is of the view that there is. The very fact that CS has been a compulsory subject since the days of the Commission for Technical Education implies that defects are evident in the trainees' communicative performance in specialised studies. It should be noted that the purpose of communication should be very clear in the mind of the intending communicator. You might ask yourself what you want to accomplish with your message, e.g. obtaining information or initiating action. Indecision about the purpose would result in an indecisive message. In the mind of the receiver this could mean only partial understanding of the initiator's intention. Having a

clear objective and adequate communicative skills helps the originator of the communication to give a clear and precise message and hence achieve the desired objective. Similarly if you are reading a text or listening to someone, you must know what you want to obtain from that particular discourse if your mind is to effectively gear itself to achieve that goal. We should therefore bear in mind that a fair level of communicative ability means that we can only partially communicate our intentions or partially get information being imparted to us. This may not be enough to effectively obtain desired results. These problems can be made worse if we are dealing with specific specialist areas which require specific language skills necessary to function effectively. It has been shown in 2.5 that the secondary school syllabus is not adequate for specialised studies, hence the justification of LSPCS.

Before the advent of LSPCS in DTEVT one of the trainees' complaints was that they did not want general English, which they had adequately covered at Secondary School, but a course of English which would help them cope with studies. This therefore meant that the fair level of communicative ability they had in general English was not adequate to cope with the challenges of their specialised training (see 2.5.4). In the Kenyan

case the College entrants had an ideal general English language background which however proved wanting in meeting the challenges of their specialised studies. In fact both student and lecturer reactions were positive, that their improvement in the skills imparted was useful in their specialised studies. In the DTEVT study informal discussion with some of the subjects revealed that the course was an eye-opener in that instructional material made a positive contribution to their academic welfare. They felt that while they could communicate fairly well in general English, ESPCS gave them skills that were specific to their fields of specialisation. While there is no empirical evidence to back it up, the subjects felt that their understanding of the specialist subject content was enhanced by the ESPCS input. Mukuni, Kapena and Tambulukani (1996) note that both trainees and specialist subject instructors felt that there was justification in the implementation of the DTEVT ESPCS input to enhance communicative performance in areas of specialisation. These sentiments are clearly in line with Mackay's (1975) observation that ESPCS is usually used to refer to teaching and learning a foreign language - in this case English - for a clearly utilitarian purpose and that this utilitarian purpose is conceived as a successful communicative performance in activities in which English plays an auxiliary role. In our case, therefore, ESPCS plays an auxiliary role in learning

the subject matter of the field of specialisation. Robinson (1980) gives further credence to the same notion when she observes that the ESP learner is usually studying to perform a role and that this successful performance can be measured by successful performance in English in his field of specialisation. These observations give support to the importance of learner and target needs analysis if we are to come up with a syllabus that is truly representative of the language skills and linguistic knowledge that will help the learner achieve his goals. Bloor (1984) emphasises this fact too.

Although it was not the purpose of this study to address itself to this problem, one of the limitations of this study and other similar ones deserves mention. If the purpose of ESPCS or any other service English language courses is to act as an indirect instrument to improve something else, e.g. a trainer's performance in his specialised study, how can the service programme be separately evaluated in a meaningful way?

Perhaps one way of getting round the problem would be to carry out a study of the trainees' performance

in their specialist fields. The ideal person to carry out this exercise would be one with a qualification in the specialist subject supplemented by an English language teaching background or training. Since such a combination is very rare, so the best would be collaborative teaching between the language and subject teacher. Included in this set is the learner and each of these people would need feedback from the other two. The learner would need to know how well his performance is measuring up to the expectations of his teacher and to have immediate assistance with his difficulties as they arise. This type of monitoring assistance may not be possible if the language and specialist teachers work in isolation. The subject teacher would need to have a clearer idea of how effectively he is communicating with his students and how that communication might be improved. Since learning a subject to some extent involves learning how it is talked about, the subject specialist's

teaching incorporates an element of language teaching. This being the case it is reasonable to conclude that his work may be assisted by the language teacher. Johns and Dudley Evans (1980), in a study in the Team Teaching of overseas postgraduate students, observe that if it is skills in writing that learners need in order to write answers to questions, for the language teacher to offer training in these skills, he needs to know exactly what the subject teacher intends by the questions he sets, what sort of structuring is expected in the answers and what sort of performance is accepted as adequate. Feedback on these is vital if the language teacher's priorities in the teaching of effective communication reflect those of the subject specialist teacher. In the Johns and Dudley Evans study, lecturers said they observed an improvement in the learner's standard of English and command of the subject matter.

4.4 Generalisation

The study having shown that the ESPCS course of DTEVT improves communicative performance of the trainees in their areas of specialisation, the question that arises is: to what extent can the findings be generalised to the larger population that the samples were drawn from? In order to answer the question, an observation or two need(s) to be made about the study. A true experiment would require subjects to be randomly assigned to experimental or control groups in order to

ensure initial equivalence of two groups. However since the study was not set up in this way due to administrative constraints, it became necessary to adopt a less rigorous repeated measures design involving intact classes. The study also entailed the researcher administering the treatment and therefore it was physically impossible to conduct the study in more than one institution during the same period of time, which was limited to the first term of the academic year when new entrants are admitted to the various fields of study. In some courses new entrants are recruited every two years due to course duration or limited space and training requisites. Because of this the sampling choice was limited to those courses which were on offer to new entrants in January, 1989. In the light of this, caution should be taken when assessing generalisability of the findings.

The results of sample A can be generalised to all shorthand classes of the target population in particular and to a lesser extent clerk typing secretarial classes in general. This is so because the syllabi used by the two disciplines are almost identical, except that the clerk typing syllabus has a general grammar component since their English grades at grade twelve level are generally lower than those of their shorthand counterparts.

As we generalise the findings to clerk typing classes it must be noted that the magnitude of the effectiveness may not be as high as that of the shorthand typing population.

As for sample B, findings can be generalised to all automotive classes of the target population in particular and in general other craft engineering courses such as heavy duty mechanics, agricultural mechanics and automotive electrical. In craft engineering, the technical principles and practices involved for the different courses are the same since they all deal with the internal combustion engine and other related aspects. It can therefore be adduced that to a large extent they use similar or related materials under almost similar situations. In general the findings can be generalised to craft construction courses such as metal fabrication, wood machining and trowel trades. O'Keeffe (1983) justifies this generalisation by noting that technical words will differ from subject to subject but the language skills and functions, and the events and activities for which these language skills and functions are used, are usually common to a lage number of occupations. This observation seems to justify the use of the same study

skills and language of work syllabi for the different craft courses in DTEVT. A similar situation obtains in the shorthand and clerk typing syllabuses though the latter's has a grammar component for reasons already mentioned. Specificity does not necessarily mean uniqueness in ESP syllabus design. A large number of language events recur in large numbers of different occupations and even when an event seems specific to a single occupation the activities within that event and language functions required for these activities are common to more than one occupation. The language of work syllabus for instance starts with a brief profile of communicative needs of the craftmen. It then describes the setting in which English will be used, the people with whom it is used and the forms of English required. Main language events are then listed. The profile goes on to deal with the language of handling individuals and groups of people. It also deals with aspects of official correspondence and committee work.

Given these similarities, the differences that arise are in classroom practice. The language teacher has to select syllabus components relevant to the trainees' field of study. Having done this, instructional material can be developed from specialist texts or fields directly related to that field of specialisation, a fact that Robinson (1980) acknowledges. Given the

discussion above, it seems there is little room for doubting the generalisability of the results as indicated earlier on. The fact that ESPCS practice gives room to the use of common core wide angled teaching materials lends further credence to the generalisability of the results. Finally the Newman Keuls Method's validation of all data identification operational hypotheses for all ordered pairs of means provides a statistical justification for the generalisability of the findings to the groups so indicated.

In short therefore, despite the limitations of the study and the fact that it is the first one of its kind to seek empirical evidence on student communication skills performance in their specialist fields since the inception of the ESPCS in the DTEVT, it would be reasonable to give it the benefit of doubt, and generalise the findings to the whole target population within the confines of the institutions during training. This suggestion is supported by the trend diagram (Fig. 1) which indicates a similar trend of performance for the experimental groups because there is no interaction between the groups. How they actually perform in their subject of specialisation during training and in the actual field of work is a serious issue which requires further research.

4.5 Recommendations

i) Since the study has shown that the ESPCS does what it claims to do, its teaching must be intensified.

ii) Evaluation in the form of tests, questionnaires and interviews, in view of changing target situation circumstances, to determine the effectiveness of the course and how it can be improved must be conducted periodically.

iii) Since one major limitation of the study is that its findings cannot be extended to conclude that trainee performance in the subject content of their areas of specialisation correspondingly improves, it is recommended that further appropriate research should be carried out in the DTEVT to determine the actual effect of the ESPCS input on performance in the field of specialisation.

iv) In order for (iii) to be effectively tackled team teaching and/or subject language integration must be seriously considered.

[illegible]

[illegible]

[illegible] (C T [illegible] BY.[illegible] ([illegible])

1.	Administering of pretest one	
2.	–	
3.	Administering of pretest two	
4.	[illegible]	

a. What is communication?

A two way process

Symbols - verbal and non-verbal

Decoding the symbols

Communication media and channels

Element 01:

Varieties of English:

Formal and informal

Polite and familiar

Tactful and tentative

Written and spoken

Standard and substandard

5. Basic communication process

Element 02:

Vertical communication - upwards and downwards

Horizontal communication - inter departmental

External communication - between organisation and outside world.

