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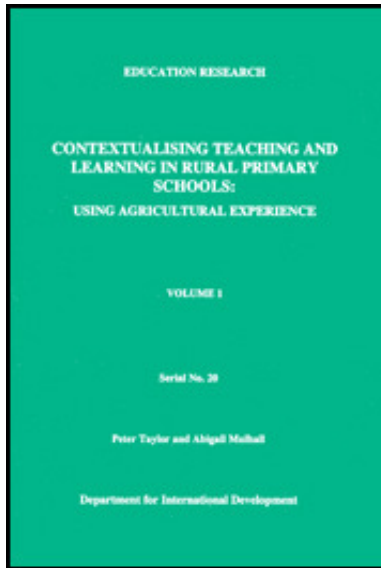
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EDUCATION RESEARCH

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piece of commissioned research on some aspect of education and training in developing countries. Most of the studies were undertaken in order to provide informed judgements from which policy decisions could be drawn, but in each case it has become apparent that the material produced would be of interest to a wider audience, particularly but not exclusively those whose work focuses on developing countries.

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List of acronyms

ALPS	Active Learning through Professional Support Project
APPEP	Andhra Pradesh Primary Education Project
BEIRD	Basic Education Integrated into Rural Development
CAPE	Comprehensive Access to Primary Education
DFID	Department for International Development

DFID	Department for International Development (formerly ODA)
EDURURAL	Northeast Basic Education Project
EFA	Education For All
EVAs	Emotions-Values-Aesthetics
GER	Gross Enrolment Ratio
GNP	Gross National Product
ICDR	Institute of Curriculum Development and Research
INSET	In-service Education and Training
NER	Net Enrolment Ratio
NGOs	Non-Governmental Organisations
NIE	National Institute of Education
OECD	Organisation for Economic Co-operation and Development
PEAP	Primary Education Assistance Project

PECR	Primary Education Curriculum Renewal
PROAP	(UNESCO) Principal Regional Office for Asia and the Pacific
PSA	Primary Schools Agriculture
PSEDP	Plantation Sector Education Development Programme
RPSs	Rural Primary Schools
SHAPE	Self-Help Action Plan for Education
SIMAC	National System of Human Resources Improvement and Curriculum Adaptation
SKP	Shilsha Karmi Project
TTI	Teacher Training Institute
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United National Children's Fund

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1. Executive summary

1. The purpose of this research was to examine the role of agricultural experience as a vehicle which can support the development of learners in rural primary schools whose needs are extremely diverse, and whose life experience has been enriched by agricultural practice. This involved a review of literature which sought to investigate a "new role" for agriculture as a key element of primary schooling. In particular it examined from a conceptual point of view, and through the use of case studies from the literature, the

capacity of agriculture to act as a familiar vehicle for the development of young rural learners' basic skills of literacy, numeracy, and other life skills which are perceived as necessary for a fruitful and productive life. The intention was not to explore issues relating to teaching agriculture as a distinct subject area in the curriculum.

In addition, case studies were carried out in four countries, Tanzania, Sri Lanka, India and Ethiopia. These countries were selected because of evidence that government policy was supportive of the concept of contextualisation, even though this might not be stated explicitly. Also, in each country, a co-researcher was identified who had published work, or had some expertise, relating to the basic ideas underlying the concepts of contextualised teaching and learning, and their contributions became a key element in this research project.

2. Primary school education in developing countries is

considered of great importance because of its wide range of benefits. These include the shaping and strengthening of the child as an individual in relation to his or her fellow people, to nature, and to the world as an environment. Primary schooling is thought also to build a capacity for life-long learning in individuals, and to develop knowledge, skills and attitudes which will contribute to the general development of the community in which individuals live by meeting manpower needs and improving community life.

3. Although most countries in the world have set themselves the goal of achieving universal primary education, and despite high investment, studies reveal low participation, high drop-out rates and under-education of pupils in many cases. This is due to constraints which include inadequate necessary inputs, a lack of facilitating conditions and an absence of the will to act.

4. Rural primary schools face particular disadvantages, some

of which stem from national educational programmes which are geared more closely to an urban context. High drop-out rates are common; these are due to pupil-related, school-related, constructed or macro-system factors. Although some generalisations can be made, research shows that the constraints depend on the specific environment in which a school is located. Efforts have been made to address these problems by reviewing teacher training programmes, introducing curriculum reform and developing new approaches to school organisation, but these changes tend to be piecemeal.

5. Curriculum reform has been attempted as a means of dealing with the problems faced by schools in many rural areas. Different approaches to curriculum development have been tried, including the introduction of academic and community-based models, and curricula which are integrated and topic-based.

6. It is suggested that contextualisation of teaching and learning can strengthen the links between the learning environments of school, home and community. This can be achieved by building on pupils' experience from outside the school and providing additional experience within the school programme. This process is enhanced through the use of metaphors and analogies, which allow children to integrate their own learning experiences. Agriculture may act as a unifying theme in order to achieve this.

7. The curriculum should not be distinctly, rigidly different, or indeed identical, for urban and rural primary schools, but should be flexible, allowing teachers to develop their own material which reflects the local environment, whether urban or rural. This approach emphasises the process of learning, rather than purely its content. Agriculture could provide an avenue through which children can have repeated experiences which help them to master cognitive, physical and social skills. Agriculture could be the basis of integrated

projects incorporated in the school curriculum, with academic activities chosen for their locally relevant, experimental attributes. Since every curricular subject is important to the development of children, it should be possible to build upon children's knowledge of agriculture and link this to each part of the curriculum.

8. A flexible method of teaching is an extension to natural teaching which takes place outside the school. It can build on a child's experiences, covering the whole curriculum whilst developing skills in a meaningful context, as opposed to breaking learning down into categories by subject area, which is less natural, more forced, and less interesting or exciting.

9. One impact brought about by this approach is to decrease the size of the teacher's exclusive territory, with a subsequent increase in the amount of input children have into designing their environment. In order to enhance this process, other types of inputs would be of great importance, for example,

the preparation of special materials, such as workcards, worksheets, additional pictorial or taped material, guides on the use of audio-visual materials, materials information and reference books which are easy to read in a language of instruction familiar to the children, whilst introducing novel terms in a suitably paced way.

10. A great advantage of this approach to rural primary education is that it allows the curriculum to be made relevant to the experience of the learners, whilst still allowing the possibility for the development of knowledge, attitudes and skills identified on a national basis. This avoids the rural curriculum being perceived as an inferior version of the urban curriculum. A major disadvantage is that its success depends largely on the skill of teachers and the availability of suitable resources. Also, the experience, culture and "knowledge" of people who live in rural areas varies from one locality to the next; equally, within a specific area the knowledge and experience of individuals differs markedly. There is no single

knowledge or experience which can be used as the basis for the curriculum. Metaphors and analogies should, if they are to be effective, be derived actively by the child, based on his or her individual experience. This makes it extremely difficult to develop rigid "relevant" primary education programmes on a national scale, and instead suggests that flexibility in terms of local development of curricula will become an important feature. This will need to involve a range of stakeholders, not only school representatives and other government personnel, but also community members, and of course the children themselves as they actively contribute to the learning process.

11. Curriculum planners at national level can deal with the difficulties posed by variations in "local knowledge" by identifying unifying themes which can provide a direct link to the experience of most or all of the learners in a particular area, and can also be readily adapted through participative processes to fit each local situation. Agriculture is one activity

with which the majority of children in rural areas of the developing world are familiar, and so it has an important role to play here; it can contribute to teaching and learning of languages, science, mathematics, food, nutrition, health and social studies.

12. Examples of countries where an integrated approach to curriculum development has been carried out, and which in some cases have involved the contextualisation of teaching and learning, are Malaysia, Uganda, Cameroon, Jordan, Papua New Guinea, Sri Lanka, Tanzania, Brazil, Kenya, India, Colombia, Ethiopia, Zambia and Guatemala.

13. Lessons learned from these examples show that different approaches to integration have been attempted, and that design and implementation of curricula vary considerably. Successful implementation of the curriculum depends on many factors, including those related to teaching practice and support, resources, community-school relations, examination

systems, and government policy and support. Curriculum reform is not enough on its own; it must be accompanied by complementary social and economic reforms. The examples reveal that some teachers have attempted to use the environment in teaching-learning situations, thus enabling children to appreciate and understand the world around them. In rural areas, therefore, agriculture could provide a unifying theme, since it is familiar to the lives of most rural children.

14. The case studies carried out for this research study (discussed in detail in Volume II of this report) have revealed that the idea of contextualisation, although a new concept for most people, is a popular one. During the field work there was frequent mention of the need to make the school learning environment of pupils more relevant to their every day learning experiences, both within and outside the school, especially in rural areas. Evidence from the field research reveals that many teachers do attempt to contextualise learning, especially where examples may relate to the home

environment, for example agriculture and nutrition.

15. The development of alternative and innovative strategies for teaching and learning increases the demands on teachers. It is important to be aware that many teachers carry a very heavy burden already; not only do they work under difficult conditions, often with large numbers of pupils, but they have to perform many activities relating to the social welfare of children in the school which go far beyond what is often thought to be the normal duties of a teacher. Ways of supporting teachers, both materially and psychologically, will have to be found which enable and encourage them to develop new strategies and approaches without becoming completely demoralised and exhausted in the process.

16. A number of important issues have emerged from the research:

- Contextualisation is not mentioned explicitly in

national policy documents, but the underlying concepts appear to be appreciated and approved. In most situations where there is flexibility in the curriculum to make it relevant to the local environment, teachers do no have the support or infrastructure at local level to enable them to put policy into practice;

● Teaching aids and materials, particularly those which relate to the local context, are often in short supply. Small classrooms with large numbers of pupils make practical teaching and evaluation of learning difficult. Physical constraints in the classrooms and an absence of regular professional support lead to low motivation levels amongst teachers and pupils;

● Teachers with little or no knowledge of agriculture, and a lack of land at the school, may be

constraining factors to the use of agricultural examples in the teaching of other subject areas. Cultural and societal values may work against contextualisation when asking pupils to talk about their experiences openly;

● In rural schools, agricultural experience and materials from the local environment are utilised by some teachers as a basis for teaching and learning. Farming themes are frequently used as a basis for language teaching, and agricultural topics and examples appear in many school textbooks;

● Donor support, or recognition of a school as a "model" or "pilot" school appears to raise the prestige of the school in the locality. This in turn seems to be a motivating factor for teachers and pupils, and encourages parents and community members to be more supportive of the school in its

activities;

● The influence of the headteacher in a school seems central to the development and use of innovative teaching practices. Where a collegial atmosphere is created, and staff of a school feel that they can discuss freely problems and complex situations with each other regardless of position in the school hierarchy, experimentation and innovation has an opportunity to flourish;

● Support from the local education authority is also important. In some cases, schools inspectors discourage teachers from attempting to use alternative methods of teaching and learning for fear that the situation might go out of control. Although national policy statements favour the use of contextualisation in schools, teachers' guides do not seem to reflect this, and so teachers feel wary

about moving away from what is laid down on the printed page, even though they may be surrounded by rich and varied resources outside the classroom and school environment. The rigidity of many primary school curricula discourages teachers from moving beyond the boundaries of the subject area, and frequent curriculum changes leave teachers feeling that they have enough to cope with just to cover the subject matter. Large class sizes, shortage of time, and a lack of confidence in dealing with classroom organisation all contribute to teachers feeling that they cannot move easily beyond the use of traditional talk-based teaching;

● Parents in rural communities, where there are low levels of literacy, seem to find it easier to understand what their children are learning when it is based in a context with which the parents themselves are familiar, for example agriculture;

● Contextualised teaching and learning may enable both girls and boys to learn more effectively at school, thus increasing the numbers of girls who leave school with higher levels of achievement and qualifications than at present. In turn this may result in greater numbers of female teachers, and also more women with a more positive perception of schooling, therefore encouraging more girls to attend school;

● Contextualising learning through the use of agriculture may help to break down the barriers between the different learning environments (home, school, community) and thus create a context more conducive to learning. Care must be taken where strong views are held about home and family life as an acceptable topic for discussion in school;

● Contextualisation strategies adopted by schools

may be viewed by parents as a means of "watering-down" the national curriculum, thus preventing children from taking and passing examinations arid acquiring a fully-recognised qualification, impeding their chances in gaining employment or progressing to higher levels of the education system. Such a view could lead to parents withholding their children from primary school; hence there is a need to raise awareness that contextualisation can enhance the possibility for children to pursue and attain a wide range of goals in life;

● Regardless of changes in the curriculum which aim to relate learning more closely to the local environment, economic and social constraints in rural areas deter many of the poorest families from sending their children to school. More far-reaching structural changes may also become necessary, such as adapting the school year of rural schools to

fit more closely with the agricultural cycle, so that children who are expected to participate in agricultural activities will be able to do so without missing out on schooling.

17. Opportunities exist for further research into:

● The development of educational practices which value and take into account the knowledge, experience and culture of members of schools and the wider community;

● Training and support programmes required for teachers in primary schools and in the local community, to enable them to base strategies for teaching and learning on a process of contextualisation;

● The development of structures and functions in

schools and training organisations which complement and support the process of contextualisation, such as alternative timings of the school year to fit in more closely with the needs and requirements of parents and their children;

● The effect of contextualisation strategies on parental opinion of the value of schooling.

This report shows that many teachers, schools and policy makers have demonstrated the willingness and ability to innovate in order to create the most effective learning environment for children in primary schools. Considering the difficulties faced by schools in rural areas of many countries throughout the world, they are to be wholly commended, encouraged and supported in their task.

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2. Context of the research/terms of reference

2.1 Background
2.2 Purpose of the field research
2.3 Methodology
2.4 Outcomes

2.1 Background

The proposal for this research was based on the findings of an initial desk study which set out to examine how agriculture could be used as a means of contextualising the primary school curriculum in rural areas. These findings were published in a Report which was circulated to a range of interested parties.

The desk study highlighted the following key issues:

i) There are serious problems associated with the provision and effectiveness of primary schooling in developing countries. These problems are particularly bad in rural areas;

ii) Relevance of the curriculum to the experience of the pupils is an important factor. In many rural primary schools, the curriculum is set at an inappropriate level, and its origin emanates from a cultural/societal background far removed from that

of the rural learners. The situation is worsened in many countries by inadequate resources, poorly trained teachers and the absence of support from policy makers, school administrators and community members. Rigid national curricula and examination systems also contribute to the problems;

iii) By relating the content of the curriculum, and subsequent teaching and learning strategies, to the life experience of the pupils, it may be possible to make schooling more meaningful. In rural areas, agricultural experience can provide an ideal vehicle for contextualising learning in all subjects, including languages, mathematics, science, social studies, health and nutrition, etc. By integrating the agricultural experience of individual pupils into their learning, it may be possible to link the learning environments of school, home and community. Since meaning is the focus here, it is crucial, however, that

agricultural examples are not forced into subject areas where they are inappropriate. Identification of appropriate parts of the curriculum for contextualisation through agriculture is critical;

iv) Reports of educational developments at primary level reveal that a number of countries have developed an integrated approach in the primary school curriculum, either nationally, or in a few pilot schools. Agriculture has rarely been noted specifically as a vehicle for contextualising teaching and learning, although it is likely that teachers in some schools do use it in this way. There are examples of textbooks which draw on agricultural examples when illustrating mathematical and scientific procedures and also for language teaching;

v) There seems to be a case for investigating the

potential of agricultural knowledge and experience to be used as a means of contextualising teaching and learning, and to examine the implications for curriculum development, resource allocation, teacher training, examinations procedures, and policy formation. In particular, there are implications for a certain decentralisation of decision making. Some degree of responsibility for the way in which teaching and learning takes place would have to move from central planners to teachers, and again from teachers to pupils. This will require commitment, support and vision from policy makers, teachers and managers, pupils and community members alike.

2.2 Purpose of the field research

The purpose of this second phase of the research was to gather information about schools which have used agricultural

experience as a means of contextualising teaching and learning, by looking at the implications for teaching and learning practices, resources, school management and teacher training, and to evaluate the impact of this practice on school attendance, school performance, development of school-community links, and on teacher, pupil and parental attitudes. Case studies were used to examine the capacity of agriculture to act as a familiar vehicle for the development of young rural learners' basic skills of literacy, numeracy, and other life skills which are perceived as necessary for a fruitful and productive life.

