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ABSTRACT

A study was conducted to investigate the future of woodworking in primary schools in Zimbabwe. Although such subjects have generally been organized along the same lines as traditional academic subjects, strategies vary from one country to another and so do the problems. The investigation covered all the primary schools in Zimbabwe teaching woodworking. Data were collected using questionnaires, interviews, and such documents as course syllabi and schemes of work. Responses were obtained from 36 woodworking teachers, 4 primary school headmasters, and 3 curriculum development officers. Findings from the study indicate that some aspects of woodworking can be taught in primary school; in Zimbabwe they are taught in very few urban primary schools. The course, when taught, emphasizes skill training, while suffering from insufficient funds and a shortage of tools, often as a result of theft. The study concludes by suggesting steps that can be taken to improve the present situation, such as increasing the financial and material support or embarking on the design of a broad primary school technical subjects course. (Document includes 35 references, questionnaires and interview forms, and examples of woodworking exercises.) (Author/KC)

THE FUTURE OF TECHNICAL SUBJECTS IN ZIMBABWE'S PRIMARY SCHOOLS

Davison M. Mupinga

DISSERTATION
submitted as partial fulfilment for an
MA DEGREE IN TECHNICAL GRAPHICS EDUCATION

LINKÖPING UNIVERSITY
Department of Education and Psychology
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LINKÖPING UNIVERSITY
Department of Education and Psychology
581 83 Linköping
Phone 013-28 10 00

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Författare:
Author

Davison M. Mupinga

Supervisor: Britta Ericson

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The aim of this study is to investigate the future of Woodwork in primary schools While such subjects have generally been organised along the same lines as traditionally academic subjects, strategies vary from one country to another and so do the problems. The current study concentrates on the future of Woodwork in Zimbabwean government primary schools

This investigation covered all the primary schools in Zimbabwe teaching Woodwork. Subjects of the study were thirty six Woodwork teachers, four primary school Headmasters and three Curriculum Development Officers. Data was collected in Zimbabwe using questionnaires, interviews and from such documents as syllabi and schemes of work.

Findings from the study indicate that some aspects of Woodwork can be taught from primary school. In Zimbabwe they are taught in very few urban primary schools. The course emphasises skill training while suffering from insufficient funds, and a shortage of tools often through stealing. The report sums up by suggesting what steps could be taken to improve the present situation, i.e. by improving the financial and material support or embarking on the design of a broad primary school 'technical subjects' course.

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FOREWORD

This Master of Arts dissertation was prepared within the framework of a bilateral cooperation project between Sweden and Zimbabwe. The Swedish International Development Authority - SIDA - provided financial support for the project.

Linköping University has been responsible for the education in cooperation with the University of Gothenburg. Fifteen students participated in the programme. Three students completed the main part of their education at University of Gothenburg. Twelve students completed their education at Linköping University.

For the twelve Linköping University students, the Department of Crafts and Design held the major responsibility for the courses. The exceptions being the course in research methodology and the actual preparation of the dissertations where the Department of Education and Psychology was responsible. Facilities for the fieldwork were provided by the University of Zimbabwe.

The Department of Crafts and Design has been the host department and responsible for the administration and coordination of the programme.

Linköping May 16, 1989

Bengt Wetterstrand
Head of Department
Dept of Crafts and Design

Lars Owe Dahlgren
Professor and Examiner
Dept of Education and Psychology

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This paper is about the teaching of Woodwork alongside traditionally 'academic' subjects in the primary schools in Zimbabwe. It is submitted as partial fulfilment of a Master of Arts degree in Technical Graphics Education, at Linköping University (Sweden). The Master Degree programme was funded by the Swedish International Development Authority (SIDA) and jointly organised by the Universities of Zimbabwe and Linköping.

I wish to thank all those who have helped me. My special thanks go to the Zimbabwe Ministry of Primary and Secondary Education for granting me permission to visit the primary schools, and to the Education Officers, primary school Woodwork teachers and Headmasters who helped me. I owe many thanks to Dr. Britta Ericson who supervised the study, to Ms. Runa Patel the Research Methodology lecturer and to Mr. Gordon Evans, English language specialist. I also thank the University of Zimbabwe for assistance during the field work.

Lastly, I must thank my wife Evelyn for her encouragement and forbearance.

The generosity and sincere interest of those who took part has not only led to the completion of this report, but also broadened my knowledge of technical education. Many thanks.

Linköping, Sweden, April 1989

Davison M. Mupinga.

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INTRODUCTION

Skilled manpower, a prerequisite of economic development is a scarce commodity in most developing countries. Zimbabwe, faced with an acute shortage of skilled manpower embarked on a major expansion of technical education. Technical subjects i.e. Woodwork, Metalwork, Building and Technical Drawing are mainly taught in secondary schools although some of them are introduced to learners in primary school. They are offered to boys, while girls study Home Economics, which includes Fashion and Fabrics, and Food and Nutrition. It is becoming common these days for girls to study the predominantly 'boys' technical subjects and boys to study the traditionally 'girls' subjects.

Originally, Woodwork skills as other practical skills in Zimbabwe, were learnt from 'father to son' (informal education), before they were introduced into formal education. Technical subjects were introduced in Zimbabwean primary schools during the colonial era, but not much has been published about this. The intention of the Colonialists was that 'practical' subjects would provide skills to those pupils who failed to make their way for secondary education. Now that educational opportunities are open to every citizen, should technical subjects still focus on the colonial objectives?

Technical subjects are introduced in primary schools to promote a technically inclined attitude among pupils. There are advantages in grooming from an early age. Primary school pupils need to exercise their motor abilities and are not yet capable of abstract thinking. So technical subjects strengthen their concept formation useful in acquiring more knowledge.

Although they are important, Woodwork and Metalwork are not today found in all primary schools. Many children are being denied the chance to exercise their motor abilities. These subjects have also suffered from skilled teacher migrations and transfer of training equipment to second-ary schools where there have been greater enrolments. Is this a planned gradual phasing out of the subject from the primary school curriculum?

The situation can be looked at from two angles. On one hand, there is a lack of primary school technical subjects teachers and training equipment, and on the other, we have the country's emphasis on technical education. Perhaps it would be appropriate to introduce the subjects at secondary school level when the pupils have attained the 'right' age.

In this report, the teaching of woodwork in Government primary schools will be examined to determine whether it should continue or be given a new direction in a developing Zimbabwe.

1. SCHOOL SYSTEMS AND VOCATIONAL EDUCATION

The teaching of 'practical' subjects alongside 'academic' subjects, seems to be a strategy adopted world-wide for primary and secondary education. Practical subjects justify their inclusion in the school curriculum (Eisner, 1963) from the basic distinction between practical and theoretical knowledge, implying that some things can only be learnt through practical experience. Teaching strategies incorporating 'practical' subjects in schools vary according to education systems.

This section summarises the past and present education system in Zimbabwe, understanding vocational education, and the reality faced by vocational courses in formal education.

1.1 The educational background in Zimbabwe

When Zimbabwe gained political independence in 1980, it inherited among other things, an education system tailored to the interests of the colonialists. Not only was the education of the African inferior to that of whites, the educational opportunities available to Africans were also inferior.

The introduction of practical subjects in Zimbabwean schools dates back to the colonial era, although the aim then was narrow. In an effort to ensure that the white populace controlled industry, the Colonial education system, denied the African student the training and skills appropriate for a modern industrial society. (Garwe 1981,Mackenzie,1988).

Industrial training was mainly offered by missionaries. According to Ross (1970), this training included farming, building, carpentry, ironwork and, for girls, domestic work. So what was really offered in African schools were manual work skills to serve the society. The education structure had eight years of primary schooling (two 'sub standards' and six 'standards'), plus six years of secondary education divided into three phases. For African education in Rhodesia prior to independence, see figure 1.

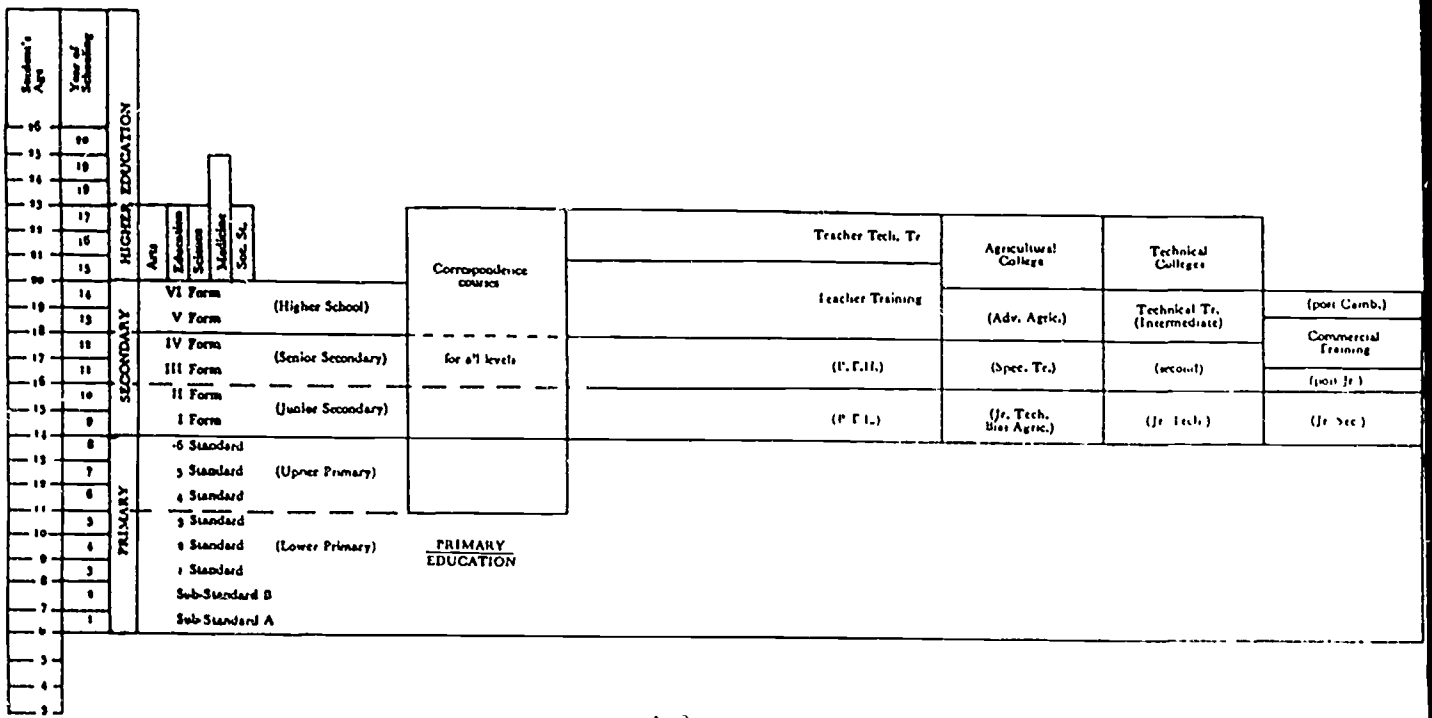

Figure 1: African Education in Rhodesia. Source: Ross,B. (1970,p.226-227)

The intention of the Colonialists had been to offer practical subjects at primary school level although education at this level was available to those who could reach a school. Only 50% of the primary school graduates proceeded to secondary education. Of these, according to Ross(1970), 12.5% went on for four or more years of secondary education while 37.5% received nine years of school, that is, primary schooling plus two years secondary. The remaining 50% were expected to form *"the unskilled workers of the future."* (Ross,1970,p.233).