UNIT A2

B. Library and locating skills

Element 01: Reference books

Title and author

Date of publication

table of contents

index

bibliography, glossary

Dictionaries

Alphabetical order

definitions and selection of correct meaning

Ability to use defined word

Directories

Functions and structure

System and classification

Extraction of information

Element 02: Classification

Dewey Decimal System

Catalogues

Author

Title

Subject

Circulations

System of loans

Period of loans

Extensive Reading

Skimming to obtain the gist and general impression of the text.

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6. UNIT A3 NOTE TAKING AND MAKING

Element 01: Listening for information

(i) Identifying the main point in speech through vocal underlining, end focus and verbal clues.

(ii) Recognising indicators in speech for introducing an idea, developing an idea, transition to another idea, emphasising a point etc.

(iii) Recognising the use of stress in connected speech for indicating emphasis or contrast.

Element 02: Reading for information

(i) Basic reference skills; understanding and use of table of contents

(ii) Graphic presentation: headings, subheadings, numbering, bold print, footnotes.

(iii) Scanning to locate specifically required information.

(iv) Deducing use and meaning of unfamiliar lexical items through understanding word formation.

(v) Understanding relations within the sentence through elements of sentence structure, modification structure and intrasentential connectors.

(vi) Understanding relations between parts of a text through repetition, synonymy, substitution, hyponymy etc.

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7. UNIT A3 NOTE TAKING AND MAKING

Element 03: Techniques of summarising

I Distinguishing the main idea from supporting detail by differentiating

(i) Primary from secondary significance

(ii) The whole from its parts

(iii) Process from its stages

(iv) Statement from example

(v) Fact from opinion

II Extracting salient points to summarise a specific idea in a text

III Recording salient points in reduced form by:

(i) Omission of closed system items

(ii) Omission of repetition

(iii) Compression of sentence or word groups

(iv) Compression of examples

(v) Use of abbreviations

IV Using graphic presentation particularly headings, subheadings, indentation and numbering.

V Transcoding information in a written text to diagrammatic display through constructing a diagram, table or graph; and vice-versa.

UNIT A4: NON VERBAL INFORMATION

Element 01:

Interpreting and transcoding information from non verbal sources (i) graphs (ii) tables (iii) diagrams (iv) bar char (v) statistical maps.

8. UNIT A8: WRITING SKILLS

Logical organisation

Suitable organisations

Possible arrangement of body of text in Chronological order, spartial order, ascending order of importance, descending order of importance, descending order of complexity descending order of familiarity.

UNIT A6: BUSINESS CORRESPONDENCE

Element 01: Letters

Layout

Content: reference, information, purpose, conclusion

Style: Vocabulary, tone, conciseness, clarity, correctness courteousness, objectivity.

Element 02: Memoranda:

Purpose and use

Layout

Content

Element 03: Telegrams:

purpose and use

Layout

Content

Need for brevity, clarity, accuracy, appropriate use of punctuation, correctness of telegraphic address.

UNIT A7: ORAL COMMUNICATION

Element 01:

a. Techniques in business environment.

interviews, meetings

reception.

b. Oral instructions

Receiving instructions

seeking clarification by indicating area of doubt.

Accepting direct instructions.

c. Making requests by stating the problem through explanation, substantiation and justification.

Element 04: Telephone Techniques

Need for:

Answering promptly

Answering with appropriate greetings/information

Taking messages correctly,

rerouting calls to appropriate recepient,

Being polite.

Avoidance of:

rudeness or abruptness,

slang and inappropriate language

10.	REVISION
11.	Administering of post test one
12.	-
13.	Administering of post test two.

APPENDIX 'B'

SCHEME OF WORK FOR AUTOMOTIVE MECHANICS

(SAMPLE B)

WEEK No.	TOPIC
1	Administering of pretest one
2	-
3	Administering of pretest two
4	UNIT A1: ATTENDING LECTURES Element 01. Listening to lectures (i) Understanding patterns of scientific thought (ii) Distinguishing the main idea from supporting detail (iii) Recognising the indicators in a lecture (iv) Understanding relations between parts of a lecture (v) Recognising the use of stress in connected speech (vi) Deducing meaning of unfamiliar lexical items (vii) Understanding information not explicitly stated.
5.	Element 02: Note taking/Making (i) Extracting salient points to summarise a text.

(ii) Recording salient points in reduced form through rejecting redundant items

(iii) Using graphic presentation

(iv) Selective extraction of relevant points from a text

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6. UNIT A2: STUDYING PRIVATELY

Element 02: Seeking further information from text books.

(i) Basic reference skills

(ii) Skimming

(iii) Scanning

(iv) Deducing meaning of unfamiliar lexical items

(v) Elements of sentence structure

(vi) Lexical and grammtical cohesion

(vii) Inductive/deductive organisation

(viii) Distinguishing the main idea from supporting detail

(ix) Reducing the text through rejecting irrelevant items

(x) Transcoding.

Element 03/4: Seeking information from the library, colleagues or lecturers

(i) Skills for eliciting help (initiating, maintaining and terminating discourse)

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7. UNIT A3: WRITING ASSIGNMENTS AND REPORTS

Element 01: Planning

(i) Skimming (ii) scanning

(iii) organisation of information in expository language.

Element 02: Writing

(i) Expressing conceptual meaning

(ii) Expressing relations within and between sentences

(iii) Use of indicators

(iv) Basic layout skills

(v) Transcoding

Element 03: Checking

(i) Locating errors in layout and content

UNIT A4: WRITING TESTS AND EXAMINATIONS

Element 01: Preliminary reading of questions

(i) Understanding instructions

(ii) Skimming to obtain general impression of text and gist of content of each question.

Element 02: Selecting questions

(i) Compare information required and information known.

Element 03: Answering questions using patterns of scientific thought

Element 04: Checking

(i) locating errors in layout and content

8. UNIT B2: WORKING WITH COLLEAGUES, SUPERVISORS AND SUBORDINATES

Element 01: Joint consideration of problems

(i) Identification

(ii) Analysing

(iii) Reaching a solution

Element 02: Communicating results and decisions

(i) Rational exposition - explanation, analysis, evidence

Element 03: Giving instruction

(i) Identification of problem

(ii) Proposed solution

(iii) Means and method

Element 04: Receiving instructions

(i) Seeking clarification

(ii) Proposing other solutions

(iii) Accepting direct instructions

Element 05: Seeking permission

(i) Stating problem

(ii) Making the request

Element 06: Granting or refusing permission

(i) Acknowledgement of request

(ii) Analysing request

(iii) Accepting or turning down request.

9.	UNIT B4: CONTRIBUTING TO THE SMOOTH RUNNING OF THE UNIT
	Element 01: Official correspondence
	(i) Form feeling
	(ii) Report writing
	(iii) Letter writing
10.	Element 01: Official correspondence
	(i) Writing memos and notices
	(ii) Reading official correspondence
	Element 02: Maintaining sufficient stocks
	(i) Assessment of future needs
	(ii) Ordering supplies using forms
	(iii) Ordering supplies by letter
11.	Administering of post test one
12.	-
13.	Administering of post test two.

APPENDIX 'C'

PRETEST 1 FOR SAMPLE A (SECRETARIAL)

SITUATION A

You are the Personal Secretary to the Accounts Manager at Chitina Machine Hiring Company. One afternoon your phone rings and the following conversation takes place:-

(X) You: Good afternnon. Chitina Machine Hire. Can I help you?

(Y) Mrs Musofu: I'd like to speak to Mr Sekaseka.

(X) I'm sorry he is out at the moment. May I help? I'm Mr Sekaseka's Personal Secretary.

(Y) Well, it's really quite important. I'd like the matter to be dealt with urgently. We received a letter from you this morning threatening legal action if we did not pay our bill. Now this bill was paid two weeks ago. It's really quite amazing. We've been doing business with you for well over four years and we have always paid promptly.

(X) Oh, I see. Well, I'll certainly look into this for you at once and I'll see that Mr Sekaseka knows about it. May I have your name, please?

(Y) It's Musofu from John Wood Limited.

(X) Ah, yes, Mrs Musofu. You are down Project Avenue, aren't you? On the Mafwasa Industrial Estate?

(Y) That's right. You know even if our bill had been outstanding, I'd have thought you would have given me a ring - not this threatening letter business. We've been good customers long enough.

(X) Well, Mrs Musofu, I'm sure there has been some clerical error which we can sort out. Do you happen to have the Invoice in front of you? If you can give me the number I can trace your account quickly.

(Y) As a matter of fact I do. It's 1512/BA Did you get that?

(X) 1512/BA. I'll look into this straight away, Mrs Musofu. If there are any further problems I'll ask Mr Sekaseka to phone you when he gets back.

(Y) I suggest you sort it out pretty quickly. I can go elsewhere for these machines you know.

(X) I'm sure there is a simple explanation.

(Y) I certainly hope so. Good bye.

(X) Good bye.

TASK 1

Write the notes you made during the conversation

TASK 2

After the call you checked relevant documents and made the following notes:-

Files - JWLTD's bill overdue 1 wk.

- JWLTD paid 10 days late.
- Clerk told to send warning to customers overdue 1 mth.
- Clerk sent JWLTD form letter for 2nd warning.
- Seems to be only error of the sort.

From the notes you made during the phone conversation and those on checking files, write a memorandum to Mr Sekaseka about the problem.

TASK 3

Seeing that you are more acquainted with the problem, Mr Sekaseka, after reading your memo, requests you to write a letter of apology to John Wood Ltd.
Write the letter.

SITUATION B

At Chitina Machine Hiring Company it has been established practice in the past for all staff within the Company to be granted use of the Company Switchboard to make personal phone calls provided they identify their name, extension number and the number they wish to call.

This information is then relayed by the Switchboard Operator to the Accounts Department and it's your duty to make out Personal Telephone Accounts to staff for each month. This information is then relayed to

the concerned officers by Internal Mail.