At the same time the research aimed to highlight the problems which may arise in attempting to use agriculture in a way which may challenge its traditional role as a vocational subject area. The study aimed to identify examples of good practice, and based on these, highlight issues of importance to educational policy makers, teachers and other interested parties.

2.3 Methodology

Details of the methodology are given in Volume II of this report; a summary is presented also in section 7 of this volume.

2.4 Outcomes

This research would yield policy suggestions for future interventions, based on the findings of the desk study and the case studies. It would provide guidelines for planners and practitioners relating to the ways and means of integrating agricultural experience and knowledge into primary/basic education programmes, in order to maximise the benefits identified whilst at the same time minimising those constraints which are likely to arise. The outcomes of this research should be of particular value to decision makers at national and international levels when planning the overall structure of their primary education programmes, and to donors as a

guide to policy decisions relating to educational funding. It should be of benefit also to both the Education Division and the Natural Resources and Policy Advisory Department of the DFID, providing them with the opportunity to explore and develop collaborative research activities, particularly in subsequent phases of this research process.

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3. The state of primary school education in developing countries

3.1 The benefits of primary schooling

In 1990, at the World Conference on Education for All, a declaration was adopted to reaffirm the international community's commitment to ensuring the right to education for all people (UNESCO, 1996):

"Every person - child, youth and adult - shall be able to benefit from educational opportunities designed to meet their

basic learning needs".

This declaration was made in response to international concern over the deterioration of education systems in previous years. In 1995 an estimated 885 million adults (aged fifteen plus) were illiterate and 110 million children were out of school. Concern has arisen over this deterioration because of the widespread belief that primary education, the main, formal delivery system for the basic education of children outside the family, is a vital component of the development of every nation and its citizens. According to the World Bank (1995);

"Education - especially basic (primary and lower-secondary) education - helps reduce poverty by increasing the productivity of the poor, by reducing fertility and improving health, and by equipping people with the skills they need to participate fully in the economy and in society".

The World Declaration on Education for All, Article 5, declared at the World Conference on Education (1990), states that primary education must be universal, ensure that the basic learning needs of all children are satisfied, and take into account the culture, needs and opportunities of the community. The Article defines basic learning needs as both the essential learning tools (such as literacy, oral expression, numeracy, and problem solving) and the basic learning content (such as knowledge, skills, values, and attitudes) required by human beings to be able to survive, to develop their full capacities, to live and work in dignity, to participate fully in development, to improve the quality of their lives, to make informed decisions, and to continue learning.

Universal primary education is a goal common to most national education policy statements; it is emphasised often that basic education should correspond to the needs, interests and problems faced by the learners, and that the curriculum should be relevant and link scientific concepts,

literacy and numeracy skills with the life experiences of the learners. It is believed widely that young people are most responsive to learning during the early years of childhood, and that cognitive and non-cognitive changes occur more rapidly among younger children (8 years old and less). Hence many countries state the intention to provide primary education for the early years of all children and, in some cases, pre-primary education.

Education is identified also by most nations as being critical for economic growth and poverty reduction. Key priorities for education are to meet the growing demands of national economies for adaptable workers who can readily acquire new skills and to support the continued expansion of knowledge. Primary education is now becoming valued more highly because its social returns appear to be higher than those at higher levels of education. Private returns are higher than social returns, since the provision of primary education is funded, generally, by the government. Moreover, the social

returns and the productivity of primary education have been more influential outside the formal sector of the economy, which has generated even greater interest. There is growing evidence that primary schooling which results in literacy and numeracy enhances productivity in both rural and urban self-employment. Lockheed et al (1980) showed that 4 years of schooling can increase agricultural output by 8%, a higher impact than the same years of schooling in a "modernising" environment, by leading to:

- increased effectiveness of the individual worker, increasing output with given inputs by using basic skills of numeracy and literacy

- more effective input allocation

- more effective input selection

For many children, primary education will be the only formal

education they receive (Elstgeest, 1987). During this period they are presented with the opportunity to become literate and numerate, to develop inquiring minds, and to gain an awareness of the broad social values advocated at a national level. In fact, the official primary education curriculum is remarkably similar world-wide; overall, 35% of available time is spent on literacy and 18% is spent on numeracy.

Although the benefits of primary school education are discussed frequently, Colclough and Lewin (1993) qualify these by pointing out that other factors will affect the development of individual children, regardless of the type of primary education they receive. Results suggest, however, that the lower the per capita income of the country and the weaker the influence of socio-economic background, the greater the effects of school and teacher quality will be on student achievement (Fuller, 1987). Heyneman and Loxley (1983) found that school effects are indeed significant determinants of achievement in a sample of countries which

included 16 developing and 13 industrialised ones.

3.2 Trends in primary education provision

3.2.1 Enrolment

According to a recently published UNESCO document on the EFA Mid Decade meeting held in Amman, Jordan (UNESCO, 1996 (1)), the single most positive and significant feature of the mid-decade balance sheet for educational provision is that primary education has largely overcome the significant decline and stagnation in enrolments experienced by many developing countries in the 1980s. The target of achieving Universal Primary Education, so that every child between the ages of 6 and 11 will be provided with a public education, still seems a long way off, however (Lockheed and Levin, 1993). 90% of the nearly three million primary schools in the world are in low- and middle-income developing countries; in these schools some 480 million children struggle to learn. Only

about one half of all school-age children in developing countries acquire a complete primary education, with nearly half of those who are enrolled dropping out before the end of the primary school cycle in low-income developing countries. According to recent estimates (UNESCO, 1996 (1)), some 110 million school-age children were out of school in 1995, a significant decrease from the 129 million in 1990. In sub-Saharan Africa, however, the number of children without access to primary education is still growing. Since 1990 the number of out-of-school children in the 6-11 age group has grown by 2 million to 39.3 million. Considering the increase in enrolment ratios[1] as a measure of achievement of the goal of EFA, according to UNESCO (1996 (1)):

"net enrolment ratios have risen in all developing regions. This must be seen as a significant indication of genuine progress towards universal primary education".

^{1} Gross enrolment ratios (GER = a total number of pupils divided by the official school-age group); net enrolment ratios (NERs percentage of the official age-group actually enrolled)

In Sub-Saharan Africa, NERs (%) for boys and girls are 65.7 and 56.1 respectively, in South Asia, 75.6 and 55.8 and in East Asia Pacific, 93.0 and 82.0. This means that nearly two out of three school-age children in Africa are enrolled, and it is estimated that NERs in the Latin America/ Caribbean and East Asia/Pacific will surpass the 90% mark before the year 2000. The World Bank (1995), however, believes that unless the pace of enrolment accelerates, the absolute number of children not attending school at all is likely, for the first time since 1960, to increase in the next two decades - reaching 145 million in 2000 and 162 million in 2015. This outcome would be brought about by continued high population growth rates, combined with falling enrolment ratios in some

countries.

These statistical figures can only be treated as a guide, however. It would be impossible to obtain accurate figures for NER, for example, as although children may enrol in school, especially when it is a legal obligation, they may never actually attend. It is believed that repetition rates are seriously underestimated in many developing countries, due to the lack of reliable data and the way in which data is interpreted (Amadio, 1995). Average figures for a nation disguise the differences between different parts of the country, or between urban and rural schools, for example.

3.2.2 Repetition and drop-out

Estimates of repetition in sub-Saharan Africa over three grades in primary school are around 20%; that is, on average, one in every five pupils is repeating a grade. In Asia/Pacific the rate varies between 7.1 and 10.9 %

(UNESCO, 1996 (2)).

The phenomenon of pupils failing to complete their primary education programme is frequently referred to as "drop-out". According to LeCompte and Dworkin (1991), a "drop-out" is a pupil of any age who leaves school, for any reason other than death, before graduation or completion of a program of studies and without transferring to another elementary or secondary school. Colclough and Hallack (1975) defined drop-outs as those that leave the school at any time other than the established exit points (at the end of the primary, lower secondary, senior secondary or tertiary cycles). Less than three quarters of a cohort of primary entrants typically survive to grade 5 in 28 of 57 developing countries (Berstecher and Carr-Hill 1990: 110). Drop-out is particularly high in sub-Saharan Africa, with one in five children not reaching grade 4.

There is evidence to suggest that repetition affects early

drop-out in school. Amadio (1995) gives a number of examples. A study carried out in twelve municipalities and towns of the province of Hebei (China), found that 68.6% of drop-outs had repeated a grade prior to dropping out. The drop-out rate was only 21.6% among children who had not repeated, 31.6% among those who had repeated once, but as high as 82.8% among those who had repeated more than twice. A survey carried out in the early 1980s in Sri Lanka found that 60% of drop-outs had attended classes on an irregular basis; 21% had repeated grades three times, 31 % twice and 64% once. Furthermore, 82% of drop-outs were above-age. LeCompte and Dworkin (1991) highlight a wide range of factors which contribute to "drop-out". They group these into four categories, pupil-related factors, school-related factors, constructed factors and macrosystem factors. There is debate about how important the effect is of each of these factors. Certainly drop-outs are characterised often as being low achievers, poor readers, have discipline

problems, are frequent truants, and come from a low income background.

Taking an actual example, a study of rural primary education in Brazil (Harbison and Hanuschek, 1992) revealed a number of interesting aspects related to the drop-out rate. If the father is a farmer, for example, there is a high opportunity cost for children going to school as children are needed for farm labour, hence there is a higher incidence of drop-out in rural areas. Another determinant of drop-out is the age of the child. The older the child, the greater the potential labour contribution, and the more likely it is for the child to drop-out; this means that in each subsequent grade in primary school, the higher the rate of drop-out. Another determinant is the education of the mother, since if a mother is well educated, she would like her children to continue their education. Achievement at school is another determinant; the school performance and the learning achieved, via the curriculum, will determine the promotion probabilities, thus the repetition

rate, and as a consequence the drop-out rate. The characteristics of the school is also likely to influence the drop-out rate. If there are not enough school facilities provided, the drop-out rate is likely to increase. Available work opportunities also determine the drop-out rate, as does migration which is in turn influenced by the cost of moving.

In another case, a study of village primary education in Pakistan (Pakistan Ministry of Education, 1977) showed that the reasons for the boys' and girls' drop-out had much in common, with poverty heading the list. In the case of girls, social and religious reasons were also cited. In this case it appeared that drop-outs rated lower in health, intelligence, peer relations, social class/caste, self-concept, and work attitudes. Also seen as influential were parental attitudes towards education, relationship between pupils and family, and familial income and stability. Where these were problematic, pupils rated much lower on school success factors, and on basic skills and knowledge, particularly in

literacy and numeracy.

A third example, from the experience of one of the authors of this report, comes from a rural primary school in a state in North East India where the drop-out rate is currently 72%. This school has the following characteristics:

- no financial support from government

- a single room without electric light or water

- 55 children aged 4 to 14

- the youngest children requiring medical treatment, feeding, clothing and washing

- textbooks without illustrations, with close print and set at a level far too advanced for the pupils educational level

- pupils writing with chalk and slate (both in short supply)

- no visual aids

- one untrained teacher who, when asked what her main problems were, said that there were so many it was impossible to begin to explain them.

These examples highlight only the main factors which appear to affect drop-out. Those which have the greatest effect will also vary between regions and between schools. The examples serve to illustrate the complexities behind the statistics, however, and emphasise the fact that there is rarely one particular factor which causes drop-out. Drop-out still arises even when children attend school regularly. Restructuring educational or school policy, or simple "quick-fix" solutions will never be sufficient alone in addressing this enduring problem.

3.3 EFA and gender

Gender disparities are a major constraint to achieving universal primary education and the wider goals of Education for All. Girls are less likely than boys to be enrolled in school, and two-thirds of the world's illiterate adults are women (565 million). Educating girls and women is increasingly seen as a key to breaking out of the cycle of illiteracy, poverty, marginalisation and rapid population growth. Girls' share in primary enrolments in the developing regions advanced very slightly to reach an average of 45.8 per cent in 1995, against 45.4 per cent five years earlier (UNESCO, 1996 (1)).

Many factors which affect female participation in primary education have been identified (Brock and Cammish, 1991):

- Geography - spatial disparity and, in some cases, incompleteness of institutional provision relates directly to difficulties of physical access which

adversely affect girls more than boys;

● Socio-cultural factors - there are cultural biases in favour of males; girls may undergo early marriage, early pregnancy and heavy domestic and subsistence duties;

● Health - the effects of poverty and malnutrition on the health of school age children has a greater impact on girls than on boys;

● Economic factors - direct and indirect costs of sending daughters to school are perceived by parents to be prohibitive, as well as the loss of vital help at home and on the land; for more privileged classes, especially in urban areas, investment in the education of females may be an advantage in enabling them to "marry well"; this further increases the urban/rural gap;

● Religion - education of boys tends to be found more acceptable in certain religions;

● Legislation - this is an indirect factor; legislation which aims to support gender equality may exist but in practice, in many rural areas, long standing societal rules constraining females are still operative, as is the case with condoning early marriage;

● Political/Administrative factors - the political will to carry through effective policies is weak in the face of severe economic constraints;

● Education - accessibility, lack of resources and low teacher quality and morale are widespread; there is often a lack of female primary teachers in rural areas, and inadequate guarantees of girls' physical safety; organisation of schooling in terms of

the daily and seasonal imperatives of local economies usually renders it dysfunctional, and the curriculum is often unattractive in instrumental terms.

The traditional female role model in patrilocal families is maintained in many societies. Women remain at home, have access to a limited range of paid employment, and generally are discouraged from taking advantage of education to the point where the linguistic development of girls is impeded by their role at home and in the community. This means that access to primary schooling will remain more open to boys unless measures are taken to address this imbalance.

It should be noted that gender is not the only inequality which presents a barrier to education. Other disadvantaged groups, ethnic minorities and the poor suffer also in this regard. As the World Bank (1995) states:

"the government's obligation to ensure that qualified

potential students are not denied education because they are poor or female, are from disadvantaged ethnic minorities or geographical remote regions, or have special educational needs".

The issue of disadvantaged groups will be addressed further in Section 3.6.

3.4 Spending on primary education

In 1993, public expenditure on education as a per cent of GNP in all developing countries was 4.1%. In the forty seven least developed countries, spending on education amounted to only 2.8% of GDP (UNESCO, 1996 (2)). Relative to the needs of the primary education system and in comparison with other levels of education, expenditure on primary education per student is trivial in many developing countries and the present levels of spending are inadequate to provide meaningful quality education for all.

It is difficult to prescribe a general guideline to how much should be spent by countries on primary education. Percentages of GNP to be allocated are often misleading because the amount spent in real terms will depend on the size of the economy. Colclough and Lewin (1993) suggest that where investment in UPE is between 3% and 7% of GNP, cost-reduction strategies may be needed in order to reduce the financial burden on government, for example by encouraging community participation and integration. Evidence shows, however, that poor, rural people are not always able to provide a substantial number of resources, nor can they meet the direct or the indirect costs of education. Hence, in countries suffering from severe recession, or in regions where incomes are generally low, many children have been unable to attend school when parents have been expected to pay for primary education.

Although much attention is given by education funders to the economic basis for educational reform, It should be noted

that there is always a struggle to estimate the returns for any educational investment. Educational cost-benefit analysis is notoriously difficult to estimate and equally controversial (Hough, 1991).

3.5 Recent donor strategies for primary education

For many developing countries the goals of providing basic learning skills to all children, youths and adults, will not be met in the near future, but will continue to be a long-term challenge. At Jomtien, guidelines for implementing the World Declaration on EFA were prepared to provide a framework which could be used as a reference guide for governments, international and bilateral aid agencies, NGOs and others concerned with meeting the goals of EFA. The following areas were chosen to be targeted:

- expansion of early childhood care and developmental activities;

4

In response to the declarations made at Jomtien, some bilateral and multilateral donors have increased their support to the education sector. In Germany for example, disbursements to basic education rose sixfold between 1992 and 1994, representing an increase in its proportion of aid to education from 6.5% to 38%. Drawing attention to the high returns on investment in primary and lower secondary education, the World Bank increased its lending for education from US$1.5 billion to US$ 2.1 billion between 1990 and 1994. The share going to this part of the education sector increased from 24% in fiscal year 1990 to 50% in fiscal year 1993. Between 1993 and 1994-1995, UNESCO increased the weight of basic education in its education programme from 26% to 47%. UNICEF's medium-term target is to boost spending on basic education to 25% of its regular resources from the current level of 10% (UNESCO 1996).