The 'bottleneck' (as it was termed), at grade seven, where the number that start school is larger than the number that progresses to further education, no longer prevails. The situation is now different educational opportunities are open to every citizen.

1.2 Education system in Zimbabwe

A notable change is the fusion of the two education divisions, African and European, under one Ministry. Tremendous efforts have been put into changing the education policies and curriculum to meet the needs of a developing Zimbabwe. The curriculum changes were to start from, *"grade one onwards, to relate to the needs of Zimbabwe today and future...with great emphasis on scientific and technological bias than had been evident"*. (Mutumbuka 1981, p.3) No changes were made to the education structure after independence.

The education system in Zimbabwe falls under two ministries, the Ministry of Primary and Secondary Education and Ministry of Higher Education. The latter is responsible for technical colleges, teachers colleges and higher vocational colleges.

Schools are either governme ' or privately owned and distributed throughout the nine regions (see figure 2, Source: Government of Zimbabwe).

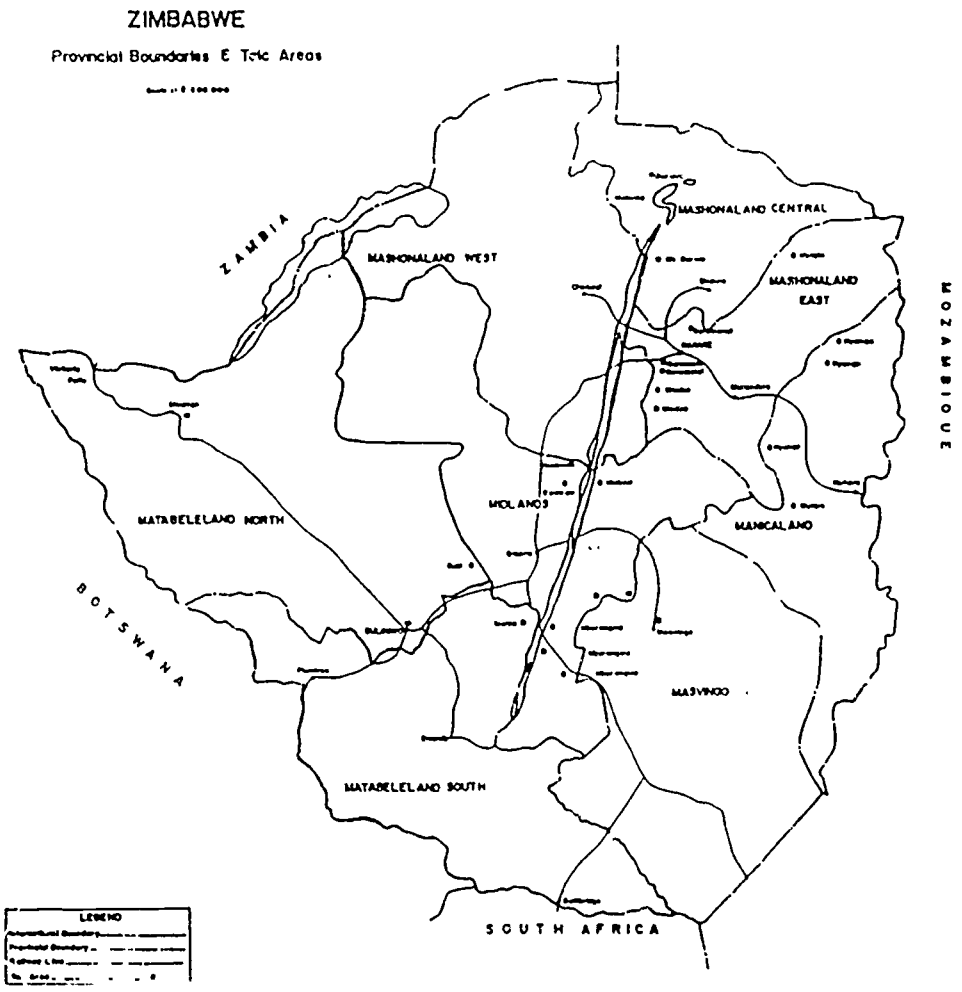

Figure 2: Map showing geographical regions of Zimbabwe

In each of the regions, a Regional Director and his staff are responsible for organising education in their region. The school year (mid January to mid December) is divided into three terms. The official school starting age is seven, although some pupils start earlier. Primary education is free, but parents buy uniforms and exercise books. This school level has seven years, grade one to seven (see figure 3). Except in grade one and two and when teaching vernacular subjects, instruction is in English.

in the sense that no tuition is paid,

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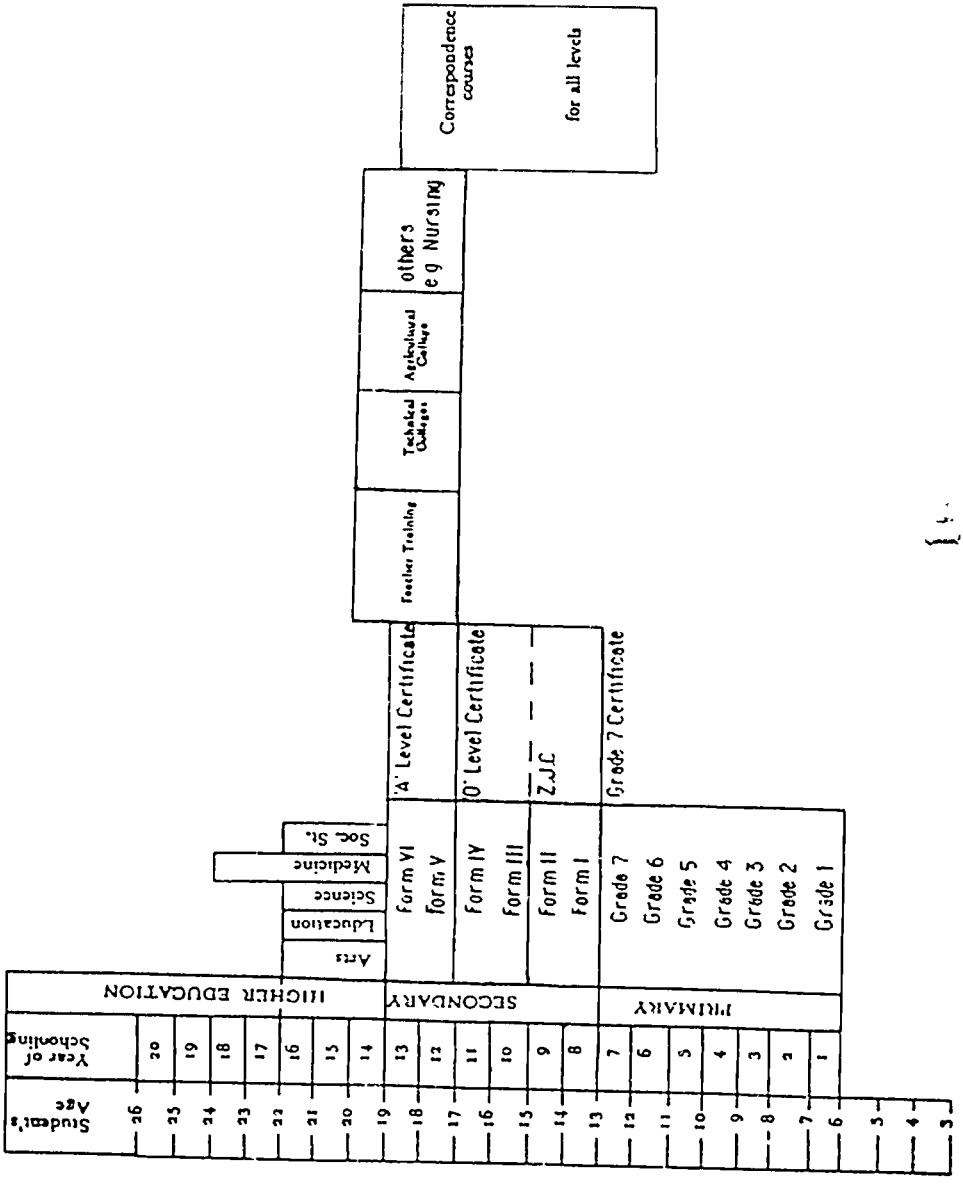

Figure 3: *Education system in Zimbabwe.(Adapted from Ross, B. 1970, p 226)*

Promotion from one class to another is automatic. In grade seven, a national examination set by the responsible Ministry is taken. Nowdays the practise is to allow pupils to proceed to secondary education irrespective of examination performance.

Education at the secondary school level is divided into three cycles; two years of Forms 1 and 2 leading to a Zimbabwe Junior Certificate (Z.J.C), a further two years, Forms 3 and 4 leading to Ordinary level Certificate ('O' level) and finally Forms 5 and 6 for an Advanced Level Certificate ('A' level). There are plans to vocationalize technical subjects after Z.J.C. in secondary schools

The current emphasis on the Z.J.C. examination, implies an automatic promotion to Form 3. Entry to Advanced level studies is determined by passes at 'O' level. Passes at 'A' level, determine not only whether one may enter University but also the type of University studies one can pursue.

Alongside the system of formal education is another system, the non-formal type of education. Students leaving the formal education system at or before 'A' level have the opportunity of entering apprenticeship training. The type of vocational training depends on the school leaving certificate, for instance, one with Grade seven or a Z.J.C. does not qualify for mechanical engineering apprenticeship. Literacy courses for adults are also available thro' hout the country. Private colleges organise distance education courses and the University of Zimbabwe offers full- and part-time courses.

1.3 Education expansion in Zimbabwe

At independence, there were many young Africans who had been denied chances to pursue further studies, either by the 'bottle neck' factor or because of the liberation struggle.

The announcement by the Zimbabwe African National Union-Patriotic Front (ZANU-PF) Government in 1980, of free and compulsory primary education for every child of school going age, increased the number of those that required schooling. This resulted in shortages of physical facilities and teachers, and meant increased teacher/pupil ratios and working in shifts.

The increases in primary and secondary school enrolments since independence can be shown using the figures extracted from Chikombah (1988, p.12). See table 1.

Table 1: 1979, 1980 and 1985 enrolments by levels and types of education

	1979	1980	1985	Increases 1979-1985
Primary	819,586	1.235,995	2,5 M	205 %
Secondary	66,215	74,321	422,584	538 %

By 1985, the percentage increases at secondary school more than doubled that of primary school. As every pupil was expected to study at least one technical subject, the increases required more funds, schools, teachers and equipment. Various strategies such as, hiring of expatriate teachers on contract, building more schools, 'hotseating' * and increases in teacher training enrolments, have been adopted in an effort to meet the shortages.

Expansion of the technical subjects has seen the transference of manpower and training equipment from primary to secondary schools. This could be viewed as a gradual phasing out of the subject from primary schools.

1.4 Understanding vocational education

The success or failure of vocational education in the formal system depends on a number of factors, internal and external.

Vocational courses in the formal education system are often attacked for contributing to economic stagnation. Formal education (Ahmed & Coombs,1975) encompasses organised educational systems that stretch from primary school to university. These are the systems often criticised for not producing 'qualified manpower' for the labour market, for not teaching a development oriented curriculum and for producing graduates without the skills needed by society, thus creating what Blaug (1973) calls 'educated unemployment.'