Recently however, the Company's Telephone Bill has gone very high. This has caused a lot of concern on the part of the Accounts Manager, Mr Sekaseka, who asks you to find out what the problem might be.

Your inquiry reveals the following information:-

(b) The Switchboard Operator reveals that some officers do not reveal the nature of their calls.

(b) The same numbers are called by the same people regularly

(c) The overall volume of personal calls is increasing.

(d) Despite repeated bills being presented, an increasing number of staff are not paying them.

(e) Staff make phone calls on behalf of outsider

(f) Some members of staff say they are receiving fake bills.

(g) The Switchboard is sometimes left unmanned, hence open to abuse.

TASK 4

Prepare the report for Mr Sekaseka on your findings and suggest what action should be taken to redress the situation.

TASK 5

After examining your report, the Accounts Manager decides to call a meeting for Heads of Department to discuss the contents of the report.

Write an appropriate notice and agenda for the meeting.

APPENDIX 'D'

PRETEST 2 FOR SAMPLE A (SECRETARIAL)

SITUATION

You are the Typing Pool Supervisor at Starr Textiles Limited. One morning when you report for work you find the following message in your in tray from the Personnel Manager.

Reports reaching Management indicate that the Typing Pool is gradually becoming disorganised.

Work sent to Typists in the Typing Pool goes missing from time to time and the typed work handed back to officers, often after a long delay, is full of errors.

Most of the Typists are either absent or spend most of the time speaking to friends on the telephone. Some leave the office without permission.

This change is greatly worrying because before you took over from Mrs Bubala as the Supervisor three months ago our Kitwe Office used to be exemplary.

I would like you to write a report with recommendations on the prevailing situation.

During your investigations the following is some of the information which comes up

- Casual attitude towards work
- Insurbodination

- Carelessness
- Lack of punctuality

TASK 1

Write the report.

After examining your report Management decides to dismiss you and two other Typists, Kapisa Hachibwatu and Mubwaluka Habasankwa.

TASK 2

Write a letter of appeal to the General Manager at your Head office.

Your appeal is successful. The first thing you do on being re-instated is to call a meeting of all Typing personnel to discuss the report you wrote before your short-lived dismissal.

TASK 3

Write the notice and agenda for the meeting.

After the meeting, at which far-reaching resolutions to jack up typing services are made, you decide to inform the Personnel Manager about the deliberations.

TASK 4

Write the Memorandum to the Personnel Manager.

A week later a Management meeting decides to re-instate one of the other two Typists, Kapisa Hachibwatu, as recommended by the meeting of the Typing Pool Personnel. The Personnel Manager instructs you to inform Hachibwatu using the quickest means. You decide to ring her after discovering that she left a contact phone number.

TASK 5

Prepare notes on the information you wish to convey to Hachibwatu. The information should cover the period from her dismissal up to the time you receive these instructions.

APPENDIX 'E'

POST TEST 1 FOR SAMPLE A (SECRETARIAL)

SITUATION 'A'

You work as a Personal Secretary to the Chief Accountant for Konimani Textiles Ltd.

Of late your Organisation has been facing a lot of operational problems because of a long history of Industrial Unrest.

Last week Management held a Consultative Meeting with Workers' Union representatives to find solutions to the problem.

The Meeting resolved that the General Manager would meet all staff in the various departments. It was acknowledged that unless a solution was found and made to work, large scale redundancies and eventual folding up of the company would follow. The Company was losing a lot of money through payments for raw materials, additional staff and renovations to the Plant.

Another cause of loss of money was identified as being claims against the company from staff who have had accidents while on duty. The meeting resolved that such claims be suspended until a proper safety policy was put into place. During the meeting, Management indicated preparedness to introduce overtime working

hours and productivity bonus payments and to invest in new equipment. These developments would mean that the Accounts department would have to work extra hard to expedite all financial transactions to be introduced.

TASK 1

Write a memorandum on behalf of the Chief Accountant to staff in your department about the impending financial developments in the organisation and their likely implications.

TASK 2

Write the notice of the meeting the Managing Director will hold with staff in the Accounts Department as resolved at the Consultative Meeting. Include an appropriate agenda.

SITUATION 'B'

In view of the uncertainity of the future of the Company you develop a keen interest in reading the appointments page of the Times of Zambia. On 30th March, 1989 you saw the following advertisement:

We require the services of a Private Secretary.

Education

GCE 'O' levels or Grade 12 with credits in five subjects including English Language and a commercial subject.

Qualification

Secretarial Certificate with Shorthand/Typing speeds of 90/55 wpm.

Experience

At least 2 years with a reputable organisation.

Age

Must be at least 22 years.

Method of Application

(i) Apply in own handwriting including copies of relevant documents, names and addresses of two referees of professional standing.

(ii) Your application should reach the undersigned not later than 17.00 hours on Friday 6th April, 1989.

The Group Human Resource Manager
P.O. Box 30075
Lusaka.

TASK 3

Write a letter of application detailed with relevant information.

SITUATION 'C'

About a month later you receive a letter inviting you to attend an interview for the post you applied for.

TASK 4

Briefly discuss some of the factors you should consider in order to have a chance of succeeding at the interview

SITUATION 'D'

While you are awaiting the outcome of the interview, a work-stoppage occurs at Konimani Ltd. You are a member of a Committee appointed by Management to conduct a thorough investigation into the problem.

Your inquiry reveals the following among others:

Poor working conditions

Workers want a senior employee removed

Late coming

Delay in convening a meeting to discuss working conditions

No accommodation

Malingering

Poor working habits

Dishonesty

Wastage and misuse of Company Property.

TASK 5

Compile an appropriate report with suitable recommendations to solve the problems.

TASK 6

Prepare a minute that will accompany the report when it is submitted to Management.

APPENDIX 'F'

POST TEST 2 FOR SAMPLE A (SECRETARIAL)

SITUATION 'A'

You are the Private Secretary to Mrs Ireen Chipindi, the Personnel Manager for Mutena Hikulembalemba (MH) General Manufacturers Ltd. P.O. Box 23140, Lusaka. It is Monday April 16, 1989 and you receive the following internal minute:

PS

Can you investigate the fight in the Typing Pool on Friday last week. I hear property was destroyed. Find out the culprits, write me a formal report on this with recommendation, not later than Friday 27th April.

I. Chipindi

16/4/89

HM/10/1

You immediately embark on the investigation and some of your preliminary findings are:

The people who fought are Magaret Mwelwa, the Typing Pool Supervisor and Linah Mzumara, a Typist. You go to the Typing Pool and you find that two glass panes were completely broken and need replacing; the third one has cracks

but is still strong. There are eight Typists in the Typing Pool including the Supervisor. The other six Typists who were not involved refused to say anything about the fight, when you interviewed them individually.

You decide to interview the two warring parties.

FIRST INTERVIEW

You: Magaret, can you tell me what led to the fight?

Mwelwa: I think there is something wrong with that old woman. There was completely no problem. You see, you gave me those things to be typed. You said they were very urgent, you remember?

You: You mean the Board minutes? Yes, I remember.

Mwelwa: Yes, so I gave them to Ms Mzumara and said "You are the only one who is not typing something urgent, type it. It's wanted this afternoon". Just like that, politely you see. Then she said angrily, "Who told you that what I am doing is not urgent?" Then I said, "I know what work here is urgent and what is not because everything comes through me". She then said I should have respect for her, you know, that sort of thing, because she is older than me. Then I tried to tell her that what I had asked her to do had nothing to do

with her age or experience; there was work to be done and she was the person to do it and that was all. Then she got more angry and started insulting me, calling me a bitch. When I said she was a bitch herself, she grabbed a bottle of correcting fluid and threw it at me. That's when I also grabbed a cup and threw it at her. That's how the fight started.

You: Alright you may go back to your office. I might call you again if I need to, all right!

SECOND INTERVIEW

You: Ba Mzumara can you tell me what led to your fighting?

Mzumara: What did she tell you? Tell me first what she told you, because I know she is a very good liar. What did she tell you?

You: We are not here to discuss what she told me. I just want you to tell me what you know was the cause of the fight.

Mzumara: What ever she told you is not true.

You: Alright, now tell me the truth yourself.

Mzumara: She brought something to type, then she said "Mzumara you are not doing anything, type this". Then I said, "an't you see that

I am typing something here?" Then she said, "I am the boss here, everybody takes my orders without questions", and she said it so proudly that you could see she meant to insult me. Then I said, "go to hell with your being boss here, I know my job, I started working long before you were even conceived". Then she got annoyed and started boasting that she was a form five and that I was only a standard four dropout, that's why I could not get promoted, you know, so many things. So I lost my temper, I am a human being too. Then we fought.

You: Who threw a cup at the other?

Mzumara: She did. She even broke a window.

You: You also broke a window with a bottle, didn't you?

Mzumara: Yes, when I missed her.

You: OK, I might call you again if I find need to.

Mzumara: OK, no problem.

A few minutes later, you call both of them together and discuss the matter. They both agree on who broke what, except in the case of the cracked pane. Ms Mzumara seems to be the guilty party; she reacted irrationally to the supervisor's instructions. You tell her that in her face, and she keeps quiet. They both agree to

bear whatever punishment Management might give them.

TASK 1

Write a report on the incident, including appropriate recommendations.

SITUATION 'B'

One of your recommendation in the report is that a meeting for all typing staff, to be chaired by Mrs Chipindi, should be called. Ms Chipindi agrees with your suggestion after reading through your report.

TASK 2

a) Write a notice and agenda for the meeting

b) What word is used for

(i) a proposal carried by a meeting?

(ii) notes of guidance for the meeting given to the Chairman?