The World Bank recently published its priorities and strategies for education (1995), in which it states that the

Bank is now the largest single source of external financing for education in developing countries. Primary and secondary education are increasingly important; in the fiscal period 1990-94 these levels represented half of all Bank lending for education. Bank programmes will encourage governments to give a higher priority to education and educational reform, particularly as economic reform takes hold as a permanent process. Basic education will continue to receive the highest priority in the Bank's education lending to countries that have not yet achieved universal literacy and adequate access, equity, and quality at that level. All projects will pay greater attention to equity -especially education for girls, for disadvantaged ethnic minorities and for the poor - and consequently to early childhood education. The World Bank highlights four major challenges which remain, however. These are the need to increase access to education in some countries, to improve equity, to improve quality and, in some cases, to speed up educational reform. In the case of basic

education, the Bank stresses that a more efficient, equitable and sustainable allocation of new public investment on education would do much to meet the challenges that education systems face today.

A report by the International Commission on Education for the twenty-first Century (Delors et al, 1996) focuses heavily on what is termed *"The Four Pillars of Education: learning to know; learning to do; learning to live together and learning to be".* Together these pillars should interact to form the total learning experience, so that education is regarded as a total experience throughout life, dealing with both understanding and application and focusing on both the individual and the individual's place in society. The report emphasises that changes in education should start with changes in the aims of education and the expectations that people have of what education can provide. A broad encompassing view of learning should aim to enable each individual to discover,

unearth and enrich his or her creative potential. The desire to develop imagination and creativity should result also in higher regard being paid to oral culture and knowledge derived from the child's or adult's experience.

3.6 Constraints on primary education provision

From the discussion above, it becomes apparent that although primary education offers a huge number of benefits, the capacity of many countries to provide access to all eligible young people is severely limited. During a seminar on innovative measures to overcome socio-economic obstacles to primary school attendance (UNESCO, 1992), participants composed a list of the problems surrounding enrolment, retention/completion and achievement in developing countries in the Asia Pacific Region. Analysis of these problems suggests that they could be attributed to many countries and primary schools, although some problems are likely to be more applicable to rural schools than urban schools and vice

versa. The problems may be divided into five main groups:

Home factors

- children have to work to supplement family income;
- children have to help in household work including looking after siblings;
- failure on the part of parents to understand the value of education;
- poor economic condition of the family
- broken families
- illiterate and poorly educated parents
- lack of facilities at home for learning.

School Factors

- inadequate facilities (furniture, textbooks etc.) in the school to educate the children;

- unqualified teachers

- a low level of competencies amongst trained teachers who are unable to interest students in school work;

- unreliable teachers' attendance due to their own earning activities outside the school, and transport problems;

- overcrowded schools;

- lack of special schools and teachers for handicapped children;

- a curriculum that is unrelated to life skills;

- inaccessibility of schools;

● poorly motivated teachers, resulting in low professionalism and misconduct;

● lack of teachers, especially female teachers, which inhibits the school attendance of girls;

● dissatisfaction and low morale amongst teachers who are forced to work in isolated areas against their will;

● non-existence of suitable educational facilities for overaged children and for those who are employed;

● unattractive school facilities and teaching-learning programmes which repel rather than draw children to school;

● lack of teachers' understanding of parental backgrounds;

• little direction or opportunity for professional development amongst teachers;

• irregular monitoring of teachers' work and performance by more experienced teachers or schools inspectors.

Community Factors

• migration of families;

• lack of motivation to send children to schools;

• prejudice against females attending school;

• lack of adequate up-to-date population statistics due to the non-registration of births, which means that the schooling needs of the community are unknown;

● rivalry between different tribal groups

● few awareness programmes to inform parents about the potential, value and nature of primary schooling.

Management factors

● organisation of the school in a way that divorces it from everyday life;

● authoritarian management styles that frighten and intimidate children;

● inadequate training of school administrators in management skills, and poor leadership on the part of head teachers who are not able to adequately supervise staff;

- no adequate management procedures adopted to ensure that once children are enrolled, they continue to come to school;

- an insufficient number of schools and inadequate infrastructures;

- unrealistic policy making;

- "non-functioning schools", where although schools are established they do not actually operate;

- a lack of collegiality and support amongst school staff;

- inadequate handling of community and parental concerns.

Child Factors

- lack of readiness on the part of the child to cope with entry to school;

- children with disabilities who cannot take full advantage of what the school has to offer;

- school phobia due to a fear of teachers and examinations;

- frequent illness resulting in high levels of absenteeism from school;

- malnutrition of children;

- overaged and underaged students;

- language problems;

- different expectations and emphasis on the part of

the home and school regarding what is acceptable language; for instance, parents may believe that the local language should be the medium of instruction, while the school may choose to adopt a different language;

- the gender of children;

- poor academic performance;

- early marriage or pregnancy.

The general effectiveness of schools has also been investigated widely. Lockheed and Levin (1993) have identified three groups of factors which appear to contribute to a primary school performing effectively. The absence of some or all of these factors would result in the performance of a school being ineffective, therefore. According to these writers, the curriculum is frequently poor in scope and

sequence. Often, the content lacks relation to situations familiar to the students. Instructional materials are in short supply and availability does not guarantee that they will be used, since textbook quality is often poor and/or too difficult for the age-group at which they are aimed. (Recent research of curricular scope and sequence in mathematics and reading textbooks in fifteen developing countries found that the material in both subjects was too difficult at the earlier grades. In the upper grades, the mathematics curriculum was too difficult, but the reading curriculum was too easy and failed to develop problem solving skills appropriately). Time for learning is inadequate, because of very high pupil teacher ratios, extra-curricular demands such as caring for pupils basic needs, and the pull of home commitments. Teaching practices encourage rote learning rather than understanding; teachers are frequently inadequately trained, if at all.

Lockheed and Levin (1993) note also that community-school relationships are often poor and parental involvement and

support is limited, non-existent, or at worst, hostile. School-based professionalism is underdeveloped, in terms of principal leadership, teacher collegiality, commitment and accountability. Flexibility in curricula (e.g. encouraging relevance, level and pace to meet local conditions), in organisation and pedagogical approaches is lacking, as is a commitment to create effective schools. This requires vision by leaders at all levels (government, business, parents, community and students), to raise the educational consciousness of the society and hence increase the movement of more resources to the classroom. Decision making is often centralised; however, effective schools appear to require a high degree of school-level responsibility and authority, with accountability to parents and local community.

An important consequence of these deficiencies, apart from poor school attendance, is that many of the pupils for whom primary schooling is terminal appear to have acquired little in

the way of knowledge, skills and attitudes which they are able to draw on and apply in their post-school lives, for their own benefit or for the benefits of their communities and nation. Many of them have low levels of literacy and numeracy, even though these are seen as the chief outcomes expected of primary school education. Equally, children who do progress to secondary school often have difficulty coping with the level of studies expected of them there, particularly where the curriculum demands understanding of concepts, rather than rote-memorisation. This "under-education" serves to compound the poor impression of primary schools amongst pupils and parents, and even prospective employers and providers of credit. In turn, this can accentuate the likelihood of drop-out.

Just as the problems which lead to drop-out are many and complex, so will be the root causes of the under-education of any particular pupil. Indeed, many of the factors which contribute to high drop-out rates will also lead to general

under-achievement of pupils. In terms of individual pupils, it is of course difficult to know whether any child has reached his or her full intellectual potential at a particular age, regardless of the situation in which they undergo their schooling.

3.7 Educational innovations

The problem of low levels of participation and achievement in primary schooling is not new, and attempts were made to address it during the mid-70s, when a new trend had emerged favouring Basic Education as a parallel system to primary schooling (Colclough and Lewin, 1993). The idea was to concentrate on those aspects of primary education which would lead to the formation of economically useful skills such as literacy and numeracy and add others which might support productive self-employment in primarily rural communities. However, since this scheme did not seem to meet the aspirations of the parents, and it seemed to legitimise existing inequalities, the idea largely faded away.

There are, however, many more examples of innovations which have been introduced in an attempt to deal with some of the problems discussed above. Some interesting examples from the Asia region (UNESCO PROAP, 1992), are as follows:

● Attempts to indicate to parents the importance of schooling (Bhutan, China, Indonesia, Lao PDR, Malaysia, Maldives, Nepal, Pakistan, Philippines, Vietnam).

● Holding of parent-teacher meetings to break down the barriers between home and school (Bhutan, China, Indonesia, Maldives, Pakistan, Philippines, Thailand, Vietnam);

● Adoption of a more relevant school curriculum and child-centred approach to teaching

(Afghanistan, Bhutan, China, Indonesia, Lao PDR, Malaysia, Nepal, Pakistan, Philippines, Rep of Korea, Thailand);

• Flexibility of the school calendar so that the cultural, work and climatic requirements are met. For instance, vacation periods may occur at crop-planting and harvest time when children are required to work on the farm (China, Lao PDR, Maldives, Nepal, Pakistan, Philippines, Rep. Of Korea, Sri Lanka, Thailand, Vietnam);

• The development of minimum learning levels and the adoption of suitable tools of evaluation to ensure that these are achieved (China, Indonesia, Philippines, Sri Lanka, Thailand, Vietnam);

• Development of special policies to encourage communities to send disadvantaged children (such

as girls) to school. (China, Malaysia, Nepal, Philippines, Vietnam);

● Establishment of non-formal education and literacy classes for both children and adults, especially women who have a particularly important impact on children's attitudes (China, Indonesia, Maldives, Nepal, Philippines, Sri Lanka, Thailand, Vietnam);

● Conducting regular in-service seminars, workshops and other programmes on latest innovations to teachers and administrators (Bhutan, China, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, Vietnam);

● Establishment of in-service teacher training to encourage teachers to be more child-centred in their teaching methods and curriculum content (Bhutan,

China, Indonesia, Lao PDR, Malaysia, Maldives, Nepal, Pakistan, Philippines, Rep. Of Korea, Thailand, Vietnam).

There is also evidence of other programmes that have succeeded in achieving some of the ideals of EFA. These programmes have focused on the objectives of universalising access to education and the quality of education. Little *et al* (1994), detail six important programmes chosen for their initiation, successes and failures, ability to change, implementation and most important, sustainability. These programmes are:

- the Andhra Pradesh Primary Education Project in India (APPEP);
- the Active Learning through Professional Support Project in Indonesia (ALPS);
- the Plantation Sector Education Development Programme in Sri Lanka (PSEDP);

- the Self-Help Action Plan for Education in Zambia (SHAPE);
- the National System of Human Resources Improvement and Curriculum Adaptation in Guatemala;
- the Shilsha Karmi Project, Rajasthan, India (SKP).

Other relevant examples described in the UNESCO EFA Innovations Series include:

- the Village Schools of Save the Children/USA, Mali;
- Chile's 900 Schools programme for the underprivileged;
- the Community Schools Project in Upper Egypt;
- the PROPEL project for non-formal education of rural children in India;
- the Hills Areas Education Project in Thailand.

Some innovations have paid particular attention to the duration and timing of schooling. Lockheed and Vespoor (1990) note that attempts have been made by different countries to alter the length of the academic year; in some it has been substantially shorter (e.g. Ghana, 610 hours) and in others, it has been made longer (e.g. Morocco, 1, 070 hours). Actual instructional time is often much less than "official" instructional time in most developing countries, however. Flexible scheduling of school hours has been introduced to reduce student absences by accommodating rural children's work schedules.

Language has also been a focus. Improvements in the English language proficiency of teachers seems to have had an effect on their students' achievement in both language and mathematics where English is the medium of instruction (e.g. in Uganda). Another important feature of innovations in primary schooling in many countries has been curriculum reform. Some 60% of World Bank-financed primary

education projects over 1970-83 included a curriculum reform component. In Zimbabwe examinations were localised and the number of subjects and topics in the curriculum were rationalised. Innovative approaches to develop an integrated curriculum design have been introduced in countries as diverse as Sri Lanka, Malaysia, Papua New Guinea and Brazil. In Colombia, "Escuela Nueva" developed an integrated, flexible curriculum for early primary grades, which increased achievement and lowered repetition of rural children significantly. Emphasis was placed on the ability to apply knowledge within the community, on school-community links and the use of local materials for teaching purposes.

Some educationalists believe that a much broader, integrated approach should be adopted; this reflects the view of the "effective schools" movement, where lists of characteristics of effective schools have been used as "blueprints" by which other schools could be developed. In addition, the need for improvement of socio-economic conditions and

infrastructures, particularly in rural areas, will be inevitable. It may be seen as necessary to reform the entire primary school sector of a region or country.

Although many reforms, such as those mentioned here, have been attempted over the last forty years, most have been piecemeal in nature. They provide evidence that rhetoric and theory can lead to application and reality, but successes have been variable in degree. Some innovations which lead to improvements in one situation may not have the same impact in another. Those which have succeeded less well can still provide lessons which may help with the development of alternative strategies. Little (1994) stresses that for an educational innovation to be successful, the first step in the process consists in identifying, preferably through an active participatory process involving groups and the community, the traditional learning systems which exist in the society and the actual demand for basic education services, whether expressed in terms of formal schooling or non-formal

education programmes. Addressing the basic learning needs of all means early childhood care and development opportunities; relevant, quality primary schooling or equivalent out-of-school education for children; and literacy, basic knowledge and life skills training for youth and adults.

3.8 The focus of this research

The discussion above has addressed the issue of primary schooling rather generally in order to highlight current developments and recent innovations. The main focus of this research is, however, rural primary schools. It was noted earlier that many of the problems outlined above pertain to both urban and rural schools, but there are issues which relate specifically to the rural context. The purpose of this research was to explore ways in which teaching and learning processes in a rural environment could be made more effective. Primary schooling in a rural context must first be examined, therefore, in order to explain the value and

application of the process of *contextualisation.*

It is important at this point to stress that a strategy such as contextualisation can not overcome all the constraints mentioned above, and it is useful to observe Lewin's (1993) comment that an analysis such as this *"can do no more than point the way towards worthwhile possibilities that need exploration and validation at the intra country level".* It will, however, suggest a way in which primary schools, teachers and education authorities can address some of the problems listed above, not by trying to change what may be insurmountable obstacles, but rather by building on the opportunities which are presented by rural primary schools and the environment in which they are located.

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4. Primary schooling in rural areas

4.1 The learning environment

4.1.1 The rural context

Although all schools may suffer from constraints and problems such as those discussed above, the situation in many primary schools in rural areas is particularly difficult. Rural schools in developing countries suffer even more than their urban counterparts from the major afflictions of low completion rates and under-education of completers. This in turn results, as Lockheed (1993) notes, in an under-educated adult workforce; the rural-urban divide is not merely maintained, but increased.

There are examples of countries (Zimbabwe, Sri Lanka, Ghana, Colombia) where major reforms have been introduced in an attempt to increase provision of primary education in rural areas. These included curriculum reform, decentralisation of examinations, transfer of responsibility for some funding to community members, and changing concept of the teacher's role towards being a facilitator and even an entrepreneur. These changes may have served only to increase the gap between the effectiveness of rural primary

schools and those in urban areas, however. Parents in rural areas may be very suspect of their children receiving an education packaged as "rural" which they perceive to be inferior to other aspects of the national education system, especially if it is thought to limit chances for future employment and educational progression. Socio-economic factors are also critical to the success of educational reform; regardless of changes in the curriculum which aim to relate learning more closely to the local environment, economic and social constraints in rural areas deter many of the poorest families from sending their children to school. More far-reaching structural changes in rural education may become necessary, such as adapting the school year of rural schools to fit more closely with the agricultural cycle, so that children who are expected to participate in agricultural activities will be able to do so without missing out on schooling.

The rural context is characterised by complexities and, in order to analyse the situation further, it is useful to look at

three distinct environments; the home, the school and the community. This can be illustrated as shown in Figure 1.