Whatever the grounds are for such allegations, there is a need to understand what is taught in schools, and when it is appropriate to introduce a particular

* (half the school population is taught in the morning and the other half in the afternoon, Mackenzie 1988).

subject or skill. Some knowledge on what schools are capable of doing is essential if one is to assess the role of schools in economic development. Schools are institutions which cannot be said to be independent of the economic and political elites for their major policies and programmes. Vocational education programmes in formal or non-formal systems - depending on their objectives - are organised differently. There could be two parallel systems of academic and vocational schools, or there could be diversified secondary schools with pre-vocational and vocational programmes in addition to academic programmes (Hultin, 1987).

In addition Hultin says, vocational training could take place in non-formal centres with pre-service and in-service training. The best structure to use would largely depend on the objectives and resources available. One should only evaluate vocational programmes in the light of differences in objectives and the structures under which the programmes are introduced.

Few people disagree with Bowman (1988) when he describes the success of a school programme in terms of the 'portability' of skills acquired. By 'portability', he means the ability to adapt the acquired skills to a given situation or job outside the school. If schools are accused of poor portability of skills then one must put the question why? Is it that the pupil is unable to perform as expected, or is it that he does not find a situation in which to do so? If the schools do not provide sufficient time for the pupils to learn, resulting in inabilities to perform as expected by societies, then they are to blame. But they can hardly be blamed for there not being a situation where the skills can be used.

The problem may be a simple case of mismatch (Blaug,1973). The job expectations generated by the education system and the job opportunities do not match. If this is the case, the school curriculum has to be changed to suit the employment opportunities and expectations of the pupils. This calls for the redefining of objectives and content for vocational subjects to match real job opportunities.

1.5 Vocational courses versus reality

Baldwin (1971) says, vocational subjects are aimed at meeting the labour shortages. This applies mostly to the secondary school. The training in particular skills at secondary school level has been so intensive as to produce manpower for industries.

Perhaps the arguments against vocational schools presented by Blaug (1973) will serve as a summary to the reality faced by such schools.
"vocational schools are expensive, the vocational teachers ought to be well trained and having industrial experience, such people are scarce in any country, the equipment of vocational schools is likely to be outmoded or so advanced as to have little relevance to the country in question, it is virtually impossible to simulate the actual rhythm and discipline of factory work in the classroom and that most students regard vocational schools as second best opportunities and hence are reluctant to take their training seriously." (Blaug 1973, p.22). Similar views are shared by Zachariah (1988), Psacharopoulos (1987 b in Tilak,1988), and Cumming (1988).

Blaug's arguments might not apply to all cases where such subjects are or have been offered. Constraints to vocational programmes depend on a country's state of economic development.

Since technology is not static but dynamic, and since skills easily become redundant, one solution is to let industries (eventual beneficiaries), support this training by providing the training equipment. This will ensure that the skills are not obsolete, and neither is the training equipment too advanced nor irrelevant.

True, these subjects require one teacher for half the class, and use expensive machinery and training equipment which is often scarce. It has been questioned (Psacharopoulos, 1987 b in Tilack1988) that although vocational and technical educational programmes may be 'more productive' than general courses, are they as productive as to warrant their costs? Industries are likely to share the expenses incurred by the schools in training pupils for particular vocations.

On the other hand, Chikombah(1988) and Bowman (1988) support Blaug (1973), in maintaining that the training grounds for technicians, are not the classrooms, but the workshops. This implies letting industries train their own manpower. For acquisition of relevant skills, on-the-job training would be most appropriate. A danger, according to Hultin (1987), is that industries would tend to look after their own interests and these might not coincide with those of society and of the individual. One alternative is to provide basic general prevocational skills in schools.

The other possibility is making the programmes suitable for the non-formal education system, which Ahmed &Coombs(1975) define. as organised and semi organised educational activities for both young and old operating outside the regular structure and routines of the formal system. A problem of

attitudes created by the separation of technical subjects from academic subjects, would need to be dealt with here. This can be taken care of by looking into the selection criteria of those to study the subjects or by the rewarding of technical occupations.

What type of vocational or technical programme - whether formal or non - formal-will heavily depend on the objectives and on what support is given. Letting schools do the training of skills is simply a non starter. The reviewed literature seems to imply that industries should train their own manpower. Schools can help in providing the general training. What remains to be defined is just which courses schools should provide.

2. TECHNICAL SUBJECTS IN THE PRIMARY SCHOOL

Some subjects are introduced at primary school level, while others depending either on the objectives, or complexity of the concepts or skills, are left until secondary school. One may ask; why introduce technical subjects at such an early stage? This section discusses classification of practical subjects before dealing with reasons for introducing technical subjects in primary schools.

Primary schools are institutions which bring together children roughly between the ages of 6 and 14. Such schools form the backbone or foundation for secondary education.

2.1 Classification of subjects

Practical subjects as distinct from 'academic' subjects are characterised by skills (knowledge) that are acquired through practice.

The practical subjects include technical subjects, home economics and vocational subjects. Although there are practical activities in some academic subjects, e.g. physics, it is the proportion of practical activities to theoretical activities which gives the classification. The distinctions between technical and vocational subjects, are not clearly defined, as some practical subjects labelled technical, are classified as vocational in other countries or vice versa.

Technical subjects (Mcleod,1988), involve the mechanical arts and applied sciences (engineering). They are characterized by studying the applied theory (relevant theoretical concepts in a practical subject) followed by skill training in using tools and or machines. The element of 'practical' or skill training in a technical subject is not given as much emphasis. Technical subjects i.e. Woodwork, Metalwork, Building and Technical Drawing are broad in content. They concentrate more on the processes and not so much on the perfection of the skills as in a vocational subject.

Home Economics, i.e. Food and Nutrition and Fashion and Fabrics, deal with the theory and practice of running a home. The teaching is in the form of applied theory and practise of skills, in about the same proportion as for technical subjects. See figure 4, for subject classification. Vocational subjects emphasize the activity or skill training with little or no theory, on well

defined specialised skills. There are specializations in particular trades within a technical subject, e g. plumbing, carpentry, joinery and glazing. In some cases, the instructions for the task in these subjects, take the place of applied theory.

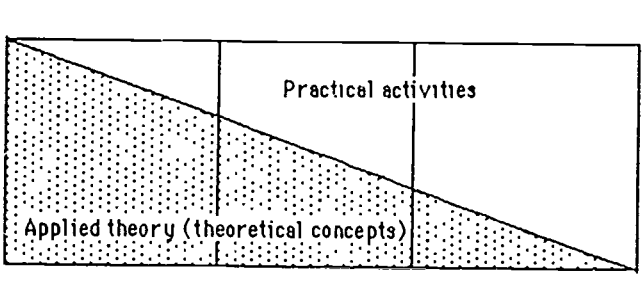

Figure 4: Illustrated differences between academic, technical, home economics and vocational subjects according to the amount of applied t theory.

The author recognises that there are other definitions for these terms so the classification of subjects presented here is not universal. Names of the practical subjects can be misleading as the same subjects may be differently labelled in different countries. The distinctions in the classification are clearer when one analyses the content and the skill training in the 'practical' courses. For the purpose of this study, the distinctions between the subjects will be treated as illustrated above.

In short, a subject will be labelled technical or vocational according to the objectives of the course. If more weight is given to the practice and perfection of skills, it will be classified as vocational. Technical subjects have about the same amount of applied theory and skill practice.

Usually technical subjects are those practical courses provided in formal education systems, while vocational subjects are provided outside schools. The differences are not only in the structure of the programme but in the content and teaching strategy adopted. Bowman (1988) recognises that, at high levels, 'academic' education may be distinctly 'vocational' in the sense that it is a direct preparation for a job. The meaning attached to 'vocational' for the present study is that of a specialised technical occupation.

2.2 The introduction of technical subjects in the primary school

Technical subjects, just like other subjects, are introduced at different school levels. Although most education systems introduce them at secondary school, it is not surprising to find them introduced from primary school level.

In Bangladesh, Sweden and Zimbabwe for instance, some aspects of the technical subject(s) are introduced to learners in primary education. The situation is different in Belgium, Sri Lanka and Kenya, where they are not introduced to pupils until their post primary or post compulsory education. (Elvin, (1981), Lgr 80., Enquist *et al* (1982), Choundhury & Obaidullah (1980), Lauglo and Lillis, (1988).

The author felt that a comparison of the technical courses from developing countries, like Sri Lanka and Tanzania would show similarities and the direction that the Zimbabwean technical education courses are likely to follow. It would also be interesting to look at how a developed country like Sweden (which support technical education programmes particularly in Zimbabwe) views the technical education. As education systems differ from one country to another, a fair comparison of technical subjects programmes should be based on the ages of the pupils, unless the terms primary and secondary education imply the same age groups.

In Sri Lanka, technical subjects i.e. woodwork, metalwork, sewing, agriculture and radio technology are introduced after primary education at the age of eleven in Junior secondary school. They aim at developing appropriate pre-vocational skills. There is also vocational/technical training outside the formal education system offering full or part time courses (Enquist O et al,1982). It is not known whether Sri Lankan girls study sewing only while boys study all the other technical subjects at Junior secondary school. The impact of the subjects at primary school level was not mentioned in the reviewed report.

Sweden introduces Handicraft (slöjd) of two types, textile handicraft and woodwork and metalwork handicraft, at the age of nine from the third grade to the ninth grade of the compulsory school (for ages 7 to 16). This is much earlier than in Sri Lanka. The compulsory school is divided into three levels, junior, intermediate and senior. Handicraft can be introduced before the third grade as long as the time (in periods/ week) allowed for the subject is spread throughout the elementary school level.

Girls and boys in Sweden study the two handicraft subjects. In textile work they learn *"needlework, embroidery, weaving and material and yarn techniques ... in Woodwork and metalwork, they learn to work, assemble, shape and finish wood, metal and supplementary materials."* (Lgr.80,p.1). The time allowed for handicraft per week does not increase with the levels. Two periods for the junior level, nine periods for intermediate and five periods for the senior level are allowed.

Where the demand for skilled manpower and the need to mass produce goods is high, the handicraft idea sounds inappropriate. The handicraft skills (leisure skills) alone are not adequate in developing countries. The situation would be the same even in developed countries, unless handicraft skills are regarded as a supplement to technical skills. Generally when focussing on developing individuals with technically inclined attitudes or awareness of leisure skills, handicraft seems appropriate. Perhaps this explains why handicraft is not offered after compulsory school in Sweden.

Handicraft is not found in the Upper secondary school (gymnasieskolar). Students above the age of sixteen study theoretical or technical subjects in Upper secondary school before joining the University. Different vocational courses at Upper secondary school level are also provided to students joining the labour markets.

Tanzania with an education structure similar to Zimbabwe offers technical subjects at primary school level. This is also the case in some Zimbabwean schools. The Tanzanian reason is that,*"primary education is not a preparation for secondary education but a preparation for life."* (Nyerere, 1981 in Carr-Hill,1984). It was hoped that on completion of seven years of primary education, school leavers would be mature enough to enter directly the world of work.

Blaug (1973,p 8) says, in Tanzania, *"it is the primary school leavers who constitute the bulk of the unemployed"*. A point to note is that training of pupils in vocational subjects does not create demand for their acquired vocational skills. Instead, employment opportunities should demand and determine the type of vocational training. Since primary education is free, one can imagine the heavy financial implications the programme has on Tanzania.

Descriptions of when technical courses are taught in other countries, without analysing the purpose and content of the courses are not significant. Although the school levels and names of subjects at which the technical courses are introduced may be the same, this does not make the programmes identical.

In all the cases described above, education up to the age of sixteen is free while the difference in the countries' economic situation may account for the differences in the programmes. The economy of a country obviously has a bearing on the objectives of technical subjects.