(iii) an addional vote cast by the Chairman in case of a tie?

c) If at a meeting

(i) a quorum is formed what should the Chairman do?

(ii) everyone present votes in favour of a motion, what words are used to declare the results?

SITUATION 'C'

During the course of the meeting you are called to answer a telephone call on behalf of the Chief Sales

Officer, Mr Atanga Mukena. Mr Mukena is away at the Police Station where his junior staff are locked up in cells. The following conversation follows:-

(X) You: Good afternoon, MH Manufacturers. Can I help you?

(Y) Mrs Chibu: I'd like to speak to Mr Mukena.

(X) You: I'm sorry he is out at the moment. May I take a message? I'll pass it on to him when he returns.

(Y) Mrs Chibu: It's really quite important. I'd like the matter to be dealt with urgently. We received a letter from you this morning threatening legal action if we did not pay our bill. Now this bill was paid two weeks ago. It's really quite amazing. We've been doing business with you for well over four years and we've always paid promptly.

(X) You: Oh, I see. Well I'll certainly look into this for you at once and I'll see that Mr Mukena knows about it. May I have your name, please?

(Y) Mrs Chibu: It's Chibu from Katungu Limited.

(X) You: Ah, yes Mrs Chibu. You are down Mtine Avenue, aren't you? On the Nkonde Industrial Estate.

(Y) Mrs Chibu: That's right. You know even if our bill had been outstanding, I would have thought you would have given me a ring not this threatening letter business. We've been good customers long enough.

(X) You: Well, Mrs Chibu I'm sure there has been a clerical error which we can sort out. Do you happen to have the invoice in front of you? If you can give me the number, we can trace your account quickly.

(Y) Mrs Chibu: As a matter of fact I do. It's 449/4329/AB. Did you get that?

(X) You: 449/4329/AB. I'll pass on the message to Mr Mukena. If there are any further problems I'll ask him to phone you when he gets back.

(Y) Mrs Chibu: I suggest you sort it our pretty quickly. I can go elsewhere for these goods, you know.

(X) You: I'm sure there is a simple explanation.

(Y) Mrs Chibu: I certainly hope so. Good bye.

(X) You: Good bye.

TASK 3

Write the telephone message for the Chief Sales Officer.

SITUATION 'D'

After reading your telephone message the Chief Sales Officer checks through relevant files and makes the following notes:

- Katungu paid 10 days late
- Clerk told to send warning letters to clients overdue by one month
- Clerk sent Katungu form-letter used only for 2nd warnings
- This seems to be only error.

As the Chief Sales Officer sets to write a letter of apology to Katungu Limited, a Police Constable calls at his office to summon him to the Police Station to help with investigations into a case of fraud involving his section. Mr Mukena then asks you to prepare the letter on his behalf.

TASK 4

Draft an appropriate letter of apology for Mr Mukena to sign when he returns from the Police Station.

SITUATION 'E'

The Chief Sales Officer is eventually charged with and convicted for fraud along with his junior staff. Subsequently, they all lose their jobs. Mr Mukena's job is advertised and a date has been set to interview short-listed candidates.

TASK 5

How would you prepare for and conduct such an interview? (make brief notes)

APPENDIX 'G'

PRETEST 1 FOR SAMPLE B (AUTO MOTIVE MECHANICS

1. Insert the missing words in the following letter. The words are not provided. You are expected to use your imagination.

Dear Sir,

On 4th January this year, I sent you an ..... for ten sets of 18mm sparking plugs, six sets of fiat 131 cylinders, rings and bearings and four peugeot 504 radiators stressing the important of delivery ..... 16th January ..... the latest, the date on which we close business for annual ..... taking.

I have received no ..... of the order, nor have the items been delivered. Failure to receive them ..... time is ..... serious ..... and I shall be glad if you will look into the matter as one of ..... and let me know when the goods may be expected.

Yours faithfully,

2. From the list of words given below, insert the correct ones in the blank spaces of the cloze text. Do not use any one word more than once. Working, known, manufactured, spite, fit, mostly, speed, regarded, days, sometimes, order, process, accuracy, adjusted, highly, machines, finished.

In ..... of the ..... of modern machine tools, there are still many parts in ..... goods which have to be made or finally ..... by hand to ..... other parts. Work of this kind is ..... as fitting and is carried out by fitters. These are ..... trained craftsmen with a good ..... knowledge of the whole ..... from the original Engineers' drawing to the ..... article.

3. Complete the table below:

Shape	Name of Shape	Adjective
		Square
	Triangle	
	Circle	
	Semicircle	
		Angular

4. Read the text below and do the tasks which follow.

The pump or forced circulation type of cooling system is similar to the thermosyphon type except that it makes use of a centrifugal pump to circulate the coolant through the engine and radiator. The water pump draws the coolant from the botton of the radiator and delivers it to the cylinder block. The coolant circulates throughout the cylinder block through bored passages (water jackets) to cool the engine cylinders. From the rear of the cylinder block, the coolant flows upward into the cylinder head where it cools the valves

and combustion ohambers.

On its way to the front the coolant flows past the thermostat, which if open, permits the water to flow into the upper radiator header tank or a supply tank (if employed). If the thermostat is closed, a portion of the coolant returns to the water pump for recirculati throughout the engine.

A. What do the following items in the test refer to?

(i) "it" sentence 1 .....

(ii) "it" sentence 4 .....

(iii) "its" sentence 5 .....

(iv) "it" sentence 5 .....

B. From the text, find words which have the same or nearly the same meaning as the following words:

(i) Identical .....

(ii) distribute .....

(iii) all over .....

(iv) back .....

(v) lets .....

(vi) burning .....

(vii) goes back .....

C. Which one of the following is the text exemplifying? Put a tick in front of the item of your choice.

(i) a process (ii) an anlysis

(iii) an identification

5. Write a letter to the Manager of your company asking for a transfer from your town to work in a sister company, in the same capacity in another town. Give two good reasons for your request.

6. Recently there was a near fatal accident in one of the workshops. As a workshop foreman write a memorandum to your personnel drawing their attention to the importance of observing laid down safety regulations.

7. A. <u>The Petrol Engine</u>

The fuel and air mixture enters the cylinder. The piston rises and compresses the mixture. The compressed mixture is ignited by the spark. As the combustion gases expand they push the piston down, and the crankshaft turns. In an air craft the crankshaft is connected to the propeller. In a car it transmits power to the wheels.

B. <u>The Jet Engine</u>

The compressor sucks air into the engine, and compresses it. Then the compressed air mixes with the fuel and this mixture is burnt in the combustion chamber. The combustion gases drive the turbine. This drives the compressor. The exhaust gases escape from the engine through the nozzle. This pushes the air craft forward.

I. In the above descriptions the following stages are found; power is produced; the mixture is burned; fuel enters the combustion chamber. Put the stages in the correct order.

(a) _____

(b) _____

(c) _____

II. The following sentences describe the petrol engine in Text A and some of them describe the jet engine in Text B. Separate them and put them in the correct order for describing how each engine works. Use the space provided at the bottom.

a. The exhaust gases escape from the engine through the nozzle.
b. The spark ignites the mixture.
c. The air and the fuel mix together in the combustion chamber.
d. The fuel and air mixture enter the cylinder.
e. The combustion gases drive the turbine.
f. The crankshaft turns
g. The combustion gases expand
h. Air enters the engines
i. The air and the fuel burn in the combustion chamber.

j. The piston compresses the mixture

k. The compressor compresses the air

l. The combustion gases push the piston down.

m. The turbine drives the compressor.

PETROL ENGINE	JET ENGINE

8. You are an employee of Public Works in the Mechanical Service Branch in Kabwe. Many of your juniors in the Automotive Department do not know how to read and write. One old man wishes to go on leave for three months but since he can't write he does not know how to complete the leave forms. Assist him to do so. His full particulars are given in the conversation below:

Old man: You see, my son, I want to go on three months leave starting from June 1 this year.

You: But you have not told me your name and rank.

Old man: Ooh! I last went on leave in 1978, again for three months from August 1.

You: Okay, were you given commutation or not?

Old man: I went on leave for one month and the government gave me money for the other two months.

You: What is your service number?

Old man: My Registration Card Number is 176618/13/1 but on my workshop Identity Card there is another number MS 584/2.

You: Do you want to commute any days again?

Old man: I want an ordinary leave to rest for three months. You see I want to prepare a home into which I will retire in four years time.

You: Where to you want to spend your leave and how do you want to get your money while on leave?

Old man: I don't want to change my paypoint. I will stay with my brother in Kasama near Mwamba Primary School, Box 41087 Kasama.

You: How much do you get paid per month? (He shows you the payslip and you discover that he gets K150.00 before deductions. You also find out his name is JAFFET MWAMBA MWILA). Do you have children?

Old man: I have a wife and four children.

You: What work do you do in the workshop mostly?

Old man: All the past years I was cleaning the workshop but last month I was transferred to giving spanners to the mechanics.

Help the old man fill part A of the application form below.

Original to: Officer

Copy to: Permanent Secretary Ministry/Province
Permanent Secretary, Personnel
Senior Finance Officer (Salaries)
Head of Department

ZAMBIA PUBLIC SERVICE (LOCAL CONSITIONS)

APPLICATION FOR LEAVE AND LEAVE CERTIFICATE

PART A

Surname: ..... Other names: .....

Personnel Division File No: .....Nat. Reg. Card No.....

Ministry/Province: .....

Department: ..... Rank: .....

Division: ..... Salary K ..... per annum

Date of return to duty last leave (or date of appointment if leave not previously taken) .....

Date on which leave was last commuted: .....

When travel warrant was last received: .....