Figure 1 Linking school, home and community environments
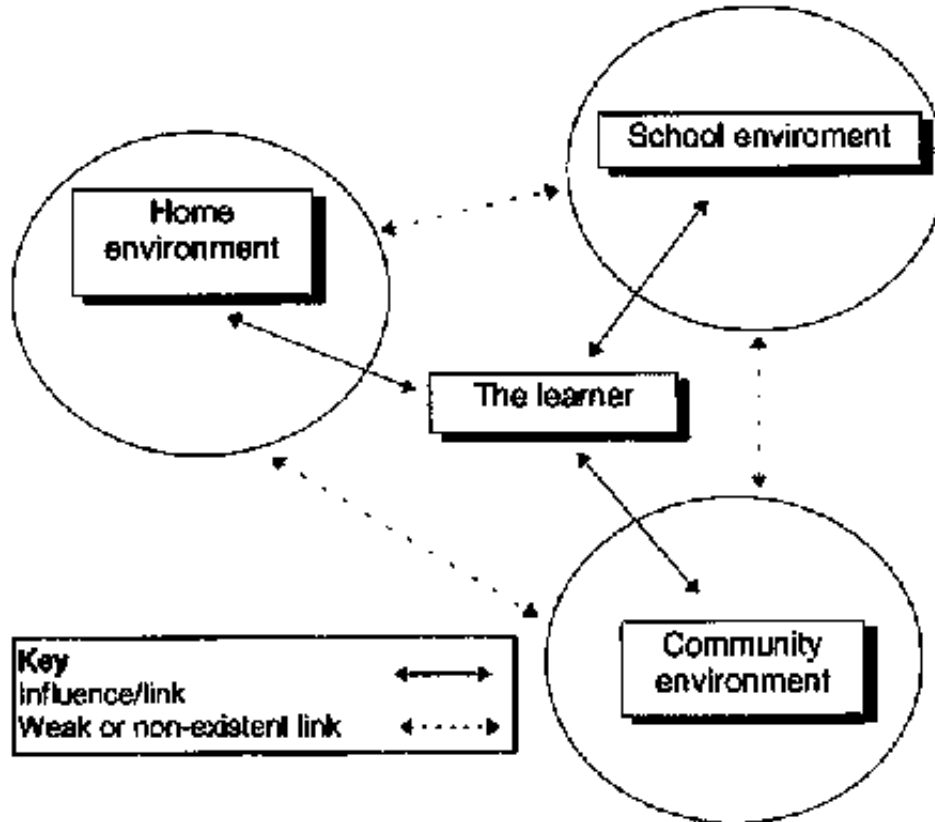
It may be noted from this diagram that the linkages between

the different environments may vary in strength. The learner is the common factor between all the environments and hence has strong links with each. The linkages between the environments themselves may be comparatively weak, however. The means by which these linkages are strengthened will be discussed later in this paper. First it is important to consider each of the three environments separately.

4.1.2 The home environment

In rural areas, parental income levels are often low, and so financial contributions to schooling from non-government sources may be negligible. Children are frequently expected to assist with production-related tasks, and so are not allowed to attend school. Timing of the school day and of terms is often designed to fit more with an urban, industrialised system, expecting children to attend school during busy periods in the agricultural year. Large numbers of

children in rural areas do not go beyond the primary cycle for socio-economic and geographical reasons and because of the urban focus of the education system. Thus there is a need for a system of education which would develop the learning potential of rural children and take care of rural needs in relation to resources and future changes (Ader, 1969). Parents in rural areas are likely to have received less formal education than their urban counterparts and may attach a lower value to schooling. Homes, and indeed schools in rural areas, are often ill-equipped to meet the needs of children to study; for example, with an absence of electricity. Children may come to school undernourished and in poor health, placing a greater stress on a single teacher who may have to deal with fifty-plus children ranging in age from four to fourteen years in one room which lacks the most basic facilities and resources (books, visual aids, etc.).

It has been suggested that, because of the gulf between an urbanised curriculum and the realities of rural life, children

who live in rural areas of developing countries are "disadvantaged"[2] in comparison with their urban counterparts. This is a contentious issue. According to this argument (Gulliford and Widlake, 1975), adverse environmental circumstances may deny children the security and emotional adjustment essential for consistent application to the tasks of learning in the formal primary school situation:

[2] It is important to note that within the broad category of "children from rural areas", there will be children also who might individually be termed "disadvantaged", since their particular circumstances are even less conducive to enable them to perform effectively at school than their peers, either because of their immediate social situation, or because they have special educational needs. In many rural areas where the most basic resources are in short supply or absent altogether,

their special needs are even less likely to be met.

"The environment of disadvantaged children may be rich in certain kinds of experience, but it is a reasonable generalisation that their horizons may be narrow, and they tend to be restricted in many kinds of experience which are often assumed in school work. Curricular activities which make the most of the immediate environment seem particularly valuable to them..."

Disadvantaged children, in these terms, are characterised by a limited background of language and experiences in their home environments, resulting in difficulty in fully comprehending the language and the concepts used by their teachers, in books and in other materials. This lack of "relevant" experience often results in pupils not being able to think about abstract ideas. Those who were not very successful are likely to be less eager to learn, and hence a

vicious circle is formed.

The term "disadvantaged children" may now be seen as somewhat pejorative, since it could be used to make a broader, unjustifiable inference about the value of a rural environment and culture from which a child originates. Indeed, many rural development practitioners now emphasise the importance and value of rural peoples' knowledge, and the need for rural education and extension programmes to build on it as a foundation. Seshadri (1993) talks *of "shedding aside the patronising attitude towards the disadvantaged",* and instead *"capitalising on the strengths of these classes".*

The real issue to be addressed, therefore, is not the value of a rural upbringing, but the fact that the aims and processes associated with primary school education seem to be based on an acceptance of a certain range of knowledge, skills and attitudes, the acquisition of which is deemed as valuable and necessary for citizens of a "modern" society. Knowledge

imparted within schools is seen by many as "superior" because it is part of a "superior" culture of civilisation (Bacchus, 1982).

4.1.3 The school environment

Curriculum

There has long been an ideological debate over the content and processes of education for rural children. Amongst some educationalists there is a belief in the existence of a body of academic knowledge which, although unrelated directly to the life experience of many people, should be learned by all:

"...the educational value placed upon abstractness...is a correct one, even though it also has a fetishistic element. It is also correct for schools to specialise in forms of thought which are not easily mastered through the informal culture. The critical thing is whether they present these forms as

alternative or complementary to informal culture". (Chanan, 1976)

Cox and Jones (1983) suggested that there is a need to deliver the same basic skills to children the world over, since the ability to abstract and master the written word leads to the acquisition of the tools to exercise power, by mastering knowledge that is outside the scope of personal experience. Their view is that this conforms with what parents want for their children, i.e. the means of their children succeeding in finding well-paid employment. Coombes (1985) suggests that the "minimum essential learning needs" for children growing up in rural areas should include: positive attitudes, functional literacy and numeracy, a scientific outlook, and functional knowledge and skills for raising a family and operating a household, for earning a living, and for civic participation. This view would be supported by many. For example:

"The basic literacy and numeracy skills are of greater value

than specific technical skills when students are unable to find work immediately after they finish training. Technical skills tend to deteriorate with disuse, and employers prefer literate and numerate recruits who can follow instructions and acquire new short-term skills quickly as new job opportunities arise....Primary and secondary school curricula must focus upon the basic skills of numeracy, literacy and scientific understanding". (Gray et al, 1992).

Often associated with this type of approach to learning is a curriculum which is undifferentiated. In this case there would not be any radical difference in curricula experienced by children grouped according to some perceived disadvantage; any difference should be in the methods of presentation and teaching. The argument for this is that differentiation can result in segregation, and thus some sort of social stigma could be attached to the children, besides prematurely (and probably unjustifiably) closing doors to further educational

opportunities. This could also accentuate the urban-rural divide which is observed in many developing countries, thus exacerbating an already difficult situation.

Although this approach to primary school curriculum development and teaching is supported widely, an accusation has been levelled against it on the grounds that, in practice, such a curriculum tends to be geared to those children whose experience conforms more closely with a culture identified as "modern" and "superior". What makes matters worse is that the "superiority gap" is becoming accentuated, since the global influence of western media and marketing organisations increasingly interprets as "modern" a middle-class, urban dream-world, inconsistent with the reality of most rural communities. Curriculum design is often centralised and rigid, revealing an urban bias and middle-class, westernised values (Bennet, 1993), with no opportunity to relate learning to the situation from which rural children come. Children are not stimulated to learn, and rarely engage

actively with the learning material. The learning material itself may be based on examples and situations which children in rural areas never come into contact with. Ekanayake (1990) believes that an irrelevant education breeds discontent and frustration and suggests that, in many instances, children who finish primary school seem to be less fit to be creative members of the community than if they had never been to school. He terms them "the schooled illiterates".

Pedagogy

Ekanayake (1990) has highlighted a number of deficiencies relating to the school environment in rural areas. He notes that interpretations of children's problems are influenced by socio-economic determinants of achievement and pedagogical traditionalism, whilst the teaching styles prevalent today are the products of these social determinants. Because of this, teachers are unable to comprehend the irrelevance of the content and methods as

the main cause of failure, high drop-out rates, non-participation of students, etc. Often, problems with children in the classroom and their

intellectual progression are blamed on the home background and hence the parents. The teacher may be at fault, however, through not understanding the cultural background of the child. As Ekanayake states, many teachers, due to their lack of training in rural pedagogy, are unaware of the poor quality and nature of academic support that parents can give at home. Parents often remain outsiders of the school system, students are passive listeners in the classroom and teachers are passive executors of predetermined curricula. The adverse situations resulting from deprivations are further aggravated by the fact that teachers begin teaching not with what the children know or have experienced but with what they do not know and have not experienced. This is because teachers have been presented with traditional philosophies of education which conceptualise parents as an important part

of the learning process, so that if one part fails, so does the whole educational process. This reinforces Ekanayake's view that teachers lack skills related to effective use of the rural environment, knowledge of local culture and appropriate attitudes, and the ability to use the children's experiences at home for teaching and learning. The importance of focusing on rurality as a policy becomes paramount, rather than as a matter to which lip-service is paid only.

Teachers in some rural schools are themselves from urban areas and have little or no understanding of the background of their pupils; they may be posted to a rural area against their will, have to travel a long distance to school and, as a result, may have very little commitment to their work. As a result of demotivation, the curriculum implemented may vary markedly from the original, time available for learning is likely to be reduced, and pedagogical practices are likely to be poor. The teaching styles adopted by some urban teachers may be alien to what rural children experience in their day-to-

day activities because these elite styles presuppose cognitive frameworks based on middle-class cultures (Singh, 1988).

4.1.4 Community environment

In order to relate schooling to the community environment, some efforts have been made to integrate "community" or "rural peoples'" knowledge into the curriculum. This certainly has been one of the aims of the community school movement, yet it has proved a minefield, since an assumption was made, generally, that school and community knowledge systems are compatible. This led to the development of the argument that, since reality is socially constructed, knowledge which represents an interpretation of that reality or is based on direct experience must be specific to the society in which it develops. Consequently, the basis of school knowledge should be community knowledge.

To achieve this, some countries have developed and

implemented a "ruralised", vocationally-oriented, diversified curriculum. Here it is argued that, in addition to literacy, numeracy and scientific understanding, children should acquire skills in technical areas which will relate directly to future work opportunities, particularly in agriculture. This has meant in practice that the content and activities included in the ruralised curriculum are related explicitly to the experiences of children brought up in rural areas. There is here, typically, some kind of focus on local, rural, social and functional issues, including the learning of basic agricultural skills. In this sense, such a curriculum may be relevant in two major ways, firstly in that the curriculum (broadly speaking) is relevant to the life experiences of the learners, and secondly that the learners acquire knowledge, skills and attitudes which will prepare them for life and work in the community from which they come. Primary education of rural children is thus seen as having a vocational orientation. This type of curriculum may be quite rigid, but with a rural bias.

Agriculture has often been an important element of the curriculum in these community-oriented schools. Where agriculture has been included as an intrinsic part of the rural schools curriculum, it has been implemented either as a manual activity, added on to the school curriculum (for example Benin, Burundi, Congo, The Gambia, Seychelles, Uganda, Zambia, Colombia, Sri Lanka, to name but few), or as a distinct subject area in the curriculum (for example Botswana, Cote d'Ivoire, Kenya, Lesotho, Malawi, Rwanda, Swaziland and Tanzania). Primary school agriculture (PSA) frequently forms an important aspect of this type of curriculum, and, indeed, a great deal has been written about it, particularly by Bergman (1983), Bude (1985), Eisemon (1989) and Riedmiller and Mades (1991), amongst others.

A number of factors have contributed to the failure of many of these efforts to provide community-oriented schooling, however. As Bacchus (1982) pointed out, the integration of school and community knowledge is beset by an innate

conflict between the two knowledge systems. He noted also that

knowledge is not value-free, and is either used as an instrument of social control or domination, or as a tool for conscientizing pupils. This view is supported by Bude (1985):

"….the school can either contribute towards deepening or fostering the apprehension of the cultural environment by endorsing its values for the socialisation process and thus by integrating cultural manifestations into the learning contents, or it can ignore or even negate these values and activities and thus accelerate the loss of cultural identity on the part of its pupils".

Attempts to integrate school and community learning have sometimes led to accusations of creating a strong class bias, providing children with the skills and attitudes needed to fill pre-destined positions in the community and thus fixing their

societal roles. Some schools were accused of destroying the best elements of communal life and introducing a new set of values unrelated to the old one. Problems arose also due to a lack of major commitment by policy makers and funders, lack of proper training for teachers, insufficiency of resources and a poor response on the part of the public, who prefer more prestigious academic programmes. Detractors of the ruralised, diversified curriculum (the World Bank in particular) believe that it leads to the creation of a dual system unwanted by parents and pupils, still failing the group of children who are most disadvantaged in society. Also, in most countries, a national curriculum is developed centrally; the inclusion of agriculture, for example, in a national curriculum might be to the disadvantage of urban children since it is likely to be outside their life experience.

Another enduring problem is that agriculture and other forms of technical skills training may indeed relate to the life experiences of rural children, but it is well documented that

many community members, particularly parents, view primary education as a means of enabling their children to leave agriculture[3] behind and to go to work in urban areas where they may earn money which can be brought home to the family. They do not want their children to be exposed to a "watered-down" version of the national curriculum which may prevent them gaining a fully-recognised qualification, thus impeding their chances in gaining employment or progressing to higher levels of the education system. Such a view could lead to parents withholding their children from primary school; hence there is a need to raise awareness that contextualisation can enhance the possibility for children to pursue and attain a wide range of goals in life.

[3] It should be noted here, that it is difficult to separate the concepts of "agriculture" and "rural life". Agriculture is certainly a major feature of the lives of many rural dwellers, but not of all. It is also

important to realise that "farming" is not always seen as an occupation, but as "part of life", the purpose of which is to provide food security for the farmer and his or her family.

Finally, there is the debate over whether vocational training in school, for example in agriculture, actually has any impact on levels of production in the community. White (1990) argues that acquisition of literacy and numeracy may be more effective than school agriculture in increasing agricultural production levels, and makes the case that school children should learn "about" agriculture, rather than "for" agriculture; the objective should be to promote "agricultural literacy", rather than to produce trained farmers. Eisemon (1989) notes that learning about modern farming techniques in school does not appear to create better farmers once they return to the community, partly because the adoption of innovative farming practices seems to depend more on the level of cognitive development in an individual, and also

because much of the technological content of "modern" agriculture bears no relationship to traditional agricultural practices and knowledge. As Eisemon states:

"The content of agricultural instruction and its articulation with instruction in modern science is particularly important. Also important is connecting instruction in modern science and modern agriculture to indigenous knowledge systems, building upon the knowledge and skills students possess from social experience".

These problems have led many community school movements to revise their strategies. Most now aim to meet community manpower needs and to be involved in activities directly aimed at improving community life, for example by providing services locally.

4.1.5 Links between school, home and community

Improved linkages between the school, parents and community and decentralisation of authority are important measures in moving towards a participatory environment required for improved learning.

Some countries have already made this move in their constitutions. In Indonesia, the 1989 Education Law states that education is the responsibility of the state, the community, and the family. In China, the 1985 "Decision on Reform of China's Educational Structure" granted decision making powers for administration of primary education to local authorities. UNESCO, 1994 (1).

Involving actively the community and parents in schooling, especially in rural areas where a large proportion of the adults will be illiterate, is an enormous task. It requires an enabling environment in which all members of the society - teachers, administrators, parents, educationalists - will work together in a participatory environment. Parental support is

particularly important, as discussed at an EFA Summit of Nine High-Population Countries (UNESCO 1994 (1)):

"Women are the first and most important promoters of children's education. Their expectations and attitudes towards their children's schooling are an important factor in learning achievement. Research in several countries shows that schools which attain a high level of quality generally also enjoy a strong degree of parental support. Parents must feel that there are clear economic and social benefits in schooling their children, especially their girls".