2.3 Primary school pupils and technical subjects

In primary schools, according to Mussen et al (1984), most of the learners aged 7-13 will be at the stage, labelled by Piaget as Concrete Operations. They have difficulties in solving abstract problems. For this reason the technical subjects aim at strengthening the children's concept formation useful in acquiring more knowledge.

While Piaget defines development in stages, there has been evidence to support that development is local, spotty, and uneven (Grubber, & Voneche, 1977). In different developmental stages, the unevenness or *decalage* can be seen in children displaying behaviour that deviates from their chronological age.

According to Bruner's theory of mode of representation (Eisner,1965) children are capable of learning much that we consider beyond their capacities. This is achieved by bringing down the content to the learner's level of comprehension and this explains why some elements of technical subjects are introduced in primary schools.

In Sri Lanka for instance, (Diyasena,1976) where the skills are complex for the primary school pupils and demand a level of maturity unattainable by these pupils, skills appropriate to their stages of development are practised. Often the label attached to a technical subject at primary school level is misleading, until one analyses the course content.

The question to ask here is, are technical skills easily simplified to suit the levels of pupils, without them practising the 'wrong' skills? The best skills come from practising the correct techniques. It might be reasonable to wait until the 'appropriate age', instead of practising 'wrong' skills due to physical inabilities. The present author believes, primary school subjects can be made concrete even without teaching technical subjects. It seems possible that certain technical subjects could be taught at the primary school.

Technical subjects are offered for the general prevocational orientation of students. It is felt (F.A.O Nutrition Studies,1971) that children go to school to prepare themselves for daily life by acquiring the necessary skills to tackle

the tasks that await them in life. The vocations are occupations that the student is likely to find himself/herself in after leaving school. The pre-vocational course is considered informative in occupations and skills for the life ahead.

One of Sweden's goals for handicraft, (textile, woodwork and metalwork subjects) is the acquisition of knowledge on activities in different fields, occupational environments and jobs(Lgr.80). But, to avoid narrowness in pre-vocational orientation courses, the subject should focus on general vocations that is, the content should be broad enough to include many technical fields. If it is not, then the concern is not a 'general prevocational orientation.'

It is hoped that the technical orientation in schools, will make technically oriented courses and occupations seem attractive (Lauglo and Lillis,1988). Normally this is a strategy adopted where the demand for 'academic' occupations is unrealistically high.

In most cases, technical subjects, courses or occupations are looked down upon and this is an outcome of the type of education or opportunities valued most. The technical subjects then, aim at shifting the high demand from academic education, what Diyasena (1976) calls redressing the 'white collar' or 'academic' bias.

The problem is not only one of being biased towards a certain type of work, but also a matter of what occupational opportunities are available after leaving school. It is realistic to assume that one is likely to go into a job where more satisfactory conditions and better prospects prevail. Not only that, it is also a case of knowing which 'side of the bread is buttered.'

In attitude formation, it is an advantage to expose the learner to technical subjects fairly early. According to Gahagan (1980), if the learner already has strong feelings on an issue then he is likely to resist any new information that contradicts his beliefs. Therefore grooming of the child needs to star fairly early if the proper attitudes towards technical employment are to be instilled.

Are the pupils in primary school in a position to make realistic judgements about their future vocations? Probably not. But they are certainly open to impressions. At secondary school pupils are more mature and so more capable of making realistic vocational choices.

Foster (1977) interviewed 210 Ghanain 'academic school' students preparing to look for work or continue with their education. Given the freedom to

choose what kind of employment they ould most like to obtain, 62% said they wanted to become artisans or farmers and only 30% favoured whitecollar employment. This finding seems to suggest that technical oriented courses can be attractive.

The second question concerned the type of employment they actually expected to obtain. He describes their responses, as a display of a 'remarkable level of realism.'

Their choices showed they were well aware of the job opportunities available. Of the 51% that said they wanted to become skilled artisans only 22% expected to do so. On the other hand while only 3.3% had hoped to become semi-skilled or unskiiled workers, 35% were actually destined to enter such occupations. He sums up his findings by saying, *"there is little foundation to theories attributing to the curriculum as a major influence on vocational aspirations."* (Foster, 1977, p. 362)

Teaching technical subjects in school cannot alone make the technically oriented vocations attractive, when the existing economic rewards are much better for those with academic qualifications. In any case recipients of the pre-vocational skills training can hardly be expected to opt for non existing technical vocations.

What aspirations pupils have are largely determined by their perception of what job opportunities are available at that particular time. Unless the economic sector responds by providing job opportunities, efforts by schools to persuade students into technical vocations will be fruitless.

Infact, Psacharopoulos (1987b in Tilak, 1988) argues that, if unwilling students are forced into vocational education, as is the case in many countries with restricted general education streams, graduates will anyway always find their way into the academic track later. It is common to find those with specialist technical skills in occupations that do not require their skills, simply because it is the only job alternative.

One can only suppose that, pupils will analyse their school experiences, their abilities, and the opportunities available when deciding their future education or vocations. Lovell, (1973) adds to the list, parents occupations, the experience and opinion of friends, interest and success in relevant school subjects.

2.4 Conclusion

The reasons for introducing technical subjects at primary school level, looking at the problem from developmental and learning theories, could be, the children's concrete stage of development, the need to develop or exercise motor skills and the promotion of a technically inclined attitude. These reasons seem valid, but the latter objective needs to be carried over to secondary schools, and if no support (technical opportunities) is got from the economic sector, efforts to promote the attitudes will be in vain.

Practical subjects originally aimed at the pre-vocational training of students. In fact, at the secondary school the training has been so intensive as to actually provide well-defined specialist skills. At the same time, the non availability of technical opportunities has tended, to thwart attempts to promote technical attitudes. Close cooperation between the school and the industries is called for to bridge the gap between the school curriculum, job opportunities and pupils expectations.

The literature reviewed has shown how unpopular vocational programmes within the formal education setting are. Apart from their basic requirement of more finance, skilled teachers and training equipment, when faced with the dynamic technology of real life, they are found wanting. Schools should provide the more general pre-vocational technical subjects orientation course Academic and practical subjects, should not be segregated if healthy attitudes towards technical subjects are to be sponsored. Industries should then train employers to their needs.

It is logical to draw the conclusion that, since the promotion of technically inclined attitudes is receiving less priority, schools ought to teach technical subjects. The pre-vocational courses can be introduced at whatever level appropriate, depending on the objectives. Depending on how they are run, general prevocational courses are less expensive than technical courses.

Much of what has been published concerns technical subjects at secondary school level. Most of it originated from countries other than Zimbabwe. The little pertaining to Zimbabwe that was available concentrated on technical and vocational subjects at secondary school or in the formal and non formal sectors.

The literature reviewed has not only varied in terms of contexts but also in terms of the results obtained. These differences could be attributed to different education systems, indigenous cultures, and the economy of the

countries in question. For these reasons, the literature reviewed is not a satisfactory ground for assumptions related to Zimbabwean circumstances, even though similarities could be expected where the education systems and economy are almost the same.

The literature reviewed gives limited possibilities for constructing hypotheses. However, owing to the lack of studies in this area in Zimbabwe and to portray accurately the state of affairs regarding the teaching of technical subjects in Zimbabwe's primary schools, a descriptive study should offer possibilities to draw conclusions about the future of Woodwork in Zimbabwe's primary schools. As supported by Best (1959), such studies do not merely describe 'what is', but will organise and analyse data to derive significant conclusions.

2.5 Research questions

The main intention of the study is to find out how Woodwork is organised at primary school level and what aspects of the Woodwork course need consideration. This is in no way an attempt to redesign a complete primary school Woodwork course or an assessment of the teaching of Woodwork in Zimbabwean Government primary schools.

In order to determine the direction of Woodwork in Zimbabwe's Government primary schools the following questions need to be answered.

(a).What is the number of primary schools offering Woodwork and/or Metalwork since 1980 ?

(b).What are the Ministry of Primary and Secondary Education policies regarding primary school technical subjects and how are the courses organised ?

(c).What problems and possible solutions do teachers experience while teaching primary school Woodwork ?

3. DESIGN OF THE STUDY

This section gives an account of what considerations were made to collect data, and of the actual data collection procedure. As mentioned earlier, this study will be descriptive, and will investigate the total population of Zimbabwean primary schools offering Woodwork.

3.1 Subjects

The first aim was to establish the number of primary schools that have offered Woodwork and/or Metalwork since 1980. The list of primary schools, obtained from the Ministry of Primary and Secondary Education (henceforth Ministry) in Harare, indicated only primary schools offering Woodwork. No Metalwork is taught at primary schools in Zimbabwe.

The main study group consisted of Government primary school Woodwork teachers throughout the country. These were obtained from the list mentioned above. Through returned questionnaires and confirmations from Regional offices, ten of the sixty five primary schools said to offer Woodwork no longer did so.(see table 2 for the size of the group to which questionnaires were sent)

Table 2: Number of primary schools enlisted to offer Woodwork in Zimbabwe and the primary schools taking part in the study.

No of schools said to offer Woodwork	Schools not offering Woodwork	No of schools offering Woodwork	Questionnaires received from schools	No of outstanding questionnaires	% of schools, base for study group
65	10	55	36	19	65,5%

Judging by the responses to the questionnaires and confirmation from an Education Officer (henceforth EO.) in the Planning Section (Ministry), there was at most one Woodwork teacher per primary school. Even if the number of outstanding questionnaires is added to the number received, the size of the

group would not be more than fifty five, that is assuming the nineteen primary schools are still offering Woodwork. Since 36 (65,5%) teachers responded from the total, these form the study group.
The Administrative personnel group included three Curriculum Development Unit (C.D.U.) Officers, (Technical Subjects) and four primary school Headmasters.

3.2 Data collection methods

Different methods can be used for collecting data on problems and solutions teachers experience while teaching Woodwork on the primary school level. Common methods used in the field of Education are interviews, observations and questionnaires. However, observations were not considered since an adequate number to warrant reliability and validity were not possible in the time available (see Best,1959). All of these methods have their strength and weaknesses.

Interviews allow the interviewer to ask for elaborations or pursue the responses with the subjects. They have varying degrees of flexibility and can either be structured or unstructured (Wiersma,1969). People are more willing to talk than write (Best 1959). Where a rapport exists, confidential information may be obtained that an individual is reluctant to put in writing. However interviews are expensive and time consuming, and problems arise when the subject is uneasy or when individuals with the desired information are not available.

Questionnaires also have open and closed questions. They take less time to reach all subjects and the respondent is kept to the subject. Long, vaguely worded and poorly organised questionnaires meet with unfavourable reactions (Best,1959). The main problem with questionnaires is that you do not often get 100% response.

Interviews unlike questionnaires, allow for follow up of responses. For the present study, covering all primary schools offering Woodwork in Zimbabwe, interviews would take far too long. Given the time, financial, manpower and environmental constraints, the author decided to use questionnaires. To complement the information from questionnaires, interviews were considered. For one research objective, it was also necessary to consult documents.

3.2.1 Questionnaire

While open questions allow the respondent to reveal his frame of reference and possibly reasons for his responses, (Best,1959) it was decided to include both open and closed questions.

The questionnaire constructed by the author had fifteen main questions. (see Appendix 1). It focussed on background information about the school and the teacher as well as problems (equipment, finance, maturity) and possible solutions encountered while teaching Woodwork. In designing the questionnaire considerations were given to its length and clarity. Due to the nature of most questions and to ensure content validity of the questionnaire which *"depends on the judgement of an expert in the field"*, (Helmstadter 1964,p 90) three secondary school Woodwork teachers were consulted.