I now apply to take ..... days ..... (state type of leave now applied for ordinary, special, maternity, etc. Section F of General Orders) the first of which is to be ..... and to commute ..... days, making a total of ..... days to be deducted from my earned leave.

I also apply for a leave travel warrant for myself, my wife and ..... children: aged ..... from ..... to ..... and return.

Salary on leave to be paid in the normal way/in advance up to the last day of the month proceeding my return from leave.

My address on leave will be .....

.....

Date: ....

Signature of Applicant

9. Read the text below and answer the questions which follow:-

PORTABLE POWERED HAND TOOLS

Electrically operated hand tools are generally considered to be the tools of the carpenter and joiner - mechanics do not often use them. They can be very dangerous if used incorrectly or carelessly and their potential danger must be recognised.

Many power tools have in recent years become available for 110V supply, especially for work on building sites. They are much safer in use and a shock from this lower voltage would not prove fatal, which could be the case when operating on 240V. Nevertheless, these lower-voltage tools must be treated correctly. In some workshops, tools are driven by a 50V power supply. Some power tools can be obtained with double insulation which means that it is impossible for an operative to receive a shock from the tool. Hence the manufacturers use two-core cables, the earth wire being unnecessary.

However, many portable tools are still driven by a 240V power supply and need to be earthed. To prevent mistakes in the use of tools designed for different power supplies, it is usual to fit different types of

of plugs and sockets for each kind so that damage will not be done by connecting them to the wrong power supply. It must be remembered that neglect on the part of users of power tools may lead to very serious injury. It is essential to observe safety precautions and to understand how the machine works; how it should be used, and its work capacity. The user should make certain that the tool is in good working order and that the correct power supply is available. Every power tool should be inspected for faults at regular interval by an experienced person. If a fault occurs, the tool should be taken out of use immediately and returned to the store room. It is important to attach a note stating the reason why it has been returned.

The cables leading from the power source to the tool should also be inspected regulary and renewed in the case of damage or wear. When used on site, they can be damaged if traffic is allowed to pass over them. Kinks in the cable should be avoided since they can cause damage. Carrying a tool from one place to another, with the lead over the workman's shoulder and the tool hanging down his back can cause the leads to be separated from their connections.

Never adjust a portable tool while it is plugged into the power supply - careless switching-on by a practical joker while adjustments are being made could cause severe injuries. Also, before inserting the plug into the socket after adjustments have been made, make sure

that the 'on/off' switch on the tools is in the 'off' position. Never pull the plug out of its socket by pulling on the cable. This too can detach the leads from their connections. If a change in sound of a portable tool is noticed during use, switch the power off and have the tool inspected for faults.

Safety goggles should be worn in many cases, especially if abrasive materials are being used. Dust masks should be used too, especially when working with asbestos and other dust producing materials.

Safety guards supplied with the machine should be used at all times. Fixing the trigger switch to the 'on' position to relieve the job of constantly applying pressure with the finger is not recommended, because if the tool should slip and come to vest against the operator's body, injuries would result because of his inability to release the switch to stop the machine.

A. COMPLETE THE TABLE BELOW - using words from the following list: Hence, timerelater, and, constant, addition, if, because, reason, never.

LINKWORD	FUNCTION
	Addition
When	
Nevertheless	
	Result
However	
And	

If	
Before	
	Condition

B. What are the subjects of the following verbs?

(i) "Use" para 2 last sentence .....

(ii) "Driven" para 3 first sentence .....

(iii) "Should be used" para 6 first sentence .....

C. What type of reference do the items below make?

(i) "It" para 3 last sentence .....

D. "This too can detach the leads ....." para 5 last sentence. What can detach the leads?

E. Cite linguistic evidence to show prohibition .....

APPENDIX 'H'

PRETEST 2 FOR SAMPLE 'B'

(AUTOMOTIVE MECHANICS)

1. a. Some words have been removed from the following passage. The list of these words is given below the passage. Choose which word goes into which blank space and then fill it in.

You know that in a d.c. generator the revolving part is always the **armature.** In an a.c. generator, ___1___, this is not usually true.

For there are two types of alternators - the revolving - armature type and the revolving field - type. The revolving - armature type alternator is similar in construction to the d.c. generator ___2___ the armature rotates through a stationary magnetic field. ___3___ in the d.c. generator, the e.m.f. generated in the armature windings in converted into d.c. by means of the commutator; ___4___ in the alternator, the generated a.c. is brought to the load in charge, by means of slip rings.

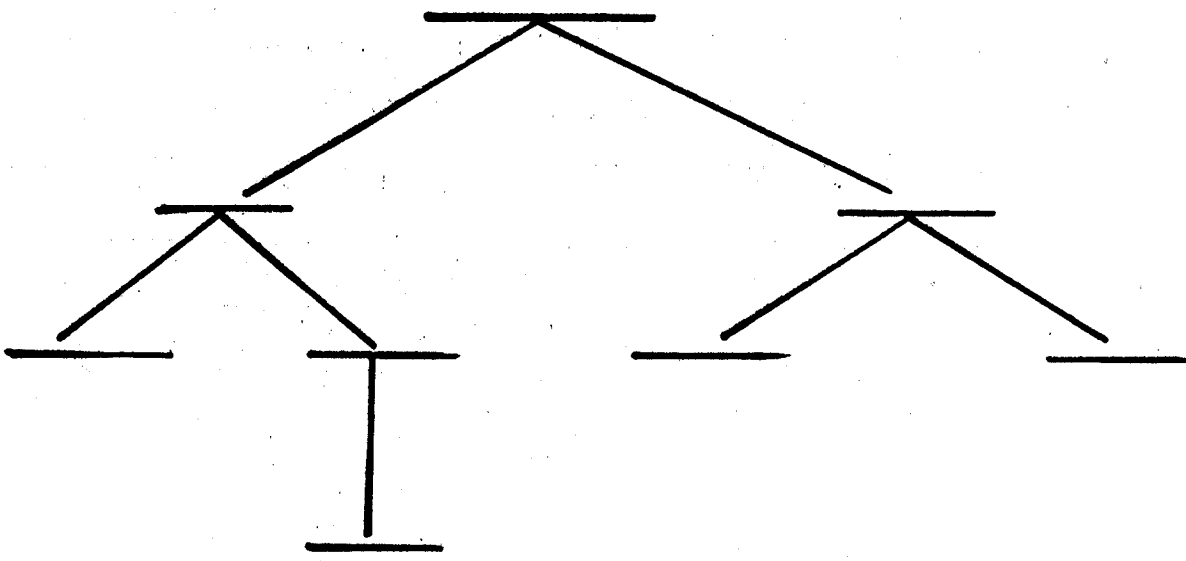
The revolving - armature alternator, ___5___, is only found in alternators of small power rating, and is not generally used.

The revolving - field type of alternator has a stationary armature winding and a rotating field winding. The advantage of having a stationary armature winding is that the generated voltage can be directly connected to the load. Fixed connections are much more easily insulated than would be slip rings at a very high voltage. So high-voltage alternators are usually of the rotating field type. The voltage applied to the rotating field is now d.c. voltage, the problem of arc-over at the rings is not encountered.

List of words

(i)	but	(iv)	since
(ii)	however	(v)	therefore
(iii)	whereas	(vi)	in that

b. The diagram below shows how the main points and supporting details are arranged in the text. Use the passage to get the required information and complete the diagram.



c. After completing the diagram, use the information on it to write a summarised passage.

d. The table below contains words which are used in the text. The other column opposite each word is blank. Pick out words from the text which mean almost the same as the given words.

Word	Its Synonym
i) Generators	
ii) Coil	
iii) Stationary	
iv) Armature	
v) Current	
vi) Multiphase	
vii) Stack	

2. a. What is the difference between the following definition?

i) A file is a tool which is used for removing metal projections in order to produce a smooth surface.

ii) Filing is an operation by which metal projections are removed in order to produce a smooth surface.

b. Briefly define the following:

i) A jack

ii) A steering wheel

c. Provide an appropriate title for the text

3. After reading the text below, attempt the tasks which follow:

A basic gas turbine engine consists of three main parts or sections: the air compressor, the combustion chamber and the turbine. Briefly here is how it works. Air at atmospheric pressure is pulled into the air compressor where its volume is decreased as the pressure is increased. Since compression of air causes a heat rise, the highly compressed air, at high temperature is forced into the combustion chamber. In the combustion chamber a fuel nozzle sprays in fuel, render high pressure to mix with the hot air. The fuel-air mixture is ignited with a resistance type spark-plug. As the fuel-air mixture in a turbine engine burns continuously, once ignited the ignition may be turned off. The exhaust leaves the combustion chamber through a duct to enter the turbine unit. Here it delivers most of its energy to the turbine wheel.

a. In the text the order of steps is indicated only by the order of events. Insert appropriate time words in the text to indicate progression between the various stages.

b. Which of the following does the text exemplify?
(i) Process (ii) Analysis (iii) Identification

c. From the text find words which have the same or nearly the same meaning as the following

(i) made of (ii) burning (iii) sucked
(iv) injector (v) tube (vi) lit

d. Suggest a title for the text

e. What is the major composition of a gas-turbine engine?

f. Identify a causal marker in the text

4. Read the text below and attempt the tasks which follow:

TECHNICAL SERVICE REPAIR CARD

i) Oil tank quantity must be 12 litres or more.

ii) Remove engine oil screen for disposal.

iii) Before installing the external filter assembly, check the red button at top of filter. If it rises 8/30 cm, filter element should be changed. P/N 27-7965.

iv) Place filter assembly mounted on a cart under each engine screen. Each cart is placarded to be used for specific engine position.

v) The filter assembly P/N AD-83330-24 should be at least full with Movil Jet Oil II.

vi) When servicing the filter assembly, be sure that the valve at the bottom of the filter is in close position.

vii) The inlet and outlet part of the filter assembly are attached to a typical screen cover (JT 8D) and a false filter inserted.

viii) Open valve located at bottom of filter to full open position. Repeat: valve should be opened

to full open position before starting engine.

ix) Run engine at 1.02-1.04 EPR for five minutes and observe oil pressure 40-35PSIG. Oil temperature maximum 120 degree C. Oil quantity not less than 12 litres.

x) After engine shut down, close valve at botton of the filter and remove filter assembly cart and instal new main oil screen. Assemble screen per MSL 79-005, M.N. 7090. Torque cover to 25-30 CM/Kgs. Check safety nuts and run engine and check screen for leaks.

xi) Service oil tank.

a. Of the eleven instructions, four are indirect, five are direct, while two are mixed.

i) Identify which instructions fall under each category.

b. Instruction number (x) has five seperate instructions crammed into four sentences.

i) Identify these four instructions.

c. Which three instructions are very clear?