Raising motivation and awareness in the community to the benefits of education, especially primary education, is a tremendous task. There is disillusionment with education when at the end of schooling, there is no job and no opportunities for progression to higher levels of the education system. Even within the community in which they live

possibilities may be extremely limited, leading to the migration of many young, rural people to urban centres. Ram Niwas Mirdha (UNESCO, 1994 (1)) suggests that the purpose of education needs to be better defined:

"we should clearly say that it is not for jobs that we are giving education, but for providing you better tools for improving your situation - if you are a carpenter, you will be a better carpenter. If you are an agriculturalist, you will be a better agriculturalist with education".

Whether such an argument will improve public perception of education is open to question, however.

4.1.6 the role of the learner

There is no doubt that linking school, community and home is difficult, but there is one common factor to all three environments which is the most valuable resource of all - the

learner. In the various approaches described above, which aim to improve teaching and learning, little emphasis has been laid, explicitly, on the role of the learner in the learning process. Child-centred learning approaches have been advocated strongly for many years; an innovation which has sought to draw on this idea and develop it as practical application is the "child-to-child" approach to learning.

The child-to-child approach to learning is an interesting concept, and one that has been incorporated into many projects world-wide (for numerous examples refer to Hawes, 1988). It is evident that the high aims put on the learning expectations of primary school children are not met, and that the children leave school without the basic learning skills they need for a productive and progressive life. This approach follows the basic principals behind our approach for contextualising learning, based on a subject known to many rural school children. The child-to-child approach rests on three basic assumptions:

- that primary education becomes more effective if it is linked to things that matter both to children and to their families and communities;

- that education in school and education out of school should be linked as closely as possible so that learning becomes a part of life;

- that children have the will, the skill and the motivation to help educate each other and can be trusted to do so.

One particular study (Hawes, 1988), analyses the child-to-child approach in the context of health education but emphasises that *"such approaches to health education may help to "unlock" better approaches to learning on a wider scale".* In other words the approach could be used to integrate or contextualise the curriculum. Hawes cites an example from a workshop held in Nyeri, Kenya:

"child-to-child examined all the applications of mathematics to health and health to mathematics. They were legion. When we understand number, predict, estimate, measure, or solve problems we may do so in relation to imaginary cases (trains starting from different stations; A, B & C digging holes in the ground), or to real, important issues (population growth; budgets to feed a family; measurement of arm circumference). In the second case we do much more than teach interesting and relevant content at the same time as teaching learning skills. We also develop and reinforce the concepts and skills far more effectively because they are related to something both children and their teachers understand and value".

Child to child and child-centred learning approaches place the learner in a central role in the learning process. The learner becomes the core and focus of the entire learning process. The experience of the learner is drawn upon and used as a

basis for the development of new learning. For young children, the home environment clearly is a crucial factor in their experience of life (whatever or wherever this "home environment" may be).

From this discussion, an important conclusion may be drawn. Although links between the school, home and community environments may be tenuous or absent altogether, the learner acts as a focal point for this tri-partite structure; it is the learner which can bring the three environments together.

4.2 Innovations at school level

Many of the problems discussed above, such as those associated with socio-economic factors, are difficult to resolve since they cannot be addressed easily through educational reform, but require action by a wide range of stakeholders, including the government, local communities, and perhaps, under certain conditions, schools. Schools,

presumably, can do something about educational problems. They do not hold the key to ali educational solutions of course, since government will need to provide complementary support by creating enabling policy and by supplying resources, not only material, but also through the reform of teacher training, learning materials production and curriculum development. Since a lot of what goes on in rural schools appears to differ quite markedly from what is propounded by policy makers and centralised curriculum developers, however, so schools may well be able to play an increasingly important role in meeting the needs of the children who attend them. As stated by UNESCO (1994):

"The school of today must overcome these developmental problems both in terms of relevance to the community and in terms of establishing a curriculum which is both universal and yet specifically tailor-made for a particular situation".

In order to achieve this goal, the real challenge for a school is

to strengthen and develop the links between the school, home and community. As discussed above, the learner can play a central role in this process, to the benefit of all. The "ideal situation" where learning environments are linked strongly, is illustrated in Figure 2.

Figure 2 Linking the learning environments
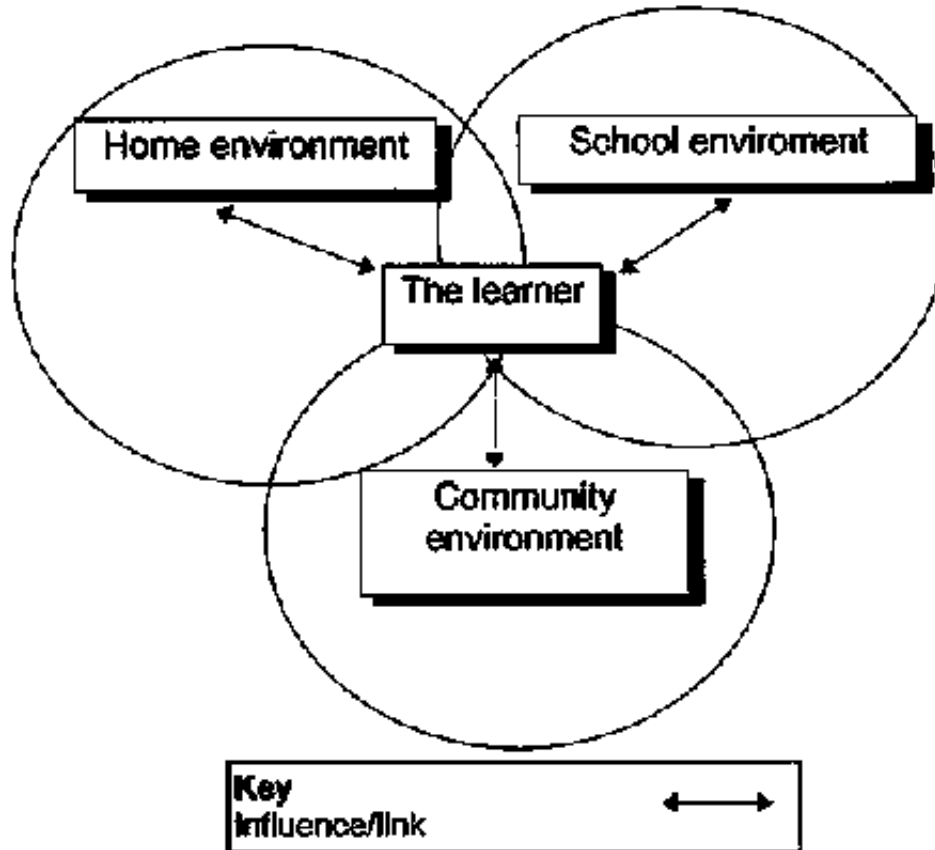
What can schools do in order to bring the learner into the

heart of the learning process? In order to make learning more meaningful for rural children, it becomes necessary to create conditions where the curriculum and teaching and learning practices are influenced by the experience and environment of the pupils, enabling children to integrate their learning experiences inside and outside school. As Victor Ordoñez, Director of Basic Education Division in UNESCO (UNESCO, 1994) states,

"teachers must also learn to see the children as building blocks - To build on what he or she has learnt before coming to school. They will know how to milk a cow, count the chickens and pigs. Build on that. My message is quite simple: let us not think of the vehicle, or the progress of the vehicle, but its contents, what is taught and how".

One innovation which may bring the different aspects of the learning environment together is the *contextualisation of*

learning. This is the concept at the heart of this research and must be defined more clearly.

4.3 Contextualising teaching and learning

4.3.1 Reaching a definition of contextualisation

Educationalists have for many years been thinking about how the way children learn in school can be related to their environment. Gulliford and Widlake (1975) quoted John Dewey saying that,

"Children are people. They grow into tomorrow only as they live today", and also "… *when we say a child cannot understand, we frequently mean that he has not had sufficient experience of the right kind to be able to understand".*

More recently, Bloom (1992) notes that children's:

"personal experiences, emotions, metaphors, interpretative frameworks, and so forth serve to create a complex system of processes that affect the nature of their personal knowledge and how it is constructed".

From this perspective, the educational development of a child is inseparable from the "being" which the child has become, brought about through a complex history of social interactions and related to the context in which the child has been raised. As children develop, they continue to construct their own being, and education as an experience can affect and contribute to this process. This "constructivist[4]" approach to the way in which children learn has challenged the Piagetian emphasis on individual cognitive development and is the subject of much recent research and writing (Wheatley, 1991, Ritchie and Russell, 1991, Ritchie, 1994).

[4] Constructivism is an epistemology which focuses

on the role of the learner in the personal construction of knowledge (von Glasersfeld 1987). Learning is viewed as an adaptive process where the learner's existing knowledge is modified in response to perturbations which arise from both personal and social interactions (Wheatley, 1991)

The argument as described by Bloom (1992) is that learning involves constructing meanings based on previous knowledge and experience, which can be semantic (formally acquired knowledge), but also episodic knowledge (personal experiences), interpretative frameworks, metaphors, emotions-values-aesthetics (EVAs) and the products of various mental processes (aspects of contexts of meaning). Contexts of meaning can involve traditional cognitive processes, such as categorising, associating and inferring, and elaborating and story telling; these are influenced by other aspects of contexts of meaning, such as the above. Bloom suggests that the components of contexts of meaning,

particularly metaphors, interpretative frameworks, and EVAs, substantially influence knowledge development processes.

Metaphors and analogies are two means by which learning in school can be related to a child's own experience of life since they express abstract ideas by grounding them in concrete experiences (Black, 1977; Lakoff and Johnson, 1980). Metaphors act as comparative mechanisms that link different types of information. White (1988) lists nine basic types of metaphors, the two most common types being those that link actions and those that compare attributes. Metaphors link observed phenomena with familiar phenomena, and the associative-inferential process is therefore facilitated by the metaphor. In young children, metaphors are usually rooted in an anthropocentric and anthropomorphic framework, but they assist in the learning process. Metaphors which are constructed by the children themselves and are meaningful to them enrich conceptual understanding. These are powerful tools for facilitating, establishing, and extending those

understandings. Solomon (1986) concludes that the allusions to past experiences provide *"metaphorical illumination"* found in everyday discourse, and this becomes a means of reasoning about the unfamiliar and about problematic phenomena.

The use of analogies, on the other hand, have been described by Flick (1991) as,

"a cognitive process, that is evidenced by linguistic structures…, that establishes an association with previous experience in some way that may be explicit or implicit", and that *"Understanding is conferred on experience through a knowledge framework which functions as a cognitive mechanism for relating elements of the experience together".*

White (1988) describes this knowledge framework as an interrelated complex of images and other sensory

impressions, linguistic forms, kinaesthetic memories, as well as affective features of experiences. Gentner (1986) proposes that, through intuition, children couple the multifaceted knowledge frameworks of past experience with novel situations. One tool which can enhance this coupling is the creation of analogies, which have a explanatory-predictive purpose (while metaphors have a more expressive-aesthetic purpose). Duit (1991) states that, since learning is an active construction process and can only take place on the basis of previously acquired knowledge:

"Learning, therefore, fundamentally has to do with constructing similarities between the new and the already known. It is precisely this aspect that emphasises the significance of analogies in a constructivist learning approach".

Flick (1991) warns that any new instruction in school must constantly ask the pupils to re-examine past experiences.

The analogies that they intuitively make must be explicit to them so that they can construct on their acquired knowledge. Linking past experience with concept formation through instruction is not a matter of finding the right analogy upon which to base instructional design, but rather the provision of a stimulus to trigger off other relevant experiences. Specific analogies can be used as a useful instructional tool, but teachers should be sensitive also to the spontaneous or intuitive analogies created by students.

In summary, although everyday out-of-school experience contributes to the knowledge constructed by a child, additional experience must be provided within the school environment which will enable a child to understand complex, conceptual learning of skills in science, mathematics, languages, etc. In order to enhance a child's capacity to develop skills in these areas, however, it is essential to relate these subjects in some way to the child's own personal experience of life, and thus to integrate the entire learning

experience. In order to meet the "essential learning needs" listed by Coombes, therefore, it becomes clear that the content of education programmes, the methods by which learning is facilitated, and the materials used to this end must all be pertinent to the experience and culture of the learners (Graham-Brown, 1991). In other words, learning should be *contextualised.*

A definition of contextualisation is reached, therefore for the purpose of this research.

Contextualisation of learning occurs when the content of the curriculum, and the methods and materials associated with it, are related directly to the experience and environment of the learner.

4.3.2 Implications of contextualisation for teaching and learning

Implications for the Curriculum

As described earlier, the curriculum for rural primary schools in most developing countries is centralised and inflexible with an urban, western, middle-class bias. In these situations, decentralisation of the curriculum development process seems unlikely to happen in the near future.

There are different approaches to curriculum development, however. Some educationalists advocate the creation of *integrated curricula.* Such an approach to curriculum development is certainly

conducive to the use of contextualisation in schools, since there is much greater potential for teachers to develop the content themselves within certain topic areas. This means that they can relate learning much more closely to the local environment.

Bacchus (1982) defines integration as "the combination of the several components of an object, organisation or a system into a whole in order to render it entire or complete" (p.1). A curriculum developed on this basis may have a core, which is identified as essential learning for all primary pupils throughout a country, but the way in which this core is handled is not prescribed by central policy makers. In order to render the curriculum complete, additional, optional areas will be included, depending on the locality of the school and the background of the pupils and teachers.

There are strong arguments in favour of this approach. As Krogh (1990) states: *"Most of the learning in our lives is along the lines of an integrated curriculum".* Following this idea, Krogh suggests ways that integrated learning, which prevails in everyday life, could be incorporated in the school programme. The teacher can choose a theme, create a topic web which relates and links a range of sub-themes or topics, and then add or subtract activities as it becomes apparent

that there is too much or too little emphasis in some areas. This flexible method of teaching is an extension to natural teaching which takes place outside the school. It can build on a child's experiences, covering the whole curriculum whilst developing skills in a meaningful context, as opposed to breaking learning down into categories by subject area, which is less natural, more forced, and less interesting or exciting. Through a learning web, academic, social and emotional needs can be met. This approach was supported strongly at a recent conference held in Ethiopia (PEAP, 1996):

"Children see the world holistically, that is they make meaning of their surroundings by making connections. Learning takes place through the introduction of new information which meets prior knowledge and experiences of the learners. Learners come to school with knowledge from their home, friends, environments, radio, etc. This knowledge is not necessarily broken up into maths, mother

tongue, natural science, social studies, etc. They come with knowledge and experiences that have meaning to them. In helping children to learn new concepts and processes it is important to make connections to the knowledge and experience that they already have. These connections between new knowledge and their existing knowledge are best make in a holistic manner which is facilitated by the integration of fragmented subjects into one or two areas (such as is being done with natural science, social studies, agriculture, home economics and handicraft)".

Most primary school curricula in use at present are not topic-based, but are organised according to the study of separate, specific subject areas or disciplines, such as language, mathematics, science, history, etc. Contextualisation still allows teachers to relate the content, however rigid, to the local environment. There are elements of all subject areas which can be contextualised. In this way, a centrally

produced curriculum can be "localised" because teachers adapt the way in which they deal with the prescribed content by using the experience of the learners as a basis for teaching and learning. This is one way of addressing the problem of rigid "relevant" basic education programmes produced on a national scale, as curriculum flexibility is encouraged at a local level. The process of contextualisation will, necessarily, involve a range of stakeholders, not only school, government and community representatives, but also the learners themselves as they contribute actively to the learning process. An important impact of contextualisation, therefore, is, in the words of Lubben et al (1995), *"curriculum empowerment".*

Contextualisation can achieve the difficult task of linking "school knowledge" and "home knowledge". The Report of the National Advisory Committee of India (1993), gives an example:

"one teacher who tried to make such a bridge in a lesson about letter-writing was asked by a class VI child: "madam, shall we write it the way we write at home or in the school way?"