In addition, reliability was ensured by; arrangement of questions starting with the general, varying the method of questioning, and the provision of written explanations of unfamiliar terms used in the questionnaire. (Elliot et al 1964). Questionnaires for such studies need trial runs to ensure that the instrument works. Given the circumstances, it was impossible to try out the research instruments in Zimbabwe.

Instead the questionnare was given to the eleven Linköping University Masters degree, Zimbabwe students, in their capacities as technical subjects teachers. This was done to ensure that the instructions were clear and questions would not be misunderstood. When the students agreed that the amended questionnaire would serve its purpose, no further verifications were considered necessary.

3.2.2 Interview schedules

Given the choice between structured and unstructured interviews, the author felt that for the type of descriptive data required, structured interviews with open ended and closed questions were most appropriate. The interviews were structured in order to make them as equal as possible but with the possibility of adding questions according to responses given during the interviews.

Structured interviews focussed on the teaching of Woodwork. One part of the interview dealt with the organization of the subject, i.e. the content and the methods of teaching. The second part centred on problems of time, work load and attitudes as did those on the questionnaire.See Appendices 2 a and Appendix 2 b.

The interviews were conducted with twelve Woodwork teachers (five in Harare, four in Midlands and three in Manicaland) who had also answered the questionnaire, and four primary schools Headmasters who had not.

3.2.3 Documents

The study also aimed at finding out the stand of the Ministry regarding primary school Woodwork, by examining the subject policies, syllabus and records. These documents detail aims, outline of the content, and developments in the subject. They were to be obtained from the C.D.U. or the E.O.'s (Technical Subjects) in various regions.

The subject policies and Woodwork syllabus, were to be analysed against the background of developmental theories. Part of the information from such documents was to be obtained from the Woodwork teachers responses on the questionnaire.

3.3 Procedure for data collection

The data had to be collected in Zimbabwe between November 12, 1988 and January 16, 1989. The University of Zimbabwe, (Department of Curriculum Studies) on behalf of the author, forwarded the study proposal to the Ministry from which permission to carry out the study was granted (see Appendix 3). The Ministry informed the Regional Directors, who in turn informed the E.O's (Technical Subjects) and primary schools to be visited during the proposed study.

It was practically impossible to visit all primary schools since they are spread throughout the country and were closing for the holidays on 9 December 1988. The questionnaire, together with a stamped and addressed envelope, were sent to all the sixty five primary schools.

The author set up appointments by telephone with E.O's in the Ministry's Head Office (Planning Section), C.D.U (Technical Subjects) and twelve of the primary schools to be visited, five in Harare region, Midlands four and three in Manicaland. The selection of which regions to visit depended on their distances from Harare where most data was to be obtained. In Manicaland and Midlands the schools visited were chosen on the basis of their location in the region and the time scheduled for visiting the particular region. The idea was to visit as many schools within a region as possible.

4. PRESENTATION OF RESULTS

The purpose of this study was to examine the teaching of Woodwork in Government primary school throughout the country. The results to follow, are a summary of the responses to questionnaire and interview questions from some Woodwork teachers and Headmasters. The findings are presented following the order on the questionnaire and, where appropriate, the information from documents and interviews has been included. The study does not employ sophisticated statistics but will use the common percentages and means.

The results are presented in three parts:

-background information of the primary schools and the Woodwork teachers.

-Woodwork on the primary school timetable.

-problems encountered while teaching Woodwork and which are related to training material and maturity of pupils.

Thirty six (65%) questionnaires were returned. Infact 36 may in reality be a higher percentage considering that some of those who did not return questionnaires may not still offer Woodwork. (For the distribution of questionnaires received, see table 3). On the other hand 65% can be considered a low number on which to base sound arguments. According to Wiersma, (1969, p.282) "75% is considered minimum rate of return" on non experimental studies.

Table 3: Distribution of questionnaires received.

Region	No.of schools offering Wood-work	Questionnaires returned	Questionnaires returned %
Harare	17	12	70.6%
Manicaland	6	3	50%
Mashonaland			
East	2	2	100%
Central	1	1	100%
West	4	2	50%
Matebeleland			
North	17	11	64.7%
Midlands	8	5	62.5%
	55	36	65.5%

In Masvingo and Matebeleland South, (not included in the table) no Woodwork is offered in primary school. In other regions as can be seen above some of the questionnaires were not returned. Where there is sparse response according to Best (1959) the obtained data is of limited validity as the information on the unreturned questionnaires might have changed the results materially. This should be kept in mind when reading this section.

However, with the similarities of technical subjects programmes in different regions, the age at which the subjects are introduced and the even distribution of the responses, the results could reasonably be taken to represent the state of affairs concerning Woodwork in Zimbabwean primary schools.

Through questionnaires returned and confirmations from Education Officers, the study established that ten of the sixty five Government primary schools said to offer Woodwork in 1988, either no longer offered the subject or had actually never taught the subject.

The error in the number may have been caused by assuming that one of the specialist teachers indicated on a school's yearly return forms (E.D. 46) was for Woodwork. Specialist teachers (primary school) also include teachers for Domestic Science, Music and Physical Education. Since the list was compiled in November, it was extracted from the 1987 school return forms. Which schools did not offer Woodwork in 1988 would be known when the 1988 yearly return forms are submitted the Ministry.

4.1 Background information

The results indicate the geographical regions and their locations in particular regions of primary schools offering Woodwork in 1988, that responded to the questionnaire. Also presented is the classification of schools as either urban or rural.

The schools are not evenly distributed throughout the country's nine regions, (see table 4). In two regions Matebeleland South and Masvingo, no Woodwork is offered in primary schools.

Table 4: Distribution of Zimbabwean primary schools offering Woodwork in 1988.

Region	Government Urban	Government Rural
HARARE	12	
MANICALAND	3	
MASHONALAND		
EAST	2	
CENTRAL		1
WEST	2	
MASVINGO	-	
MATEBELELAND		
NORTH	11	
SOUTH	-	
MIDLANDS	5	
TOTAL	35	1

Only one rural school established after 1980 offered Woodwork. An interview with an EO.revealed that all the other primary schools were established around 1963. Thirty five responses indicated that only Woodwork and no Metalwork is taught in schools. No information indicated that Metalwork was taught. The only case where Welding, simple Metalwork as well as Woodwork was taught was in a school for the mentally handicapped.

In the different regions, the percentage of primary schools offering Woodwork compared to the total number of primary schools is on average, less than 2%. Figures from The Zimbabwe Herald (Tuesday, 31 January,1989)

show the position. In Masvingo region, out of 45 primary schools, none offers Woodwork. In Manicaland, with 776 primary schools, six (0.77%) schools offer the subject. The situation is even worse in Mashonaland Central and Mashonaland East, where only three (0.39%) primary schools out of a combined total of 788 (322+466) offer Woodwork.

Of the thirty six teachers (study group), only one was female. She is a specialist teacher for the mentally handicapped. The teachers professional qualifications range from those with only technical qualifications to those with both teaching certificates and technical qualifications (see table 5). Certificates for technical courses include, Elementary Industrial Certificate (E.I.C), National Technicians Certificate (N.T.C.) and National Industrial Certificate (N.I.C).

Table 5: Distribution of professional qualifications among primary school Woodwork teachers.

Type of certificate	No. of teachers	%
Untrained	2	5.6
P T L.	8	22 2
P T.L. & C E.	2	5.6
P.T.L. & T C.	4	11.1
P.T.H	1	2 8
C E.	3	8 3
J.C. or Std 6 & T.C.	16	44 4
	36	100

KEY
C E. - CERTIFICATE IN EDUCATION
J.C. - JUNIOR CERTIFICATE
P T.L.- PRIMARY TEACHER LOWER
P T.H - PRIMARY TEACHER HIGHER
Std 6 - STANDARD SIX
T.C - TECHNICAL COURSE

Thirty four (94.4%) of the primary school Woodwork teachers were trained while only two (5.6%) were untrained. The teachers have different training, sixteen (44.4%) hold technical training certificates only. They received technical training after completing Standard Six (equivalent to the current grade seven in Zimbabwe) or Junior Certificate (J.C.). The rest have primary school teaching certificates and four (11.1%) teachers have technical qualifications as well. Today, primary school teacher training courses do not include Woodwork.

The teaching experience ranges from inexperienced to very experienced. Seven of the teachers had less than five years experience (see figure 5). Among these were two untrained teachers with only two years of

experience. Two very experienced teachers had forty three and forty eight years of service.

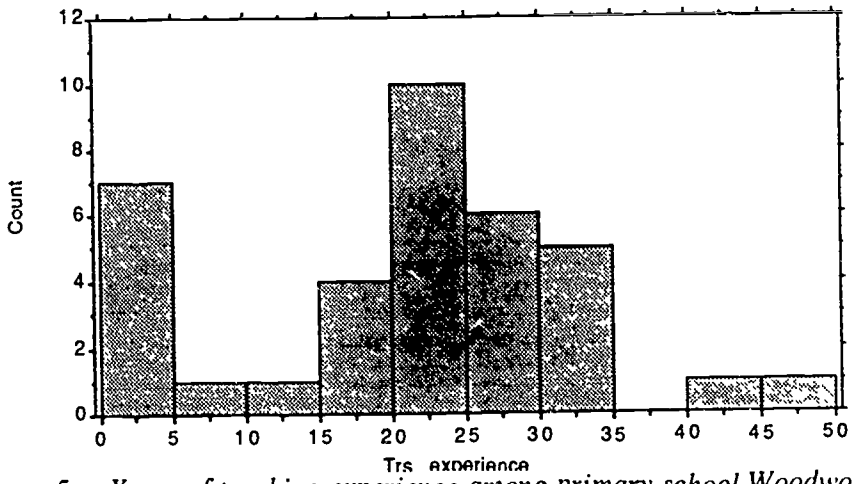

Figure 5: Years of teaching experience among primary school Woodwork teachers.

4.2 Woodwork on the school timetable

In this part, the grades that study Woodwork and the class sizes are presented as well as the time allowed for the subject, teaching methods used and facilities available.

All teachers but one indicated that the schools offer Woodwork to grade six and seven boys only. This was also confirmed by EO's Planning Section. The girls instead study Domestic Science. Boys attend Woodwork lessons in half classes. The size of the half classes vary from thirteen to thirty pupils (see table 6). To the question of class sizes, four of the thirty six teachers responded by giving their answers in terms of average ages of pupils and were regarded as non response. The average (mean) size of a Woodwork class is 22.5 pupils.

Table 6: Number of pupils per primary school Woodwork class in Zimbabwe.

From	To	Count	Percent
13	15	1	3.13
16	16	1	3.13
19	21	10	31.25
22	24	9	28.13
25	27	10	31 25
28	30	1	3.13

According to twelve teachers the author interviewed, most lesson time is spent on practical exercises. In grade six the knowledge of Woodwork tools, their use and care is emphasised. Basic skills such as squaring, planing and simple joints are also practised. In the suggested Woodwork scheme for grade 6 obtained from one of the visited schools, skills such as sawing, planing and jointing are trained in producing coat pegs, racks for towels, letters and pencils (see Appendix 4).

In grade seven more time is spent on producing articles involving almost all the skills practised in grade six. The articles they make are, for example, coffee tables, shoe racks and book cases. Drawings of grade seven exercises were obtained from another of the schools visited and they also include a tea tray (see Appendix 5).

Concerning the teaching of applied theory, responses were obtained from thirty five teachers (one non response). All these teachers indicated that applied theory is taught although they differed according to how frequently they do it before practical exercises (see table 7).

Table 7: Frequency at which applied theory is taught to link the practical exercises.