APPENDIX 'I'

POST TEST 1 FOR SAMPLE B

(AUTOMOTIVE MECHANICS)

1. Read the text below and attempt the tasks which follow.

All the cars which are described in this Manual have Pressurised Water Cooling Systems in which the natural thermostat circulation is augmented by a centrifugal impeller mounted at the rear-end of the fan spindle. This impeller receives water from the bottom tank of the radiator and passes it through the cylinder block. It then goes up into the cylinder head until it reaches a thermostat at the front end of the head. The thermostat valve remains closed while the water is cold, so that the water re-circulates round the engine and warms up rapidly. This rapid warm up reduces the risk of severe cylinder bore wear. When the water temperature is in the region of 80°C the thermostat valve opens allowing the water to pass through the top hose into the radiator header tank. From here the hot water falls through the radiator core to the bottom tank, being cooled on its way by external air flow through the core. The volume of cooling air is increased by a belt driven fan.

a. Suggest a suitable title for the text.

b. What do the following items in the text refer to?

i) "All" sentence one

ii) "it" sentence two

c. What is it that passes through the cylinder block in sentence three?

d. In what position is the thermostat valve when the water is cold?

e. Before water falls through the radiator core where does it pass?

f. What is it that the passage is exemplifying?

2. Text (A) below is written in the active (personal) form while text (B) is written in the passive or impersonal form. Text (A) is therefore, less technical than text (B). With close reference to text (A), complete text (B) by filling in the blank spaces with appropriate verb forms.

TEXT 'A'

First I take a small electric bell and hang it with its dry battery from a rubber band. I choose rubber because it does not transmit sound easily. Next I hang the bell inside a bell jar. Then I place the bell jar on a pumping table. As I pump the air out, the sound of the bell becomes fainter and fainter. You will see the hammer moving and striking the bell but you won't hear any sound.

TEXT 'B'

First a small electric bell _____ and hung with its dry battery from a rubber band, Rubber _____ because it does not transmit sound easily. Next the

bell _____ inside a bell jar. Then the bell jar _____ on a pumping table. As the air _____ the sound of the bell becomes fainter and fainter. It _____ that the hammer will be moving and striking the bell but no sound _____.

3. Below are definitions of five devices. Cross out the wrong general classwords in order to give a good definition of the devices.

i) A screw driver is a tool/a piece of apparatus which tightens or loosens screws.

ii) A drill is an instrument/a piece of apparatus which bores holes

iii) A generator is a tool/machine which produces electricity.

iv) A condenser is a machine/tool which converts vapour into liquid.

v) An ammeter is a machine/instrument which measures electrical current.

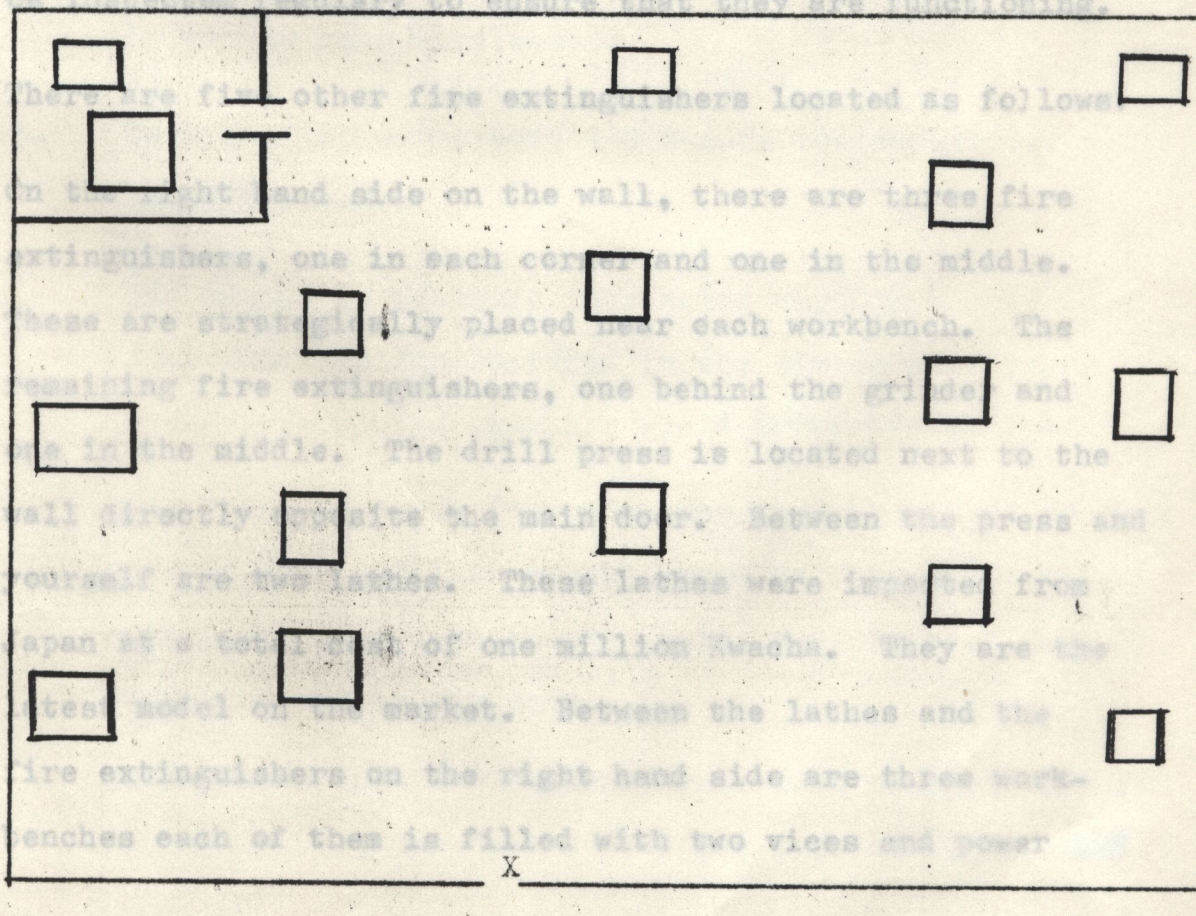
4. Read the following Text and complete the Table which follows:

A ball point pen consists of a case, a small rolling ball, a socket and resevoir. The case is made of plastic. It holds the socket, ball and resevoir. The socket is made of metal. It holds the ball, while the plastic resevoir contains the ink. The ink moves down the resevoir by action of gravity and covers the ball. The ball has two functions. When the pen is in use,

the ball transfers the ink to the writing surface. When the pen is not in use, the ball is stationary and it prevents the ink from drying out. The ink is a sticky liquid containing dye. The ball is made of steel and is generally Imm in diameter.

What a pen consists of	What part thing is made of	What each part does
i) A case		It holds a socke ball, and resevo
ii)	Steel	
iii)	Metal	
iv)		It contains Ink

5. Below is a workshop plan. Study the plan and key carefully. Then read the passage and write down the letter that represents each item in the area where the passage says it is found



Key

Lathes - L; Grinder - G; Work Benches - B; Storeroom - S; Drill Press - D; Fire Extinguisher - F; Where you are standing - X (already marked for you)

You are standing at a point marked X

As soon as you enter the Workshop you will see the grinding machine at your immedite left. This is where all our workshop tools are sharpened. You are advised to ensure that the Quenching bucket is full of water before you grind any tool. At the end of each working day you must return all tools you have borrowed to the Storemen, failure to do so will result in your being charged for the loss of the tools. In the corner of the Store is a fire extinguisher. Fire extinguishers are extremely important in a Workshop and must be inspected regulary to ensure that they are functioning.

There are five other fire extinguishers located as follows:

On the right hand side on the wall, there are three fire extinguishers, one in each corner and one in the middle. These are strategically placed near each workbench. The remaining fire extinguishers, one behind the grinder and one in the middle. The drill press is located next to the wall directly opposite the main door. Between the press and yourself are two lathes. These lathes were imported from Japan at a total cost of one million Kwacha. They are the latest model on the market. Between the lathes and the fire extinguishers on the right hand side are three workbenches each of them is filled with two vices and power

sockets. There are two more benches between the storeroom and grinder.

6. Recently there was a near fatal accident in one of your Workshops. As a Workshop foreman write a memorandum to your Personnel drawing their attention to the importance of observing laid down safety regulations.

APPENDIX 'J'

POST TEST 2 FOR SAMPLE B

(AUTOMOTIVE MECHANICS)

1. You are a workshop foreman. You have paid in full for some goods you ordered from a whole saler. When the goods are delivered, you notice that some of the items are of the wrong sizes. Write a letter to the supplier for immediate replacement of the wrong size items, or a refund on the items not needed by you.