The report continues to state:

"this kind of perception results in the confinement of classroom life to a narrow orbit. Classroom knowledge assumes total independence from the child's own experience and knowledge of the world. As a consequence of this de-coupling, children begin to compartmentalise knowledge into two categories: that which has currency in the school and classroom, and the other which has uses and relevance outside the school."

An aim of contextualisation is to put an end to this de-coupling by decompartmentalising knowledge, and allowing all those

involved in the learning process to recognise that learning is in fact a common currency to all learning environments.

Implications for Pedagogy

Contextualisation can be applied in many different areas of the curriculum, but there are a number of implications for pedagogical practice. The size of the teacher's exclusive territory will decrease, inevitably, with a subsequent increase in the amount of input children have into designing their environment. This may pose a threat to teachers who are familiar with a strongly hierarchical school environment, and prove equally uncomfortable for pupils, parents and policy makers. Teachers will also have to develop skills in understanding the environment from which the learners come from, as their pedagogical approaches should attempt, as Aghihotri et al (1994) suggest, to *"work in harmony with the world of the child and the community by, for example, including drawing, pictures, songs, stories and riddles of*

and by the local people and by encouraging the child to relate the content of the text to the environment often involving activities that would necessitate observation and analysis of the environment".

Many other types of inputs will be also of great importance, for example, the preparation of special materials, such as workcards, worksheets, additional pictorial or taped material, guides on the use of audio-visual materials, materials information and reference books which are easy to read in a language of instruction familiar to the children, whilst introducing novel terms in a suitably paced way. Lubben et al (1995) note that *"contextualised materials stimulate student participation and provide the opportunity of identifying student misconceptions".* They point out also that girls, who may feel alienated from schooling, can relate more easily to contextualised materials, and hence become more motivated to study and produce a better academic performance as a

result.

Bearing in mind the severe constraints facing rural primary schools and teachers, a major difficulty associated with contextualisation is that its success will depend largely on the skill, motivation and professionalism of teachers, as well as the availability of suitable resources. Many materials and texts available currently are, as stated by Aghihotri et al (1994) *"very distant from the environment of the child, both in terms of content and language".* This leads to indifference, alienation and non-participation of the learner in the learning process. Another problem is that the experience, culture and "knowledge" of people who live in rural areas varies from one locality to the next; even within a specific area the knowledge and experience of individuals differs markedly. There is no single knowledge or experience which can be used as the basis for the curriculum, therefore. Metaphors and analogies should, if they are to be effective, be derived actively by the child, based on his or her individual experience and, as

Lubben et al (1995) note, on experiences they may have in the future or which they find contentious or relevant for other reasons (perhaps because it relates to experience of their peers or role models). The Department of Primary Education, Sri Lanka (NIE, 1994) supports the need for teachers to link their teaching to the external environment:

"Education is a continuous process and hence it has been emphasised that education should not be confined to any particular period of time and any particular place. Possibilities for supplementing the formal education process with non-formal education modalities to make education better related to day to day living and hence more meaningful to the learner must be explored".

There are implications, therefore, for teacher training, both in-service and pre-service, for more imaginative means of creating and distributing resources for teaching and learning,

and also for time management, since the development of contextualised materials for teaching and learning will inevitably be a time-consuming activity. In this respect, it is important to be aware that many teachers carry a very heavy burden already; not only do they work under difficult conditions, often with large numbers of pupils, but they have to perform many activities relating to the social welfare of children in the school which go far beyond what is often thought to be the normal duties of a teacher. Ways of supporting teachers, both materially and psychologically, will have to be found which enable and encourage them to develop new strategies and approaches without becoming completely demoralised and exhausted in the process.

4.4 Using agricultural experience as a medium for contextualisation

In order to contextualise teaching and learning, a teacher must identify aspects of the learners' experience which will

provide a valuable resource of basic concepts, metaphors and analogies to which the content of the curriculum can be related.

In rural primary schools, most learners have direct, first-hand experience of agriculture, either as a result of their own activities, contributing to the family livelihood, or from observation of their immediate surroundings. An agricultural topic used as a medium for contextualising part of the curriculum could, therefore, provide an avenue through which children can have repeated experiences which help them to master cognitive, physical and social skills. Agriculture could be the basis of integrated projects incorporated in the school curriculum, with academic activities chosen for their locally relevant, experimental attributes. Even though the agricultural experience of individuals will differ, agriculture can still be used as a vehicle to make school learning more meaningful. Metaphors and analogies can be based on agricultural activities and experiences, and thus enhance the acquisition

of literacy, numeracy and the skills of basic scientific reasoning within the confines of a subject-based curriculum.

Where the curriculum allows it, local agricultural practices can be used as a basis for *"the development of an integrated life-centred curriculum with teaching devised according to "centres of interest" or "projects" where traditional subject boundaries are given up as artificial. During a period of several weeks, for example, all teaching would be centred around a given topic, with language, arithmetic and science skills being imparted in the process"* (Riedmiller and Mades, 1991). Children can be encouraged to relate the learning process in school with the natural learning process which exists outside the classroom, and begin to provide the means by which the process of learning becomes continuous, in school and beyond. It could enable children to develop not only basic knowledge and skills, but also higher-order competencies, such as problem-solving and thinking skills,

and broader competencies such as leadership skills, group skills and personal initiative (Black *et al,* 1993). This would be expected to enhance interest and thus motivation.

Coverdale (1972) suggested how a simple study of maize could be used as a theme for learning, whatever the structure of the curriculum. Measuring plots could involve mathematics, development of powers of observation and communication and the use of language. The history of the maize plant could be considered, as could geography in terms of where maize grows in other countries. This approach to learning aims to provide general education in an agricultural setting, since in rural schools, *"there is a very strong case for a rural bias to be applied to the whole basic syllabus in order to give it a coherent pattern of meaning and relevance"* (Coverdale, 1972). Agriculture provides an ideal basis for this "rural bias", because of its familiarity to the majority of rural school children. At home, many pupils will be involved in daily

agricultural practices such as feeding and herding livestock, watering, digging and weeding. Agricultural seasons may also affect the pupils' school attendance record. This familiarity with agriculture may provide a basis for contextualising learning over a range of subjects, including reading and writing, mathematics, science, geography, social studies and home economics, as illustrated in Figure 3.

In order to adopt this approach, teachers would need to have an understanding of local agricultural conditions and also to have the capacity to learn from the local environment and from their pupils. As mentioned earlier, this has implications for teacher training and support. It would be necessary, also, for teachers to be able to produce learning materials which draw on agriculture as the context for the learning. Some school text books have been produced recently which encourage teachers to use agricultural illustrations for mathematics, science and languages; some examples are given in

The Department of Primary Education, Sri Lanka (NIE, 1994) advocate strongly the use of agricultural experience as a medium for contextualisation:

"The success of the teaching-learning process depends heavily on the motivation of both the learner and the teacher. It has been identified that information regarding food habits and types of food of the community can be used in introducing innovative strategies in education. Outdoor activities using agricultural plots in the school and the home can also make learning more meaningful and hence attractive. These plots could be used for introducing concepts in mathematics, language and social studies, etc....Since agriculture is the main occupation of the parents in the Sinhala Medium areas, every attempt must be made to help them to learn better practices. Well maintained agricultural plots in the school could be used in teaching not only agriculture but also concepts in science, mathematics,

nutrition, social studies, etc. These plots could also serve as demonstration plots for the community. In addition these could be used as nurseries to provide seeds and plants of improved varieties to farmers."

The use of agriculture in this way could have considerable advantages. It will appeal to parents and employers if it is proven that such an approach enables young people to cope more effectively with the subject matter in school. At present, passive, written examinations are the arbiters of success in most national education systems and this situation is unlikely to change in the near future. Although decentralisation of examination procedures is often discussed, many national policy makers still feel unwilling to introduce continuous assessment procedures which place new demands and responsibilities on teachers. It will be crucial, therefore, that parents and pupils feet that a new, innovative strategy introduced in schools will not reduce the chances of success

in examinations; the aim of a strategy such as contextualisation is in fact to increase this chance of success, since by understanding abstract concepts better, pupils should perform better in examinations. Also, pupils who have left school should find that they are able to apply what they have learned in their local communities, and school pupils themselves will gain satisfaction from their own personal development. These skills will be useful, too, to those children who do succeed in progressing to higher levels of education. As Ravi & Rao (1994) state:

"The local environment with which the children are familiar, and upon which the teacher and the children can draw for information and materials has to be seen as an area for study which is worthwhile".

Figure 3 Agriculture as a basis for contextualised teaching and learning

Geography:
soil and land formation
weather
land use

Science:
plant growth
reproduction
health and disease

Maths:
measuring field size
weighing fertiliser
calculating seed rates

agriculture

Reading and Writing:
record keeping
reports
stories

Home economics:
nutrition
food preservation

Social studies:
team work
cultural aspects of
agricultural systems
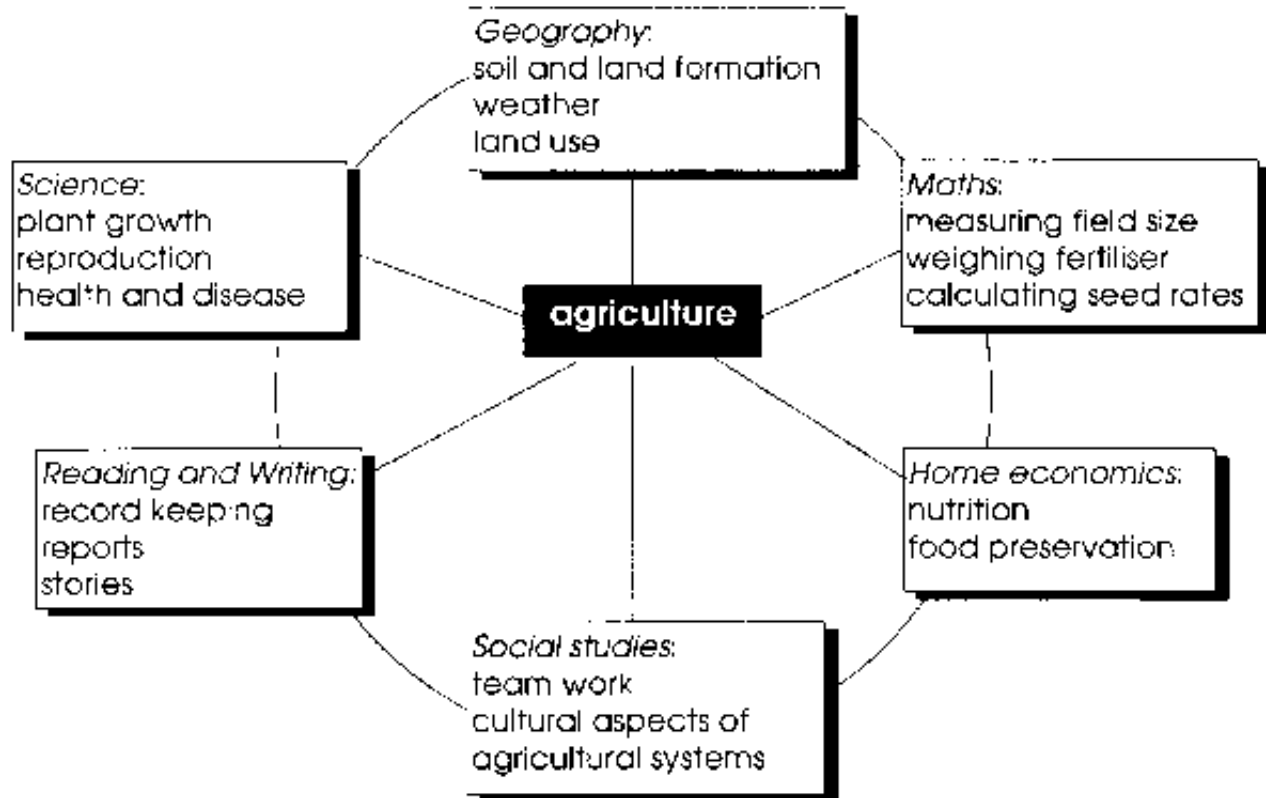
Figure 4 Examples of text-book material which draw on

agricultural practice and experience

4. Ondimu and Nyangau are digging a shamba. Ondimu starts at the lop and digs the top 3/8 of the shamba. Nyangau starts at the bottom and digs the bottom 3/10. What is the total fraction dug?

5 Omolo dug 1/4 of his shamba on Monday and 3/5 on Tuesday. What total fraction of the shamba did he dig in the two days?

5. Otugah planted 139 rows of pineapples in his shamba. Each row contained 75 pineapples. How many pineapples were there in the shamba?

E Talk maths: A dialogue

A: Look at Mr. Kombo's cows.
B: In 1988 he had five cows. Today he has eight cows.

A: By how many have his cows increased?
B: They have increased by three cows.

	1988	Today
Cows	(5)	(8)
Hens	12	20
Sheep	25	36
Goats	10	16
Pigs	8	12

F Write a letter like this to a friend.

PO Box 347.
Isiolo, 12/2/88

Dear Meja,

I have done two important jobs today.
I have milked the cows and I have planted the onions. Please
write me a letter about your day.

With best wishes.
Tom

These words will help you: clean, water, hoe, mend, iron,
cook. wash, dust, herd. weed, pick, brush

page eight (8)
date.............

CLASS WORK 8

A VISIT TO A FARM

Yesterday Ashok and Anita went to their uncle's farm. There they saw a cow, a cat, a then), a goat, a dog and a hen. They also saw a lamb, a kid, a calf, some chicks, some kittens and some puppies.
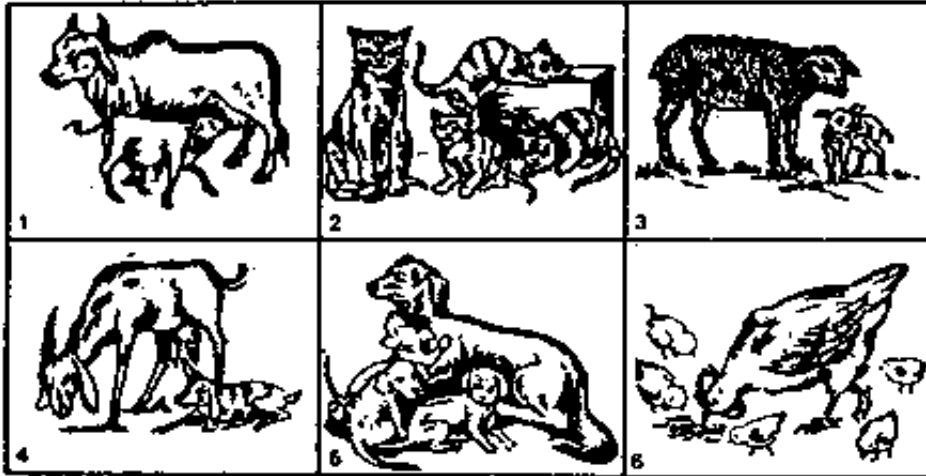
Now complete each sentence by writing the correct name in

each black space. You can choose your words from the box,

1. Young cows arc called *calves.*
2. Young dogs are called................................
3. Young cats are called...............................
4.......................................are young goats.
5.......................................are young sheep.
6.......................................are young hens,
7. The babies of cats arc called..........................
8. The babies of cows are called..........................

puppies	calves	kittens
lads	lambs	chicks

5. Contextualisation - Implications for practice

5.1 Contextualising teaching of a subject-based curriculum

As mentioned in the previous section, the majority of curricula being used in primary schools are subject-based. A teacher will need to recognise, therefore, which aspects of the specific subject matter are amenable to contextualisation, by identifying elements which provide a direct link to the experience of most or all of the learners. This section highlights different curriculum areas which could be treated in this way, and pays attention, particularly, to the use of agriculture as a contextualising medium. As Riedmiller and Mades (1991) state:

"The handling of regular school subjects is localised, by relating the topics of the separate subject syllabi to the local environment; in this way, the subject is the point of origin; the environment then functions as a teaching aid to illustrate academic themes and to serve as a practical ground for applying the acquired knowledge and skills".

5.2 Contextualising language

One of the reasons that primary school children in developing countries appear to face difficulties with the study of science and mathematics is that the language of instruction is unfamiliar to them (Eisemon, 1989). Cleghorn *et al* (1989) describe, for example, the situation in Kenya where restrictions on the use of languages other than English during instruction may ultimately hamper student understanding of important concepts. When instruction is in a second language and when the concepts being taught lack equivalence in the students' language and culture, teaching involves a process of "dual translation".