	Element	Count	Percent	
1	everytime	19	54 286	·Mode
2	frequent	8	22.857	
3	sometimes	8	22 857	
4	seldom	0	0	
5	not	0	0	

The interviewed teachers indicated that explanations on articles made replaced applied theory. This is evident from the grade six scheme of work mentioned earlier. Explanations are made almost every time before a practical exercise.

An interview with a Headmaster said that the time allocated for Woodwork depends on the school enrolment. Time for woodwork is reduced where there are more classes of grades six and seven. To ensure each class gets a turn to study the subject without overloading the teacher. Except in two schools the author visited, grade six and seven have the same hours of Woodwork. The least time allowed for the subject is one hour per week while the maximum is four hours (see table 8).

Table 8: Time per week in minutes allocated to Woodwork class

From	To	Count	Percent
60	89	2	5.9
90	119	0	0
120	149	19	55 9
150	179	6	17.6
180	209	4	11.7
210	239	1	2 9
240	269	2	5.9

A total of thirty four teachers responded to the question of time allowed while two teachers never responded. Nineteen teachers (55.9%) indicated that, they allow two to two and a half hours per week for Woodwork. A teaching load of 36 hours/week was for a Woodwork teacher with twelve classes of grade six and seven, two and a half hours per week per class. Only seven teachers (20.6%) allow more than three hours per week.

Thirty five teachers responded to the question on Workshops. They all have a workshop for Woodwork. From what the author saw in the schools visited, the workshops are not built differently from the other classrooms. Only two teachers (88.9%) felt the sizes of their workshops were adequate while four teachers (11.1%) when it comes to storage of tools, timber and so on did not.

As the Headmasters and teachers see it, the Woodwork store rooms are poorly secured and this has resulted in losses of tools through burglaries. In five of the schools the author visited, there was evidence of doors being cut using a cutting torch or windows broken by thieves to gain entry into the tool rooms.

4.3 Problems of training materials and maturity

The problems presented are of tools, textbooks, finance, and physical and mental maturity.

Thirty five teachers (one non response) responded to the question about tools. Of these, twenty eight (80%) said there were problems while the remaining seven (20%) did not experience any. Among the major problems cited are, burglaries, shortages, inefficient maintenance and replacement, and the high costs of new Woodwork tools. No electric power driven machines were seen in the schools visited.

The replacement of worn out or broken tools is a very difficult process and this has resulted in shortage of tools. The interviewed teachers claimed that the Ministry is supposed to replace and maintain the tools. The prices of tools is increasing day-by-day. In one school the author visited, the teacher expressed the need for small saws and setting planes which children are able to push.

The current grade six scheme of work referred to earlier was printed and last revised in 1969. While a similar document for grade seven was not

available, efforts to secure policy documents specifying the position of the subject on the primary school timetable, were fruitless.

All the thirty six teachers responded to the question on textbooks. Twenty nine teachers (80.6%) expressed the need for one. Although seven teachers did not mention this as a problem the fact is they have no Woodwork textbook. One teacher from a school visited was selecting topics from a C.D.U. Module A Woodwork textbook (designed and currently used in form one). An official from C.D.U. also confirmed the absence of a primary school Woodwork textbook.

Finance is a major concern for all primary school teachers. According to the Ministry rates revised in 1976, a pupil in grade six pays Z$ 4.50 a year while those in grade seven pay Z$ 5.00. The Ministry grants a child the same amount of money as he pays. The total amount of 'industrial fees' per grade six child is Z$ 9.00 and grade seven Z$ 10.00. This teachers claim is insufficient to buy timber and training materials to last for the year. The shortage of funds has led schools to resort to cheaper timber like 'off cuts' as good timber is not only expensive but very scarce.

Thirty six teachers responded to the question about physical maturity. Nineteen (52.8%) teachers did not see any problem. Of the other seventeen, five teachers cited pupils' height as a problem and not the failure to use Woodwork tools. Twelve teachers did not indicate what the problem was. In two schools visited, work benches had been lowered or pupils had been provided with platforms to stand on to reach the top of work benches. The suggestion that appropriate sizes of tools are needed seems to imply problems related to the physical development of the pupils.

All teachers responded to the question about mental maturity. While twenty one teachers did not experience any problems, three of the fifteen who expressed concern complained of slow learners. Interviewed teachers said that pupils with high academic performance also do well in Woodwork. On the other hand those labelled slow learners in other subjects are quite active when it comes to Woodwork.

Some interviewed teachers said that pupils were very interested in Woodwork. They felt it was unfair for Headmasters to withdraw pupils from Woodwork classes for functions like music or to ask pupils to pay for their misdeeds only during the Woodwork lesson.

Out of the total of thirty five responses, twenty six teachers (74.3%) felt that Woodwork can be introduced from grade six (see table 9). There was only one non response. No one felt it would be appropriate to introduce Woodwork at secondary school level.

Table 9: School levels at which teachers felt appropriate to introduce Woodwork

	Element:	Count.	Percent'	
1	gr 1	0	0	
2	gr. 2	0	0	
3	gr.3	1	2.857	
4	gr.4	1	2 857	
5	gr.5	6	17.143	
6	gr.6	26	74 286	-Mode
7	gr.7	1	2 857	

4.4 Conclusion

The study has established that Woodwork is offered in not more than fifty five Government primary schools but none teach Metalwork. Except for one school, they were established around 1963.

The Woodwork course is organised alongside academic subjects in the primary schools but it was not possible to secure policy documents and grade seven scheme of work or syllabus.For grade six, teachers rely on a scheme of work printed and last revised before independence in 1969, and not all schools visited were in possession of it.

The Woodwork course is experiencing problems with tool shortages, inadequate finance, resource material and lack of supervision from Education Officers. While teachers have called for a review of the financial support, most schools are using 'off cuts' and reducing the number of articles made per year to strike a compromise between the costs and shortages of timber.

With the relationship between decreases in numbers of such primary schools and problems of multiple shortages experienced while teaching Woodwork, the unfavourable situation implies that, either a decision has been made to gradually phase out the subject, or priorities are being given to the secondary schools.

5. DISCUSSION

This section is in three parts, firstly a summary of the results, then a discussion on the methods used and lastly a discussion of the findings.

5.1 Summary

A few Zimbabwean government primary schools teach Woodwork to boys from grade six to grade seven. The schools are all in urban areas except for one and they are not evenly distributed throughout the nine regions. As one school was established after independence while the overall number of primary schools has increased by 205% and that some schools no longer offer the subject implies very marginal increases. On the other hand, since more primary schools stopped offering the subject compared to those established, it can be said that the number is decreasing.

The cost of living has risen but the 'industrial fees' granted to the pupils are the same now as in 1976. There is not enough money to replace any worn out tools either, even if they were available. The course emphasises skills and the production of articles (vocational) even though funds are insufficient. The Woodwork scheme in use outlines practical exercises in carpentry and the same articles seem to be made each year. The situation is very difficult to say the least.

Burglaries are a problem which teachers have little control over. Insecurity of most workshops has resulted in loss of tools through burglary when the replacement and maintenance process of the tools by the Ministry is facing difficulties. The Woodwork classes are manned by technically qualified and experienced teachers but the uniformity and standard of the course is doubtful since there is no syllabus and no resource books.

As nothing has changed after independence, the subject as taught can be seen as a 'colonial hangover.' The country emphasizes education with a technological bias and aims at producing individuals not only with skills necessary for the development of society but with respect for work. The question to ask now is, do we need to give the subject a new direction in a developing Zimbabwe?

After realising (when in Zimbabwe) that no Metalwork was being offered in the schools, it was impossible, due to time shortage, to change the questionnaire since it had been printed. But one wonders how this could have

affected the responses. If it affected the responses, then the effect must be negligible. However, interview schedules were changed to omit questions on Metalwork.

It proved impossible to find out the exact number of primary schools that had taught Woodwork since 1980. Although the use of the yearly return forms (E.D.46) from 1980 to 1987 would have provided the information, efforts to get the forms were fruitless. By finding out when the enlisted schools (on Ministry list) were established, or finding out if any such schools had stopped offering the subject, increases or decreases were clear.

Responses to the question about experiences did not distinguish clearly between experience of teaching in general and experience of teaching Woodwork. The wording could have been improved. However it was clear that most teachers were experienced.

Though it would have been best to visit all primary schools, the number of schools visited in Midlands region had to be reduced since the visit was made on a pay day. Due to the similarities of the activities in the schools, however, the number of schools the author managed to visit can be taken as representative.

If teachers think the researcher is a Ministry official, they will naturally be cautious about the answers they give. They may answer not exactly how they see the situation but how they think they are supposed to see it. Something of this nature may have happened in this study. However, a University of Zimbabwe identity removed doubts and made it possible for the teachers to express their personal feelings on problems they experience while teaching Woodwork. It is possible to rely on their responses.

The Curriculum Development Unit (Technical Subjects) mainly deals with subjects at secondary school level. At the moment, nobody looks into Woodwork at primary school level. This meant difficulties in getting current policy documents and grade seven Woodwork syllabus or updated grade six scheme. Since the schools were using a 1969 grade six scheme of work, it would be logical to analyse the course using this outdated scheme.

Although these problems may affect the findings, the effect is negligible and therefore one could rely on the results as a true representation of the situation concerning Woodwork in Zimbabwean primary schools.

5.2 Discussion of findings

According to literature reviewed, Woodwork was introduced in primary schools on the understanding that most pupils were not proceeding to secondary education and it was necessary to provide some pre-vocational training to the pupils before they left school. Now that every pupil can proceed with his education according to his abilities, are the objectives still relevant? On the other hand, is it really the case that everyone will proceed to secondary education? If they do not, then the original objectives are still valid.

The fact that nothing is being done to train teachers to teach these subjects at primary school level and that only one such school has been established after 1980, could be an indication that the days of the Woodwork in primary school are numbered. The massive increases in pupil enrolments and no output of trained teachers, means the few teachers available are overworking or that many pupils are denied the chance to study Woodwork at this level.

A Woodwork teacher with twelve classes of grade six and seven may teach thirty six hours per week. This should be compared to other primary school teachers who work for only twenty hours a week. The difference cannot be accounted for in terms of the half classes of twenty two that they teach. The heavy teaching loads are a direct result of the shortage these teachers.

A look at the financial situation reveals that a grade seven class of twenty two boys is expected to use Z$220 (22 boys at Z$10.00 each) worth of timber and other material for the whole year. The market values of the book cases, tea trays and coffee tables they produce do not correspond to the costs incurred.

Woodwork in primary schools, can be looked at from two angles. Firstly, the subject will be phased out when the teacher transfers or resigns. Its existence on the school timetable depends on the availability of the specialist teacher.

Secondly, is there no chance of giving the course a new direction considering changes in educational policies? Something needs to be done, either modifying the course to suit the new situation or shifting the subject to an appropriate level. Since all the primary schools which have been offering the subject still have their equipment and teachers the course needs to be reviewed. Either the existing problems are tackled and solved, or an alternative is sought.

As to improvements to the existing situation, the financial grants need to be brought in line with the current market prices. Furthermore, technical subjects Education Officers, need to find time to supervise and support primary school Woodwork in their regions.

EO's can also make Woodwork teachers feel their services are worthwhile, by inviting them to seminars or meetings concerning their subject. These exist for secondary school teachers. In cases where the Woodwork teacher has left but the tools are still there, the Headmaster should find someone among his staff who studied the subject to teach.

If the subject is to benefit all pupils, then why is it only introduced in a few primary schools? Such programmes emphasizing skills, have failed under 'universal primary education' as in Kenya, and this could be a reason why not all primary schools offer the subject. On the other hand, there is no reason why the current programme should not enjoy the benefit of it being offered to few schools.