2. The Stores Department of your company has delayed the delivery of goods requisitioned. This is delaying work on a project the General Manager expects to be completed in two days' time. Write a memo to the Stores Department to convey your displeasure.

3. Read the following text and answer the questions which follow:-

The engine is pressure lubricated through a gear type pump which is incorporated in the timing gear cover and driven by the camshaft via a front cog clutch. The pump draws oil from the sump through a suction horn fitted with a filter screen which is fitted to the crankcase by a duct in the timing gear cover. This supplies oil to the pump.

Oil passes from the camshaft rear seat onto the crank shaft rear support where it flows into an adjacent

chamber. From here the oil flows through ducts in the crankshaft front end to the centrifugal oil filter. The centrifugal filter which also acts as a pulley for the generator and blower drive, rotates with the crankshaft.

Oil from the filter enters a passage in the crankshaft where it lubricates the main and connecting rod bearing and passes from a special groove in the front main bearing and ducting in the crankcase into which is inserted the oil pressure warning sender unit, and also the delivery pipe for oil to the overhead valve gear.

The pushrod sleeves provide the return path for the oil from the cylinder head and delivers oil to the tapper gear and the camshaft cams. The tappets are suitably drilled to allow correct circulation of the oil. The tappets are located in two casting cavities one of which communicates with the timing gear housing and the other one to the crankshaft front drain.

The oil pressure is regulated by a pressure relief valve mounted at the rear end of the camshaft. It comprises a hubbed disc which slides on a guide of the oil pump drive shaft. Under spring load the valve disc circumferentially closes an annular chamber which communicates with the lubrication circuit. Excessive oil pressure causes the disc to uncover the chamber.

a. Suggest a suitable title for the text.

b. Read the first four paragraphs of the passage

and decide which amongst the eight sentences below express the main points. Select these points and match each of them with the paragraph it summarises in the table given below:-

(i) Oil from the filter enters a passage in the crankshaft.

(ii) A gear type pump driven by camshaft lubricates the engine.

(iii) Oil flows from camshaft through crankshaft into adjacent chamber to the centrifugal filter.

(iv) The filter screen is fixed to the crankcase by a duct.

(v) Oil drawn from the sump is supplied to the pump through a suction horn.

(vi) The main endrod bearings are lubricated by oil from the filter.

(vii) The crankcase is inserted with an oil pressure warning sender unit.

(viii) Oil passes through ducts to the centrifugal filter.

Now complete the table as instructed above.

Paragraph	1	2	3	4
Main Idea				

c. What is the main point of the fifth paragraph?

d. Mention one function of the pressure relief valve as stated in the sixth paragraph.

e. In paragraph one the word "which" is used. What does it refer to?

f. In paragraph two, last sentence, - what does "this" refer to?

g. "Rotates" is used in the last sentence of paragraph three, what rotates?

h. The words "filled", paragraph two sentence 1 and "passes", paragraph three sentence 1 are used in the text. Find other two words in the test with similar meanings to them.

4. The following text is a transcript of instructions given in the spoken medium. The instructions were not rehearsed or read. As a result they are longer than necessary and less carefully expressed than they would be in writing.

Here are three steps from a written version of the instructions. The numbers show their place in the sequence of instructions.

1. The car should be on firm level ground.

10. Remove the wheel from the studs and put it aside.

18. Finally, you should look around to make sure you haven't left anything lying about.

From the text write a set of instructions 2 to 9. Include warnings, prohibitions and recommendations where necessary.

Well the first thing you have to do is to make sure that the car is on a reasonably level piece of ground

and that the ground itself is fairly firm. Obviously you can't jack the car up if you're standing in mud. (ah) When you're ready, open the boot and get the spare wheel and the tool kit and the jack out and go round to where your flat tyre is. The first thing to do - probably - is to get the jack into the jacking socket and pump it a little bit until it is firm and the car is steady. Then (ah) after you're-of course, you have made sure the handbrake is on (ah) properly (ah) and (ah) at this point you want to check that the front wheels are firmly chocked by a stone or block of wood or something that's convenient. (ah) when this is all ready (er) go back to the wheel, remove the hubcap and loosen slightly the wheel nuts(ah) and when you have done this (ah) then you can (ah) pump away at the jack and raise the side of the car until the wheel - rather the tyre on the (ah) wheel that you want to change is quite clear of the ground. Then, unscrew the rest of the wheel nuts and (ah) - don't lose the wheel nuts incidentally, you put these in the hubcap which forms a convenient little basin for the wheel nuts - (ah) then (er) take bold of the wheel at both sides and juggle it so to speak (ah) off the wheel studs, put it aside (ah) and then get hold of the (ah) spare wheel nuts back into their positions, screwing them up at any rate finger tight and preferably a little tighter if you can do it. (ah) The next thing to do is to (uh) release the jack a little - at any rate until the (ah) new wheel is resting firmly on the ground and at this

point (ah) take the wheel brace and finally tighten up the wheel nuts to their proper tightness. When you've done this - but not before (ah) replaceing the hubcap. (ah) At this point you've almost finished. Pick up the spare wheel and put it back in the boot. (er) Take the jack out of the jacking socket (ah) and replace it with the rest of the tool, kit. (ah) Remove the chocks from the front wheels, have a good look around to make sure that you haven't left anything lying around (ah) and then (ah) if all goes well you should be able to drive off.

5. After reading the text below attempt the tasks that follow.

Mechanic: Your valve clearances need adjusting

Mr Mwale: What are they?

Mechanic: Well, look here. In the top of each cylinder you've got two valves. O.K.? Then here, above the valves, you's got a camshaft. When the engine is going, the camshaft goes round and the cams open each of the valves in turn.

Mr Mwale: So the cam pushes the valves down, does it?

Mechanic: Well, not directly. It pushes down a lever called a finger, and then the finger pushes the valves.

Mr Mwale: Aha. O.K. But what are the valve clearances?

a	b	c	d	e	f	g	h

Mechanic: They are the small gaps that separate the heels of the cams and the fingers, and if the gaps aren't right, the valves won't open and shut properly.

Mr Mwale: Oh, I see, so how do you adjust them?

Mechanic: Right. First you turn the crankshaft so that the valve is closed. Then you check the size of the clearance with a feeler gauge. If the gap is too big or small you adjust it by tightening or loosening the nut at the base of the finger.

TASK A

Match the parts of the sentences on the left to those on the right. Use the table provided below.

a.	The cylinder	i.	is positioned to close the valves
b.	The camshaft	ii.	pushdown the fingers
c.	The cams	iii.	has two valves
d.	The fingers	iv.	is adjusted by turning the nut on the finger
e.	The valve clearance	v.	is used to check the size of the clearance
f.	The crank shaft	vi.	are between the cam heels and the fingers
g.	The feeler gauge	vii.	is above the valves
h.	The clearance	viii.	open the valves

a	b	c	d	e	f	g	h

B. Complete this text with expressions from the above text.

Mr Mwale's car has an indirect camshaft. In another kind of engine, the cams .... down ..... on the ..... of each valve. The valve clearance is the ..... that ..... the camshaft heel and the valve. Because this system had fewer parts, it does not need ..... so often.

C. What is the purpose of the valve clearance?

D. What should be done if

(i) the valve clearance is too small? .....

(ii) the valve clearance is too big? .....

6. Identify the main point in the following paragraph by underlining it.

"When a fault is observed it is not sufficient merely to replace the faulty part. The cause of the faulty must also be located and corrected so that the trouble is not repeated. In relation to positions, it is necessary to consider such things as operating conditions, lubrications, cooling temperature .....".

7. The information below is from a motor cycle servicing manual: use it to answer the questions following it.

Service required every: Month	-	6	12
Miles	200	3,000	6,000
K.M.S.	x	x	x

Change of oil	x	x	x
Clean oil filter			x
Replace spark plugs		x	x
Check ignition timing	x	x	x
Check valve clearance	x	x	x
Replace oil filter			x

(i) What needs doing to the motor cycle after 300 kilometres? .....

(ii) When should you replace the oil filter?

(iii) What items require most attention? .....

(iv) Is it true that the oil filter needs cleaning after the first 300 km? .....

8. After reading texts A, B and C below attempt the tasks which follow.

A. <u>DETONATION</u>

There are degrees of violence of explosions. Except for nuclear bombs, explosions are used in combustion (burning) which takes place in a very short time. The shorter the time the more violent the explosion. Each different fuel has its own rate of combustion under certain conditions. If the fuel mixture is raised to too high a temperatu or if it is over compressed, the rate of combustio may become too rapid, and the mixture is then said to detonate. The overheating and over compression make the flame move very rapidly in one direction only. The very rapid rise in pressure in front of

the flame wall 'hammers' on the cylinder head, or walls or piston. This hammering is heard plane out side the engine and is called picking. It is to prevent this single direction of the flame wall that engine combustion chambers are designed to give swirl to the mixture during firing.

B. BALL AND ROLLER BEARINGS

These are devices to allow one working surface to roll around another as though there were wheels between the surfaces. This cuts down sliding friction but another type of friction known as rolling friction is met with. There are two main types of bearings, one called radial, in which the balls or rollers are spaced round the bearing like the spokes of a wheel, and the other called thrust, in which the balls lie round the bearing like peas in a circular pod. Roller bearings are of two types, parallel-roller, running in parallel cylinder races, and taper-roller, running in cone-shape races. Thrust way round and with the correct clearance or, the correct pre-load pressure.

C. GREASE

All bearings must be lubricated. Engine bearings are fed with oil from the oil pump or by splash from the sump; gearbox and rear axle bearings receive theirs by splash from the gears. Front-wheel hub and dynamo bearings are topped up by a

gun at fairly long intervals. If too much grease is supplied to the front-wheel hubs it becomes compressed, gets hot, melts and may leak past the seals on the brake linings.