Solomon (1987) notes that most cross-cultural studies in science education lean heavily upon the use of language to explore different meanings. This implies that cultural variation implies different ways of perceiving nature, and also, perhaps, that different languages directly affect how nature is

understood. It seems to be the mother tongue, rather than the language of the school, which most affects the conceptual profile of children.

Vygotsky (1978) held that children's language "turns inward" to become the basis of inner speech and so of thought itself. This is not a problem where the curriculum is taught in the local language, but there are cases where subjects such as science and mathematics are taught in English, French or Portuguese, and these are not the first language of the child. Strevens (1976) made the point that most studies in the philosophy and the practice of science education embody two unstated assumptions: first that all the learners are members of the same culture, and also that they have the same common mother tongue. These assumptions are false in the case of developing countries. For example, in many rural schools, there might be different dialects spoken by teachers and pupils; there are cases when teachers have been posted to schools where a completely different language is spoken

to their own. Another problem occurs when text books and learning materials are written in a different dialect or language than the "first" language of the children. Consequently, these pupils are disadvantaged in terms of language, not because their own is inferior or inadequate, but because they are required to conceptualise using words unfamiliar to them.

Strevens (1976) observed that the following problems were particularly common:

- unanalysed difficulties of mutual comprehension between teacher and pupil, especially in spoken English;

- the absence in the learner's own language of a word of expression equivalent to one in English;

- the absence in the learner's own language or

culture, of a necessary concept;

● word-order difficulties (e.g. syntax, lack of familiarity with common everyday roots from Greek and Latin that enter the scientific vocabulary, lack of precision in the use of language, interference from non-decimal counting systems).

Agriculture could provide a means of solving some of these problems, as the use of metaphors unfamiliar to the children constitutes an impediment to the learner's understanding. If the teacher allowed children to construct metaphors and analogies using their own language and based on their own agricultural experience, this could be an aid to deeper understanding of complex topics. Bude (1993) describes how children in schools in Cameroon use the medium of folk tales and fairy stories as metaphors and analogies, many of which are grounded in an agricultural context. Cleghorn *et al* (1989) point out that when language restriction does not operate

strongly in practice, as in the case of Kenya's rural schools, locally relevant examples are more easily brought into the lesson along with the occasional local term, hence meaning is better communicated.

Children could also relate abstract concepts which are alien to their own culture through the medium of their experience of agriculture and local practice. Connections can be made between the concrete cultural world outside the school and the semantic organisation of the abstract world being constructed through science lessons. Strevens (1976) points out that in many cultures measures are seldom exact, since approximation is more practical. In other cultures, weight and measures of weight are new ideas. The essential point, however, is that although a society and language may not employ concepts and terms that are identical with those of Western science, they will certainly have some concepts and terms which refer to number, measurement, agriculture, architecture, engineering, medicine, botany, and other fields

of scientific activity. The cognitive task for the learner of science through English for example, is the acquisition of fresh attitudes towards observation and of terms for ideas which are partly new to him or her and partly just different from those already familiar. Agriculture can help to achieve a smooth transmission from one stage to another since new concepts will be incorporated in a familiar topic.

Agricultural practice in many countries is also closely related to beliefs which do not fit into a Western "logical framework", such as magic, superstition and ritual. There is now a recognition that much superstition is actually based on sound scientific principles, although not articulated in this way; a medium such as agriculture could help to identify the links between "modern" and "traditional" thought, demonstrate that these are not always mutually exclusive, and at the same time enable learners to understand scientific concepts and processes which are beyond their experience.

Cleghorn *et al* (1989) highlight one major problem associated with the use of local languages at primary school level. As a result of using local languages, it is thought that children may fail to advance quickly enough in the official medium of instruction. When this is an examinable subject, and even a prerequisite for promotion to secondary school, failure to read and write to an accepted standard could lead to drop-out, repetition and general demotivation. They note, however, that in rural Kenyan schools, using vernacular languages and terms to explain abstract concepts appeared to contribute towards literacy in the sense that children paid more attention to the topic, understood better what they read, and were therefore able to relate to it and better transform it to knowledge. Combining the use of the vernacular language as a means to induce understanding, with English, may have expanded the children's awareness of word meaning and language differences, helping to develop their English competency while also fostering understanding of the

concepts being taught. Their research seemed to prove that the use of the occasional local term assisted the process of moving back and forth between locally relevant concrete examples and the abstract. Since most agricultural practices, processes and concepts do exist in vernacular languages, this means that they can be used effectively to explain natural phenomena, and thus enhance understanding. Also, where agriculture is used as a basic theme in an integrated curriculum, learning will not be confined only to everyday situations, but will facilitate the acquisition of a wide range of skills, eventually helping school leavers to achieve social mobility, should they desire it.

5.3 Contextualising science

Husen and Keeves (1990) describe a programme initiated by OECD with participation from UNESCO for the redefinition of curricula in the areas of science, technology and mathematics education from kindergarten through to secondary school in

its member states. A characteristic of this changing educational scene is the greater emphasis placed on science education at the primary school level. In some countries this is a new development, so there is scope for seeking innovative ways of devising suitable curricula. The Nuffield science projects in the United Kingdom have aimed to promote thinking by children through the integration of science topics. These developments were furthered as a result of the 1985 Bangalore Conference on "Science and Technology Education and Future Human Needs". The starting point for this conference was to identify issues that are essential for

development, including food and agriculture, and to examine how science teaching could be developed without maintaining the division between the "pure" sciences, physics, chemistry and biology. This resulted in the generation of ideas and new techniques for science teaching at all levels on the themes mentioned. A meeting was held subsequently in Zimbabwe in

1990, which involved African teachers and curriculum developers, generating African materials for African schools on socially relevant aspects of the science they teach.

The inclusion of science in the primary school curriculum can provide an extremely efficient vehicle for teaching the skills of communication and of numeracy and for doing so in a natural integrated manner. Most important, however, is the concept that science teaching should be child-centred. Husen and Keeves point out that the way in which children solve problems is essentially a scientific way of working. School experiences need, therefore, to build on what children do naturally. Scientific enquiry is valuable because it helps children learn about their surroundings in a way which is natural and acceptable to them, by practical exploration relying heavily on sensory experience. Involvement and discovery help the child to communicate. Activity-based curricula can allow children to gain concrete experience of the world (Haddad, 1986; Walberg, 1991; Ogunniyi, 1995).

Still, there is debate about how integrated science programmes should be developed. Gunstone (1985) comments that:

"Despite much work, there still remains a remarkable diversity of views as to what integrated science is, what programs might be integrated and how content should be selected for them".

Although these are real problems, agriculture can contribute to their solution by providing an excellent vehicle for the contextualisation of science in several ways. First, as we have seen, it can help children to overcome the problems associated with words, meanings and contexts derived from unfamiliar environments and cultures.

Secondly, agriculture provides many opportunities for problem-solving activities. As Husen and Keeves (1990) point out,

"Science could be characterised as concerned with understanding why...the enquiry approach of science is perfectly adapted to the psychological nature of pre-adolescents. It is in the nature of young children to be active and inquisitive"

Agriculture can provide practical activities which are grounded in scientific processes. This relationship places the emphasis on the processes of science rather than the content. Agriculture can also provide a means of allowing children to develop, carry out and evaluate their own research projects; as a result, the nature of scientific enquiry is experienced rather than "taught". This can enable children to compare, analyse the benefits and constraints and identify linkages between traditional farming methods and "modern" methods (Yakubu, 1994). George (1988) describes how school pupils in the Caribbean study "modern" technology in order to develop problem-solving skills and to become aware of the

social implications of the introduction of modern technology in a developing country, whilst at the same time recognising and developing the capacity of indigenous technology. Valuable work has been carried out also on the in-service training of secondary school teachers in Swaziland to enable them to develop and produce contextualised science materials (Lubben et al, 1995). Through contextualised teaching and learning, children can develop their capacity for meta-cognition, and hence reflect critically on their own practices and experience; this may have a positive impact in the long run on agricultural innovation, production and rural development.

5.4 Contextualising mathematics

Just as development of science-related skills and literacy are important for children, so is mathematics. Yet it is probably the subject most frequently cited as being a barrier to advancement through the school system. Some governments

actually make mathematics a non-compulsory subject area for promotion to secondary school or to further education. The result of this is that an individual can proceed through several levels of the education system without being numerate. University entrance criteria in many developing countries are based on the attainment of a qualification in mathematics, since this is the factor which lends itself most easily as a cut-off point in a list of potential candidates.

Balfanz (1988) considers how the mathematical knowledge children develop on their own, outside of formal school instruction, can be used to increase the distribution and level of mathematical knowledge attained by students. Clements and Jones (1981) described a case study from Papua New Guinea which detailed the learning processes of a child who came from a society which did not have names for numbers; still it was evident that there was mathematical knowledge in the society, but conceptually quite different to the standardised, western-oriented version. Damerow (1986)

notes that social and cultural conditions are strong determinants of the acquisition of mathematical skills, as are the organisational structure of the school system and the nature of classroom practice and interaction.

In the primary school curriculum in the Indian State of Meghalaya (1990) it is noted that:

"The main objective of mathematics curriculum is to develop in the child the competencies which are relevant to real life situations that requires mathematical thinking, understanding of mathematical principles, knowledge and information about the social and economic application of mathematics. The mathematics curriculum at the primary stage should be related and relevant to the needs of a child as an individual and the society, hence huge stresses should laid more on the development of concept, skills and attitudes".

Agriculture can play a role in contextualising mathematics,

just as it can for science, since it allows children to conceptualise mathematical principles as they relate to experiences with which they are familiar. Even if their vernacular language does not have terms for numbers, agricultural examples could be used to draw on the meanings which do exist in that culture, and bridge the gap between the two knowledge systems. Instead of creating despair over the abstractness of routine arithmetic calculations, the recognition that mathematics contains elements familiar to the lives of children outside school can help to reassure them, and hence build self-confidence and increase motivation. At the same time, it was observed earlier that agriculture integrated into the curriculum can help to improve literacy rates, and this in turn should have a positive impact on the level of numeracy in children.

5.5 Contextualising food, nutrition and health

Turner (1987) suggests that in order to achieve health for all,

teachers must try to find ways to incorporate nutrition education more fully and effectively into the curriculum. She notes that successful teaching largely depends upon local initiatives and the level of co-operation between the school and teachers and the local community rather than implementing ideas produced by outside experts. It is unusual to find nutrition education as a separate subject in schools in any part of the world (Calloway et al, 1979), and it is accepted, usually, that it should be incorporated into other subject areas. At primary level, nutrition education very often forms part of thematic studies which include literature, mathematics, history and geography as well as science. Agriculture, food, nutrition and health are, by nature, very closely related, and it should be possible to define themes which integrate agriculture and nutrition into learning experiences in other aspects of the curriculum.

A survey by Turner and Ingle (1984) highlighted the variety and range of teaching approaches utilised in teaching nutrition

in many countries, particularly in primary schools. Drama, poetry, music, art were included in the subject areas in which teaching about food and nutrition featured in addition to mathematics, geography, history, science and technology, physical education and home science (UNESCO, 1983). This approach was based on the use of the local environment as a basis for activities which encourages children to be curious about their surroundings, to observe, explain, experiment and communicate their ideas and findings (Baez, 1980).

Turner (1987) describes the ways in which many primary school topics related to nutrition are frequently incorporated within a scheme which forms a part of an integrated programme of work and which includes aspects of health education and agriculture. A study of staple food, for example rice, cassava, or bread could be based on a visit to a local farm, market or the school kitchen. Work in science and mathematics can be extended by germinating rice grains and measuring the growth of seedlings. Food can be integrated

into studies of geography and religious ceremonies, in order to better understand social and economic factors. Children can then learn more about the complex interactions governing attitudes to food, and hence learn about agriculture at the same time. Activities related to school gardens or farms can also provide a rich source of low-cost, easily available classroom material.

5.6 Contextualising social studies

Agriculture can be used as a means of preparing students to cope with sensitive biology-related social issues. The issue of birth rates and population control, for example, could be dealt with in an agricultural context by examining the impact of changes in the population rate on agricultural production systems; this combines social issues in relation to both agriculture and biology, hence facilitating a two-way flow of information and a build-up of knowledge of farming systems and biological principles within a social context.

Knamiller (1984) notes that environmental issues are equally amenable to this treatment, since children have a wealth of environmental knowledge on which to base learning. Issue-based studies may help to sensitise young people to local development problems, bringing about a positive impact in the community.

It may be possible to deal with gender issues in a similar way. Krugly-Smolska (1995) reports that it is important to begin the process of changing cultural stereotypes in children before they leave primary school. Since farming activities in many parts of the world are performed by women and girls, the relevance of the agricultural context may be even greater for girls than for boys, especially if they are active in the process of metaphor and analogy construction. This could lead to the development of greater self-confidence in girls, and hence greater motivation to remain at school, helping to redress the problem of higher drop-out rates for girls than for boys at primary school level.

Finally, Krogh (1990) points out that as children mature, it is possible to move from ego-centred social studies to a focus on the rest of the society. By integrating the theme of agriculture into the curriculum, a domain of personal experience for most children in rural schools becomes the basis for primary school learning; this may help children make the difficult transition from orientation towards the individual to an orientation towards society.

5.7 Application of the theory into practice

The argument presented in this section has demonstrated that learning in primary schools can be enhanced by contextualising the subject matter, by relating it to the environment and experiences of the learners. It has shown, too, that agriculture may be used as a nurturing vehicle which can support the development of learners whose needs are extremely diverse, and whose life experience has been enriched by agricultural practice. Contextualising learning can

bring the learner into the heart of the learning process and help to strengthen the links between school, home and community, which in turn enhances the effectiveness of learning in primary schools. This relationship has reciprocal benefits.

The discussion so far has been theoretical, as its purpose has been to explain the meaning of contextualisation and the implications of its use. A research study was developed which set out to investigate whether the theory discussed above had a grounding in reality by posing a number of questions. *Do teachers in rural primary schools contextualise learning in practice? Do they attempt to create an integrated learning system? What prerequisites are needed for contextualisation to take place? What factors constrain its application in the reality of the classroom situation? What are the roles and perceptions of teachers, parents, policy makers, and of course, the learners*

themselves? In order to make decisions about which countries would provide a source of information for the case studies regarding the practice of contextualisation, the literature was reviewed in an effort to gather information about existing practice. Section 6 presents a summary of these findings.

6. The role of agriculture as a contextualising subject in primary school education: Examples of practice from the literature

There are many accounts in the literature relating to

developments in rural primary schooling. Some of these describe new programmes and educational innovations at the planning stage, and are useful in illustrating the range and diversity of strategies employed and their various locations throughout the world. Other accounts provide a theoretical perspective but, in addition, present a balanced account of positive and negative lessons learned as a result of the experience. This is of great value since the development of future strategies can be made considerably more effective by paying heed to the problems and weaknesses encountered during educational reforms as well as to successes and strengths. A selection of these accounts are presented below. They form only a very small sample of the full range of educational reforms attempted over the last twenty-five years throughout the developing world, but they were selected for their relevance to the focus of this research, the contextualisation of teaching and learning in rural primary schools.

6.1 Malaysia

Seymour (1974) described curriculum development in Sarawak, which is primarily an agricultural state. In order to move away from the traditional production oriented approach to agricultural education, a "New Syllabus" was introduced. This integrated the subject matter of the lessons during the first two years, in order to "reinforce the learning of one subject by the learning of another" (p. 281) The syllabus indicated approaches and techniques to make the subjects more relevant to the experience of the student. While the curriculum was not especially designed for rural schools, teachers in training were taught how to use the agricultural and rural experiences of their students to convey scientific laws and processes more clearly. However, many teachers could not understand the value of integrating subjects in lesson units, since this method seemed to make it more difficult to coach the learning of the basic skills. Regarding the agricultural emphasis, teachers seemed to pay lip-service

to this, because in their eyes children came to school to become literate and not learn what they already know and try to escape from. Different groups had different perceptions of the purpose of primary education; the administrators wanted to provide education that would assist national development; the teachers wanted to prepare some students for secondary education; the parents seemed to want increased upward social mobility. Teachers appeared to be so focused that even when teaching science and health, which have useful and practical applications in the tropical agricultural environment, they did not use the recommended visual aids, demonstrations and field work exercises. This could be accounted for to some extent by the limited education, abilities and expertise of teachers. Since these participants differed so much in their perceptions of the purpose and process of schooling, there was a problem in achieving a level of co-operation which would ensure that students were taught in the way they were supposed to be. Seymour

stressed that since different groups (administrators, teachers, parents and students) share different values, perceptions and experiences and exist as subcultures, each can influence the acculturative process of the school at various stages either directly or indirectly. Different interpretations of educational goals and content among administrators, teachers and parents can influence teachers so that there may be a discrepancy between curricular objectives and instructional activities. This would have broad implications for the effectiveness of using agriculture as a means of contextualising learning.