Maybe the reason why nothing is being done about the Woodwork textbook, is simply a question of priorities or of relying on the experience of the teachers. Teachers do need guide-lines and new ideas.

Effective teaching of the subject depends on:

a) Modification of course objectives
b) Review of industrial grants
b) Security of the store rooms
c) Replacement and maintenance of tools

If nothing is done, the subject will die out.

The 1969 syllabus is not in line with prevocational orientation objectives. It is difficult to keep abreast of the ever changing technology and there is a risk of practising outdated skills. This is certainly a waste of resources.

It would be logical to aim at prevocational orientation together with the aim of creating technically inclined attitudes. As argued in chapter two, to give the pupils a broad view of the work life ahead, it would be advisable to teach a broad technical course. In Zimbabwe, for instance a pre-vocational primary school course could teach Woodwork, Metalwork, Building and Technical Drawing. These are the technical subjects that one is likely to find at secondary school level.

Actually the name of the subject does not really matter. What counts are what aspects are actually taught. It is important to avoid early technical specialization by pupils. A general technology course would create a fair platform for all pupils.

There could be other subjects included in this primary school 'Technology' course. The course should give pupils a general idea of what is involved in each subject. This early exposure together with the general technical courses at Form 1 and 2, would assist them in making mature decisions on what vocational courses they can study in future.

Either a 'Technology Studies' syllabus based on the needs and economic constraints of Zimbabwe could be designed or, if woodwork is taught the objectives and course content must be made more relevant. A syllabus, a textbook, the necessary tools and materials must be made available. Available resources must be used to the best effect.

Considering all the aspects that have become apparent in this study, the main implication, is the need for the content of a future primary school 'Technology' course to be outlined and implemented.

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APPENDICES

Appendix 1.

Linköping- Sweden

November 1988

Dear Colleagues

I am a Zimbabwean student, studying for a Masters Degree in Technical Graphics Education, at Linköping University in Sweden. The course demands as part of the final assessment, that a student carries out a research in his area of interest. My interests are in technical subjects (Woodwork and Metalwork) in primary schools (ages 7-13). Following the current emphasis on technical education in Zimbabwe, my specific interests regarding the present study are in the future of Woodwork and Metalwork in Zimbabwe's primary schools

Kindly assist by answering all questions on the attached questionnaire All the information received will be used purely for educational purposes. Also note that when the findings of this study are published, no reference will be made to names of individuals or schools from which the information was obtained.

Thanking you in advance for your co-operation.

Yours faithfully

Davison M Mupinga

NOTE:

Please indicate your choices to the questions by using a (X) in the brackets or write your responses in the blank spaces provided. Do not hesitate to write at the back of the questionnaire if the space provided is insufficient.

1 (a) Name of primary school_____

(b) Region situated _____

2) Classification of school ( ) Government (urban)

( ) Government (rural)

( ) Non-Government (urban)

( ) Non-Government (rural)

3) Which technical subject(s) do you teach ?_____

_____

4). Teacher's background

(a) Sex: Male ( ) Female ( )

(b) professional qualifications ( ) Untrained

( ) P.T L

( ) P.T H

( ) Certificate in Education

Other _____

(c) Teaching experience (years) _____

5) What grades in your school study the technical subjects?

Grade(s)

a) Woodwork_____

b) Metalwork_____

6) What is the average size of classes that study technical subjects?

_____

7) How much time in periods per week and length of periods in minutes is spent on _____

	Grade	Number of periods	Length of periods in minutes.
(a) Woodwork			
(b) Metalwork			

8) Are the technical subjects offered to boys ? ( ) YES

( ) NO

9) Are the technical subjects offered to girls?

( ) YES

( ) NO

10) How often do you teach related theory topics to link the practical exercises?

( ) everytime before a practical exercise

( ) frequently before a practical exercise

( ) sometimes before a practical exercise

( ) seldom before a practical exercise

( ) not at all.

11(a) Do you have a workshop for the technical subject(s)?

( ) YES

( ) NO

(b) How do you rate the size of your workshop ?

( ) adequate ( ) inadequate

12 (A) While you are teaching, do you experience any problems of

(a) TOOLS ? ....( ) YES

( ) NO

(b) TEXTBOOKS ? ... .( ) YES

( ) NO

(c) FINANCE? .... ( ) YES

( ) NO

(B) If any of your answers to the above questions 12 (a), (b) and (c) is yes, state the type of problem(s)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(C) Can you suggest possible solutions to any of your above problems.

13) (A) Do you experience any problems of physical maturity of the pupils when it concerns particular practical skills that the pupils should practise?

( ) YES

( ) NO

B) Do you experience any problems of mental maturity of pupils when it concerns understanding of certain theoretical technical concepts ?

( ) YES

( ) NO

C) If any of your answer to the above questions (13 A and B) is yes, please state the type of problem(s).

13 (D) Have you tried to solve the problems stated in number 13 (C)? How have you been solving the problems?

14 (A) When do you think it is appropriate to introduce some elements of the technical subject that you teach ?

(a) Primary school level

Grade 1( ) 2( ) 3( ) 4( ) 5( ) 6( ) 7( )

(b) Secondary school level

Form: 1( ) 2( ) 3( ) 4( )

B) Give reasons for your opinion

15) Any other problems and recommendations regarding the teaching of technical subjects in Zimbabwe's primary schools.

NB. When you have finished answering all the questions, kindly return the questionnaire to.

Davison M. Mupinga
12 Boyd Way
Southerton
HARARE

not later than December 1988

THANK YOU

Structured questions on the teaching of primary school Woodwork, used during interviews with twelve Woodwork teachers and four primary school Headmasters

1) Who determines the level of theory and practical to be taught in Woodwork ?

2) What Woodwork practical skills/ articles do pupils make in.

Grade (6) Grade (7)

_____

_____

_____

_____

_____

3) (a) How many practical articles do pupils make per term?

(b) Do you consider the number of articles per term adequate?

4) How do you asses the practical articles?

a) do you look at the process?

b) do you look at the finished article ?

c) do you asses from the process to the final product?

d) do pupils make any articles of their choice ?

5) Do they have an external theory /practical Woodwork exam in grade 7?

6) What type of practical articles do they do ?

a) individual tasks?

b) group tasks ?

7) Does the content you cover also include elements of other subjects ?

a) name the subjects.

A list of expected problems experienced while teaching Woodwork in primary schools. Used for interviewing Woodwork teachers and four primary school Headmasters

A) TIME 1) Is the time allowed for Woodwork enough?

2) If the answer is NO, how do you deal with the situation?

B) Work Load 1) How many Woodwork classes do you teach ?

2) What is the average size of each class ?

C) Tools and Equipment 1) Do you have adequate tools?

2) Do you have a secure store -room ?

3) Who owns the tools?

4) Who maintains /repairs them?

5) Do you have the right sizes of tools for the various ages of the pupils?

C) Maturity 1) Do you experience any problems of physical maturity?

2) Do you experience any problems of mental maturity?

3) How do you deal with the problems?

D) Attitudes

How is Woodwork regarded among the theoretical subjects in the school?

a) by other members of staff ?

b) by the pupils themselves ?

E) Materials 1) Do you have problems in getting timber ?

2) Who supplies your wood ?

3) How are the prices of timber compared to what the allocation you receive for the subject ?

F) Finance

Do pupils pay money to assist in the buying of training materials required for the subject?

a) how much do they pay in Grade 6 ?

b) how much do they pay in Grade 7?

G) EVALUATION

How do the objectives of the primary school Woodwork course compare with reality e.g economic constraints? What recommendations can you give to improve the teaching of the subject in Zimbabwe's primary schools ?

Appendix 3.

DEPARTMENT OF CURRICULUM STUDIES
FACULTY OF EDUCATION

Chairman. L. M Nyagura. BSc , MSc . PhD

P O Box MP 167
Mount Pleasant
Harare
Zimbabwe

Telegrams UNIVERSITY
Telephone 303211
Telex 4-152 ZW

UNIVERSITY OF ZIMBABWE

14 November 1988

TO WHOM IT MAY CONCERN

Dear Sir/Madam

---------- is an M.A. Technical student who is visiting your school/institute/centre to carry out some research for the M.A. degree he/she is studying at ----------

Please assist her/him. He is attached to the University of Zimbabwe at present.

S. NONDO
Acting Chairman, Curriculum Studies.

SUGGESTED WOODWORK SCHEME FOR GRADE 6

The attached four sheets contain outline sketches of models suitable for Grade 6 woodwork classes. It should be noted that the scheme is on models incorporating joints and not just joint exercises. Dimensions and shaping are left to the teacher's own discretion. Shaping should be simple and the size of the model dependent on its purpose.

EXERCISES 1 AND 2 are simple planing exercises, showing the use of a plane to smooth rough surfaces. Allow pupils to plane smooth the four sides of the wood without reference to face side, face edge or measurements. The aim will be to produce a rectangular smooth piece of wood. Glasspaper finish. Exercise 1, 2 and 3 are completed in one woodwork lesson. Pupils enter the workshop on there first visit and leave with a completed model.

EXERCISE 3 introduce face side and face edge.

EXERCISE 4 face side, face edge, gauging and planing to width and thickness.

EXERCISE 5 complete preparation of a piece of wood including sawing.

Exercise 4, 5 and 6 may take two lessons to complete, other exercises will vary in time to complete. Aim to complete up to exercise 10 in the first term exercise 11 - 16 in the second term, 17 - 21 in the third term.

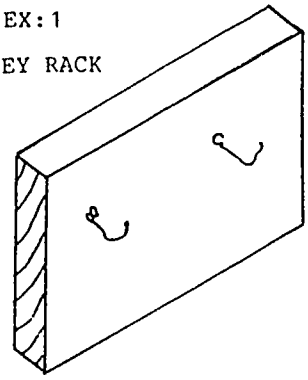
This is only a guide suggestion, time table periods vary from school to school. Again this is only a suggested scheme and NOT a definite department scheme.

Teachers should include their own models and add changes to their schemes every year in order to maintain variety and interest in their subject.

B.W. Carstairs
INSPECTOR OF TECHNICAL SUBJECTS.