I. What is the synonym of 'burning' in text A? .....

II. Pick an example of a conditional sentence in text A .....

III. What do "these" in text B line-1 refer to?..

IV. Give an example of analogy in text B .....

V. Cite evidence of repetion in text B .....

VI. What does "it" in text C line-6 refer to? ..

VII. Answer the following by either indicating T (true) or F (false).

a) The shorter the time of combustion, the more violent the explosion .....

b) Pinking is not a type of hammering ...

c) There are three types of bearing .....

d) The other name for 'ball' is 'roller'

VIII. Name too types of roller bearings .....

IX. Which bearing runs in cone-shaped-races? ..

X. Where do the rear axle bearings receive their oil from? .....

APPENDIX 'K'

FORMULAE

(i) Facility value (FV) or index of difficulty

$$FV = \frac{R}{N}$$

Where R = the number of correct responses

N = number of testees

(ii) Discrimination index (D)

$$D = \frac{\text{correct U} - \text{correct L}}{n}$$

Where n = number of testees in one group

U = upper half

L = lower half

APPENDIX 'L'

ITEM ANALYSIS SUMMARY TABLES

SAMPLE A

PRETESTS

TEST	AVERAGE F.V.	AVERAGE D.
1	.56	.49
2	.62	.61
COMB-INED	.59	.50

POST TESTS

TEST	AVERAGE F.V.	AVERAGE D.
1	.55	.94
2	.65	.83
COMB-INED	.60	.89

SAMPLE B

PRETESTS

TEST	AVERAGE F.V.	AVERAGE D.
1	.59	.53
2	.48	.61
COMB-INED	.54	.57

POST TESTS

TEST	AVERAGE F.V.	AVERAGE D.
1	.48	.54
2	.59	.60
COMB-INED	.54	.57

APPENDIX 'N'

RAW SCORES FOR SAMPLE A (SECRETARIAL) IN THE FOUR MEASURES

SUBJECTS	PRETEST 1 RAW SCORES	PRETEST 2 RAW SCORES	POST-TEST 1 RAW SCORES	POST-TEST RAW SCORES
1	35.00	47.86	53.33	53.33
2	48.33	63.57	71.33	74.67
3	45.71	46.67	61.33	64.00
4	29.29	50.09	59.33	64.00
5	43.33	43.57	64.67	62.67
6	42.14	46.67	68.67	74.67
7	25.00	25.33	57.33	60.00
8	55.00	63.33	74.00	78.67
9	51.67	45.00	59.33	61.33
10	46.67	60.71	65.33	58.67
11	30.00	37.86	59.00	61.33
12	40.00	45.00	65.33	64.00
13	25.00	46.43	52.67	54.67
14	45.00	49.29	67.00	68.00
15.	55.00	65.00	77.33	82.67

APPENDIX 'N'

RAW SCORES FOR SAMPLE B (CRAFT) IN THE FOUR MEASURES

SUBJECTS SS	PRETEXT 1 RAW SCORES	PRETEXT 2 RAW SCORES	POST TEST 1 RAW SCORES	POST TEST RAW SCORES
1	37.60	49.29	77.14	71.67
2	46.43	46.43	65.67	67.14
3	60.71	56.43	72.86	73.33
4	46.43	48.71	64.29	65.00
5	60.71	62.14	61.33	62.86
6	59.29	59.29	76.67	81.43
7	47.86	50.43	60.00	61.43
8	59.29	61.29	71.43	71.67
9	30.71	37.86	57.14	60.00
10	46.43	49.29	51.43	60.00
11	36.43	43.86	71.43	75.00
12	39.29	42.14	61.43	73.33
13	55.00	56.00	75.71	76.67
14	20.71	23.86	51.43	46.67
15	55.00	57.71	68.57	68.33

APPENDIX 'O'

SUMMARY OF SINGLE-FACTOR ANOVA PROCEDURE AND THE RESULTING F. RATIO FOR SAMPLE A

SOURCE OF VARIATION	SUMS OF SQUARES (SS)	DEGREES OF FREEDOM (df)	MEAN SQUARES	F
BETWEEN SUBJECTS	3689.19	14		
WITHIN SUBJECTS	7297.95	45		
TESTS	5760.87	3	1920.29	60.31*
RESIDUAL	1337	42	31.84	
TOTAL	10987.14	59		
		*P.01		

APPENDIX 'P'

SUMMARY OF SINGLE-FACTOR ANOVA PROCEDURE AND RESULTING F. RATIO FOR SAMPLE B

SOURCE OF VARIATION	SUMS OF SQUARES (SS)	DEGREES OF FREEDOM (df)	MEAN SQUARES (MS)	F
BETWEEN SUBJECTS	4179.68	14		
WITHIN SUBJECTS	6563.02	43		
TESTS	5177	3	1725.67	52.29*
RESIDUAL	1386.02	42	33.00	
TOTAL	10742.7	59		
		*P .01		

APPENDIX 'Q'

APPLICATION OF THE NEWMAN KEULS METHOD ON TESTS OF DIFFERENCES BETWEEN PAIRS OF MEANS FOR SAMPLE A

(i)

TESTS		b1	b2	b3	b4
	TOTALS	622.00	691.43	955.98	982.68
b1	622.00	-	29.23	293.98	320.68
b2	691.43		-	264.55	291.25
b3	955.98			-	26.7
b4	982.68				-

(ii) p.99 (r,42) 3.82 4.37 4.70

(iii) $\frac{}{\sqrt{nMs\ res}} = 28.85$ q.99 (r,42) 83.48 126.07 135.60

(iv)

	b1	b2	b3	b4
b1	-	NS	**	**
b2		-	**	**
b3			-	NS
b4				-

APPENDIX 'R'

APPLICATION OF NEWMAN KEULS METHOD ON TESTS OF DIFFERENCES BETWEEN PAIRS OF MEANS FOR SAMPLE B

TESTS		b1	b2	b3	b4
	TOTALS	701.89	744.73	994.19	1006.2
b1	701.89	-	42.84	292.3	304.31
b2	744.73		-	249.46	261.47
b3	994.19			-	12.01
b4	1006.2				-

(ii) q.99 (r,42) 3.82 4.37 4.70

(iii) $\sqrt{\frac{nMs\ res}{2}} = 28.85$ q.99 (r,42) 84.99 97.23 104.57

(iv)

	B1	B2	B3	B4
b1	-	NS	**	**
b2		-	**	**
b3			-	NS
b4				-

APPENDIX 'S'

TESTED DATA IDENTIFICATION OPERATIONAL HYPOTHESES:

SAMPLE A

(i) The mean score of b_4 is significantly greater than the mean score of b_1

HO: $b_4 = b_1$

HI: $b_4 > b_1$

Computed q statistic = 320.68

Dritical q statistic at 14 df = 135.60

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(ii) The mean score of b_3 is significantly greater than the mean score of b_1

HO: $b_3 = b_1$

HI: $b_3 > b_1$

The computed q statistic = 293.98

The critical q statistic at 14 df = 126.07

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(iii) The mean score of b_2 does not significantly differ from that of b_1

HO: $b_2 = b_1$

HI: $b_2 > b_1$

Computed q statistic = 29.23

Critical q statistic at 14 df = 83.48

∴ We do not reject the HO since the computed q

statistic is less than the critical q value.

(iv) The mean score of b_4 is significantly greater than the mean score of b_2.

HO: b4 = b2

HI: b4 > b2

The Computed q statistic = 291.25

The Critical q statistic at 14df = 135.60

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(v) The mean score of b_3 is significantly greater than the mean score of b_2

HO: b3 = b2

HI: b3 > b2

The computed q statistic = 264.55

The critical q statistic at 14df = 126.07

∴ We reject the HO since the computed q statistic is greater than the critical q va

(vi) The mean score of b_4 does not significantly differ from the mean score of b_3

HO: b4 = b3

HI: b4 > b3

Computed q statistic = 26.7

Critical q statistic at 14df = 135.60

∴ We do not reject the HO since the computed q statistic is less than the critical q value.

SAMPLE B

(i) The mean score of b_4 is significantly greater than the mean score of b_1

HO: b4 = b1

HI: b4 > b1

The computed q statistic = 304.31

The critical q statistic at 14 df = 104.57

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(ii) The mean score of b_3 is significantly greater than the mean score of b_1

HO: b3 = b1

HI: b3 > b1

The computed q statistic = 292.3

The critical q statistic at 14 df = 97.23.

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(iii) The mean score of b_2 does not significantly differ from that of b_1

HO: b2 = b1

HI: b2 > b1

Computed q statistic = 42.84

Critical q statistic at 14 df = 84.99

∴ We do not reject the HO since the computed q statistic is less than the critical q value.

(iv) The mean score of b_4 is significantly greater than the mean score of b_2

HO: $b_4 = b_2$

HI: $b_4 > b_2$

Computed q statistic = 261.47

Critical q statistic at 14 df = 104.7

∴ We reject the HO since the computed q statistic is greater than the critical q value

(v) The mean score b_3 is significantly greater than the mean score of b_2.

HO: $b_3 = b_2$

HI: $b_3 > b_2$

The computed q statistic = 249.46

The critical q statistic at 14 df = 97.23

∴ We reject the HO since the computed q statistic is greater than the critical q value.

(vi) The mean score of b_4 does not significantly differ from the mean score of b_3

HO: $b_4 = b_3$

HI: $b_4 > b_3$

The computed q statistic = 12.01

The critical q statistic at 14 df = 104.57

∴ We do not reject the HO since the computed q statistic is less than the critical q value.

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