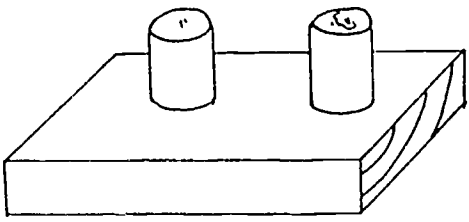
EX:1

KEY RACK



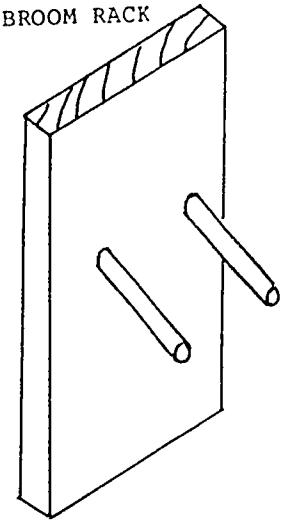
EX: 3

PEN HOLDER

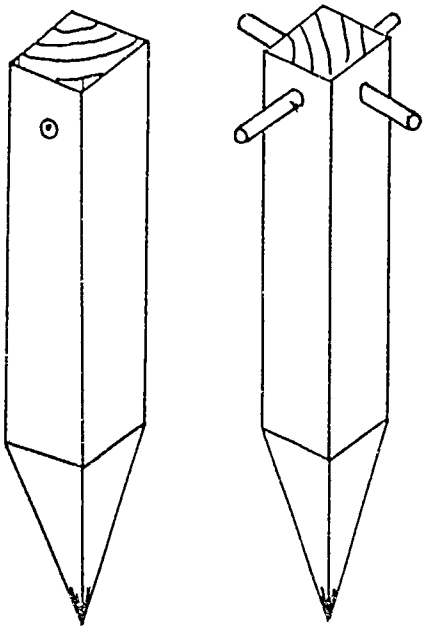


EX: 2

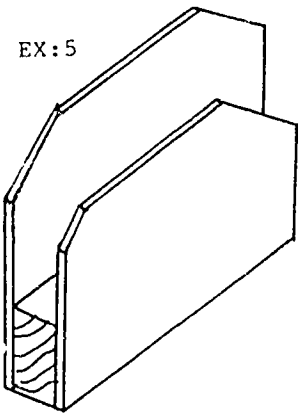
BROOM RACK



EX: 4 GARDEN DIBBER SET

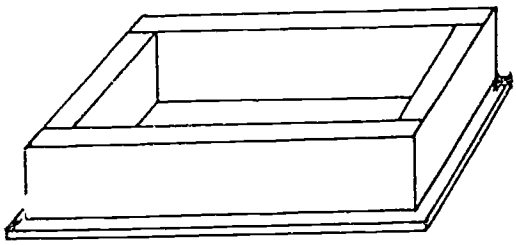


EX:5



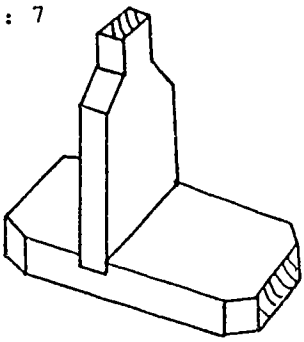
LETTER RACK

EX. 6



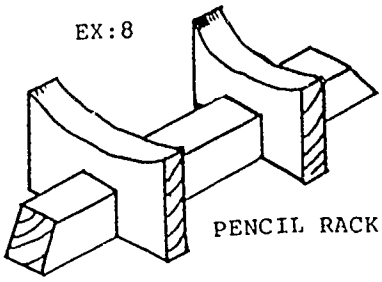
OPEN BOX- NAILED

EX: 7

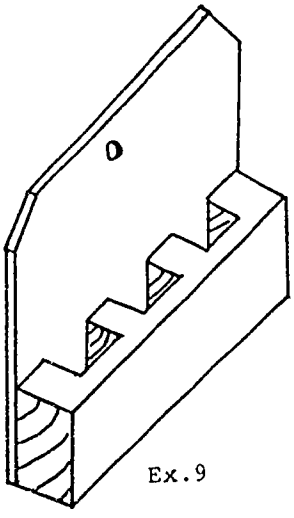


MATCHBOX HOLDER

EX:8

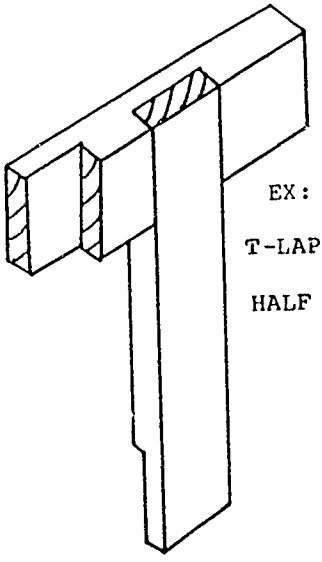


PENCIL RACK



Ex.9

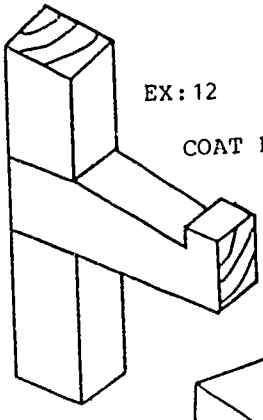
SCISSORS RACK



EX: 10

T-LAPPED

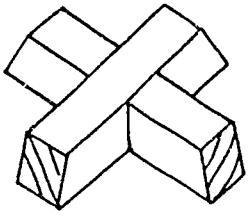
HALF LAP



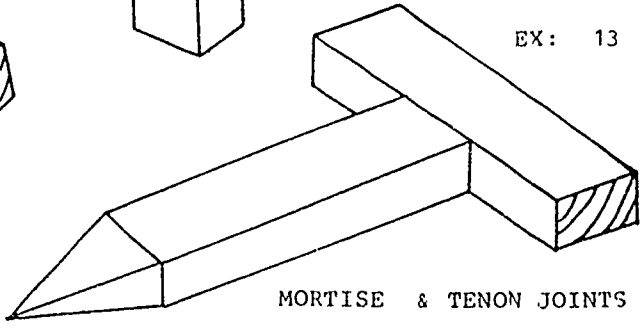
EX:12

COAT PEG

Ex.11



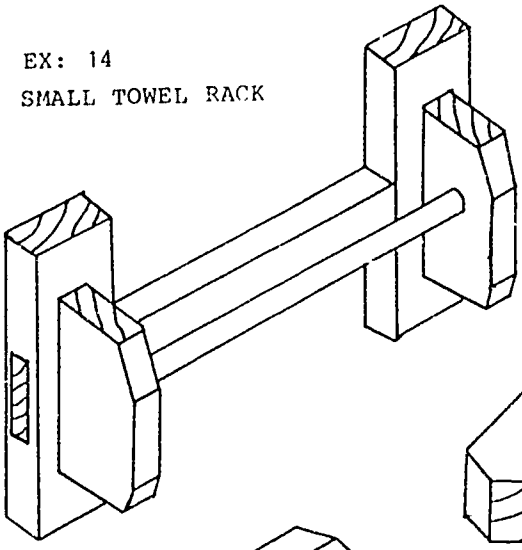
POT STAND



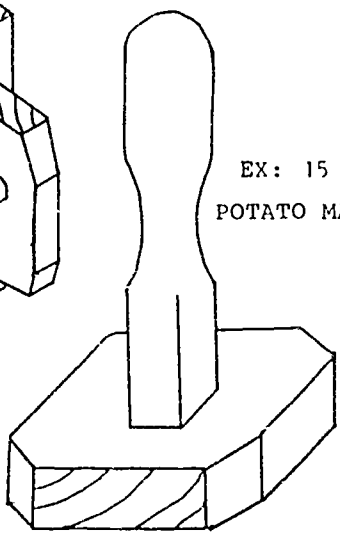
EX: 13

MORTISE & TENON JOINTS

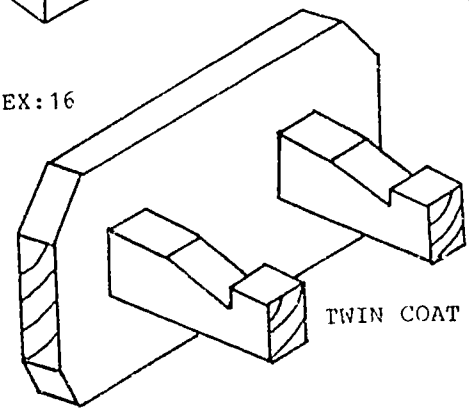
EX: 14
SMALL TOWEL RACK



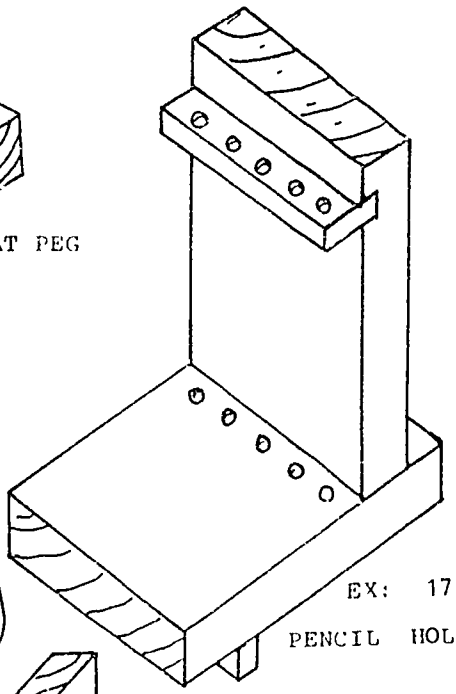
EX: 15
POTATO MASHER



EX:16

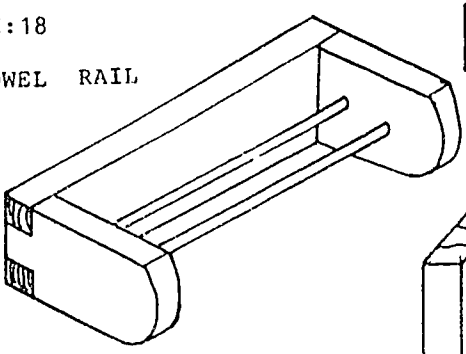


TWIN COAT PEG

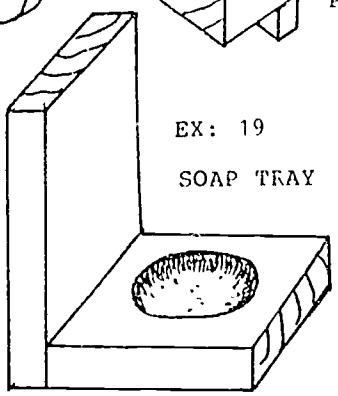


EX: 17
PENCIL HOLDER

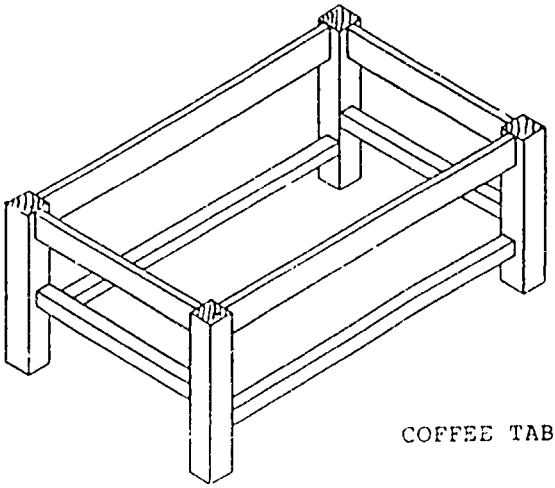
EX:18
TOWEL RAIL



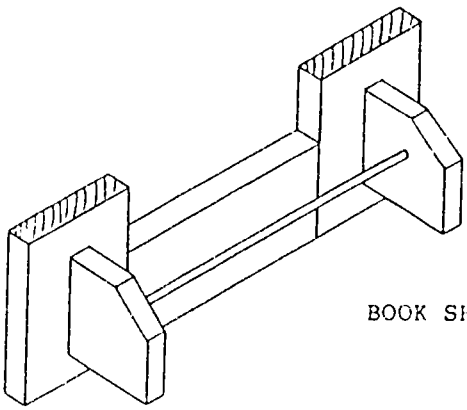
EX: 19
SOAP TRAY



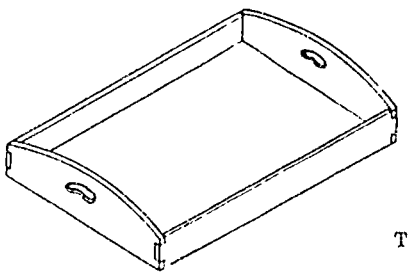
Grade Seven practical exercises in Woodwork.



COFFEE TABLE



BOOK SHELF



TEA TRAY

N.B. Diagrams not drawn to scale