6.2 Uganda

Massey (1987) describes the Namutamba-'Basic Education Integrated into Rural Development" (BEIRD) curriculum development project in Uganda, which infused agriculture and appropriate technology into the curricula of teacher colleges and primary schools. The main period of the project ran from

1971 to 1979, but it was being revitalised in 1986 in order to address five basic problems: the lack of life-adaptive knowledge and skills among rural primary school graduates; a BEIRD organisational structure at national, district and community level; a curriculum that integrates practical and academic instruction; a BEIRD pre-service/in-service teacher training system and materials; and adequate primary school teaching materials and methods.

6.3 Cameroon

Bude (1985) notes that primary schools in the anglophone region of Cameroon have, since the 1960s, attempted to use the local environment for the development of cognitive abilities and also as the animation centre for community development. In the Francophone provinces, early efforts to increase the relevance of the curriculum seem to have foundered, whereas in anglophone provinces "a certain type of community orientation has for decades been an

established part of the primary school curriculum and also of school-community relations". In addition to using locally relevant experience, schools have also forged and developed strong links with their local communities by supplying various services, for example agricultural advice to farmers.

6.4 Jordan

Badran, Baydoun and Subbarini (1987) describe how, in 1978, agriculture (production-oriented) disappeared from the school curriculum as a separate subject, followed by a subsequent disappearance of related topics from the science syllabus. More recently, reconsideration of the place of agriculture in the curriculum has brought about the realisation that the objectives of science education can only be attained by relating science to real, concrete situations, involving particularly the interaction of humans and the environment. Agriculture thus provides an ideal area from which pupils can acquire an understanding of scientific concepts and develop

scientific skills and attitudes. A framework has been suggested which attempts to integrate agricultural education as a major element of the science syllabus in the Jordanian elementary school system.

6.5 Papua New Guinea

Goelenboth (1987) describes "village orientated topics" in Papua New Guinea primary schools. Since most students do not proceed to secondary education, schools use agricultural related topics in order to provide students with skills which will assist in direct material improvement of village life after their graduation. It was proposed that education could be enhanced if there was a concentration on the key topics which are relevant to the agro-ecological conditions in the appropriate region. Such programmes appear to have shown that it is possible to improve conditions in the villages and thus encourage young people who have acquired relevant skills to remain there after completing school.

6.6 Sri Lanka

Peiris (1976) and, more recently, Baker (1988) described an integrated approach to curriculum development in primary education in Sri Lanka. The basis of the curriculum was that children should carry out activities related to their own experience, using subject content as and when necessary in their work (through a project approach, planned well in advance and focusing on identified knowledge, skills and attitudes). Ideally the children would need no external pressure to work because the nature of the work itself would generate an enthusiasm producing an internal self-discipline. As a result they would be made more responsive to their own environment. Imitation of the work of others in classrooms and attempts to walk along well-trodden paths would be firmly discouraged, whilst creativity in all spheres of physical and mental activity would be positively fostered. A new curriculum was devised, therefore, setting up general guidelines for each content area. This involved listing

experiences for primary-level children and placing them in relevant blocks of a cube, the three dimensions of the cube standing for time, place and human needs. A Teachers' Handbook for grades 1 and 2 were devised, which attempted to help the teacher to organise integrated learning through project work, at the same time paying attention to building up basic skills, e.g. language and mathematics. A child development studies project was set up to find out how the children develop concepts in mathematics. A spiral curriculum was devised to accommodate the needs of the teachers and the students in small rural schools, where a teacher was in charge of more than one grade. Although the preparation of the overall curriculum was centrally controlled, flexible guidelines were provided, and teachers were given freedom to draw up their lesson units and teaching sequences using the materials available locally. A problem noticed was that discovery-learning, advocated as a crucial component, was hampered by the fact that literature and materials available

for children did not meet the requirements of variety or suitability. To fill this gap, a new project was introduced to produce resource reading materials which would meet the needs of the new curriculum.

6.7 Tanzania

Elstgeest (1987) notes that primary education in Tanzania is the only formal education some children will get. The purpose of primary education is, therefore, to provide and use experiences and to exercise skills which enhance the growth of understanding. In order to achieve this, children must be faced with problems that they can handle (according to their developmental level). By asking questions based on their own experience, the children can respond positively and build on their confidence and, therefore, their motivation. An example is given of the fifth grade class in Kigururnyembe, Tanzania, where children used equal amounts of soil, using washers and nuts as units of weight. They then translated their

findings into a picture, and proceeded to establish what amount of water their soils could carry. Another example was of children counting the number of seeds in a cob of maize to assist them in developing skills in numeracy. When the children set out to count the seeds, they were surprised that there were 470 seeds, as many of the children had a vague idea of large numbers. Elstgeest notes that the children can learn that by manipulating and controlling the environment they can influence and control the response and behaviour of living things in certain ways; this demonstrates a particular value of agriculture as a contextualising subject.

6.8 Brazil

Harbison and Hanushek (1992) describe the introduction of the Northeast Basic Education Project (EDURURAL), set up in 1980 as an integrated educational programme. It was financially supported by the World Bank and the government as a single-purpose educational programme, which was

aimed to target the least developed areas, and besides other things, assist in the development of curricula especially designed to the poor rural environment, where drop-out, repetition and non-attendance rates were very high. Only 40% of the primary school teachers had themselves completed primary school. EDURURAL was an ambitious social programme that sought to raise achievement by providing standard packages of incremental learning resources to a large number of schools. It was designed to expand children's access to primary schooling, to reduce wastage of educational resources inherent in grade repetition and dropout as children progressed through the system and to increase achievement by improving the quality of instruction. The EDURURAL project succeeded in the final two years of evaluation in improving delivery of the desired inputs, at least in two of the three states, but the change was only modest when comparing the inputs of the rural areas with these of the urban areas. In particular, wastage declined

more rapidly in EDURURAL schools but there is no evidence that the EDURURAL project improved pupil flows as promotion rates did not increase. The programme contributed in setting up new schools and expanding others. Overall, however, there is little evidence that EDURURAL contributed directly or indirectly to school survival.

6.9 Kenya

Black *et al* (1993) describe the Kisumu School Improvement Project. This was launched in 1990 in response to increasing doubts in the 1980s over the relevance of the school curriculum, imbalances between supply and demand of educated manpower, widening gaps between urban and rural standards and participation and a concern about the education of girls. Developments in this case were to come from the "bottom" and were to be creative; the strategies and teaching styles were to be appropriate and stem from the teachers and the identified needs of the children; they were

to be classroom based (since the reality of the classroom must be the measure of success or failure); they were also to be holistic, with learning activities covering the whole range of children's emotional, physical and cognitive needs. Some of these activities were agriculture-based. The results appeared to be an improvement in children's attitudes and motivation and led to higher attendance rates. Although there was an initial intention to allocate differentiated tasks to the individuals and to encourage group work, Black *et al* (1993) note that this did not happen to a great extent; still the children did appear to gain self-confidence. There was, apparently, a surprising lack of involvement in projects or in work which integrated subject topics, this being explained by the rigidity of the Kenyan curriculum. It was also noted, however, that although the same pre-set curriculum was followed, teachers felt less obliged to stick rigidly with it. The positive results observed may have been influenced by the relatively high level of resources made available to the

schools, and this does then raise questions regarding reproducibility and sustainability, although not all the schools within the Kisumu group received the same resource inputs.

Sifuna (1993) describes the development of the Kenyan "8-4-4" system during the 1980s, and notes that, although there is a tendency for teachers to teach towards examinations (due to pressure on children to qualify for secondary school), "teachers were of the opinion that, using the environment in teaching-learning situations enables children to appreciate and understand the world around them". This is encouraging, since it is noted that there appears to be a grass-roots belief in the value of basing learning on the experience of children. The emphasis placed by policy-makers on entrance examinations and academic progression, however, and the subsequent stress this places on schools, results in less effort being made to capitalise on community and pupil experience. Passing examinations and coaching for this goal takes precedence.

6.10 India

a) Black *et al* (1993) describe the Bombay School Improvement Programme which began in June 1989. This aimed to find concrete ways of addressing the problem of children's learning difficulties, to reduce the drop-out rate and improve community contacts in order to enlist the understanding, support and interest of the community; it was hoped that this would encourage children's motivation to learn. The overall aim was to foster child-centred learning, envisaging a move away from traditional textbooks towards curriculum materials developed by the teachers. Much of the advantage of such a move is predicated on the assumption of a rich resource alternatives for pupils both in the school and in the home. Some teachers thought, however, that this meant a move from textbooks to no textbooks at all; in fact it was intended that this child-centred teaching method could be introduced without replacing traditional textbooks. Moreover, parents were concerned that their children would not be able

to learn in more traditional environments in the future if new methods of teaching were introduced in the primary school. At the end, the main difference in the teaching style was the greater emphasis on groups or individuals. The project has broadened the opportunities to develop higher-order skills as well as personal and social skills, and the children seem to have developed these to a greater extent. Black *et al* (1993) note that child-centred learning does have resource implications; there should be enough space and resources within the classroom as well as outside it. This particular program involved one school in Bombay, which received resource inputs sufficient to allow the initiative to be tested and evaluated. Whether the results observed would be reproduced in schools where very few resources were available would be a matter for further investigation. In order to develop this type of improvement programme, teachers need also to receive thorough guidelines on how to implement the school curriculum and good materials to support their

teaching. This has implications for teacher training. There are difficulties in adopting child-centred methods; teachers have to learn how to teach and children have to learn how to learn in the context of interactive groupwork. There is, however, ample scope to produce teaching materials which are more supportive of child-centred teaching methods than the traditional textbooks.

b) Seshadri (1993) describes the Comprehensive Access to Primary Education (CAPE) project, launched in 1979 and implemented in 17 states in 1987-88, linked with the Primary Education Curriculum Renewal (PECR) programme. PECR has "developed relevant local specific learning experiences through decentralised curriculum planning. The learning experiences are drawn from the child's environment and the curriculum is directed to the attainment of certain essential competencies by the child". Also noted is the UNESCO project "Teaching of Science and Technology in Rural Areas", developed at the Regional College of Education, Mysore,

which is "based on the rural child's knowledge of traditional science and technology in the socio-cultural context of rural areas of India". Seshadri stresses the importance of building on the strengths of rural children, rather than maintaining a "patronising" attitude towards them because they are thought of as disadvantaged.

6.11 Colombia

Colclough and Lewin, (1993), and Colbert *et al* (1993) describe the development of primary school education in Colombia. In the 1980s, the urban primary NER was about 90%, whereas that in the rural areas was around 65%, with only 1 in 5 children in rural areas completing primary education. Cost units per child in the rural areas were much higher than those for urban schools, which meant that there was low internal efficiency of rural education directly related to the paucity of resources available to rural schools. Academic schedules were rigid and were reported not to

take account of the special needs for rural pupils to help with agricultural and other chores. In the early 1960s, the Unitary School Programme conceived by UNESCO was initiated. One teacher was required in each school to help children to teach themselves, children were allowed to advance at their own pace, teaching materials were designed in order to help the teacher work with many groups of students, the key elements were instructional cards or subject guides which gave more autonomy in learning to the pupil. Children could then leave for agricultural work and then come back and work at their own pace. The problems, which made it impossible to generalise the programme throughout the rural areas in Colombia, were that although it dealt with the learning process at the level of the child, the programme failed to address the fundamental concurrent changes needed in the national curriculum, in teacher-training methods, and in the local supervision of the system, for the programme to be a success. "Escuela Nueva" then began in 1975, building upon

the experience with Unitary schools. The new curriculum allowed the possibility of teachers to make their own adjustments in line with local circumstances. This provided practical problem-solving experiences. The criterion for advancement was the ability to apply knowledge within the community. Links between the community and the schools was emphasised, and the use of local materials was advocated. Teachers were given training and material incentives. Central authorities retained responsibility for the design of the programme and for providing practical support, whereas the training and implementation became the responsibility of regional and local officials; in practice this meant that curricula especially designed for rural areas could be more easy to introduce when teachers were trained locally. Escuela Nueva had 4 major aims: to provide a full 5-year primary course in all rural areas through multigrade teaching methods; to improve the internal efficiency of rural education with increased relevance, flexibility and new

evaluation procedures; to reduce drop-out and repetition; to improve human and material inputs and reduce expenditure. The Escuela Nueva students scored higher in academic achievement tests. Teachers also believed that it was superior, and it enhanced their participation in community activities. Nevertheless, despite improvements, the quality of schooling was still lagging behind that in the urban centres.

6.12 Ethiopia

The Ethiopian Institute of Curriculum Development and Research (ICDR) (1993) described the development and trial of the "general polytechnic curriculum" in 70 pilot primary schools. The environment and experience of the pupils is supposed to be integrated into all subject areas. The use of local, agricultural examples to facilitate learning in mathematics provides an illustration of this. Problems faced include language difficulties (trying to establish Amharic as the medium of instruction), shortage of resources (books,

teaching aids, tools, water and electricity) and availability of teachers trained to use the new methodology required of them. This innovation is no longer in operation, however, under present government policy.

6.13 Zambia

Chelu & Mbulwe (1994) describe the Self-Help Action Plan for Education in Zambia (SHAPE). One of the main aims of the programme is to improve the quality and relevance of education. The programme has tried to improve and strengthen certain types of learning in order to achieve quality and relevance. These are:

- relating science, mathematics and languages more to the local environment;

- developing a wider variety of skills, e.g. literacy, numeracy as well as practical problem-solving skills,

etc.;

● developing individual potentialities, e.g. initiative, responsibility, creativity;

● developing positive attitudes, e.g. towards work, local cultural traditions, preservation of natural resources;

● developing a healthy balance of learning and working to suit individual interests and future needs.

6.14 Guatemala

Little et al (1994) describe a curriculum adaptation process, SIMAC (National System of Human Resources Improvement and Curriculum Adaptation), at a local level which involves the establishment of a close relationship between the school and the world surrounding it. Teachers and pupils, as well as

parents and other members of the community, have the right to participate critically and constructively in developing and carrying out effective and relevant learning experiences. SIMAC has been designed to shift the emphasis from a teaching-based curriculum towards a learning-based curriculum and from a content-based curriculum to a process-based curriculum. This integrates academic areas, methods and procedures within the learning process and is closely linked to the needs, interests and problems of the pupil and the community. It relates school life to the world that surrounds the child and teaches the child how to share and live with other people in a responsible, creative and critical way. Pedagogical practices are used which assume that learning, amongst other factors, starts from the reality which surrounds the child (family and community).

6.15 Lessons learned

These case studies reveal that a wide range of efforts have

been made to improve teaching and learning in rural primary schools, and some of the studies (particularly those from Malaysia, Tanzania, Kenya, India, Colombia and Brazil, discussed above) provide considerable insight into the successes and difficulties associated with the development of educational innovations. Some important points to note are as follows:

- approaches to curriculum development vary considerably;

- the way in which the curriculum is designed and the way in which it is implemented at school level may be quite different;

- "teacher factors" are of great importance. Teachers seem not to be adequately trained (either through pre- or in-service), or sufficiently motivated (with adequate remuneration and sufficient length of

posting) to develop integrated teaching methodologies. The Ethiopian ICDR (1993) expresses this point well:

"Because primary teachers in their one year of pre-service at the teacher-training institute with a 17 subject curriculum receive little exposure to methodology they tend to rely upon their own experience as primary school pupils and teach as they were taught: using rote learning and chalk and talk. Creativity, flexibility, innovativeness and improvisation are talents primary teachers may possess but they are infrequently displayed. Since each teacher teaches only his or her special subjects in several grades the necessary integration of culture and environmental content and concerns across various subjects is quite difficult" (ICDR, 1993).

- a number of other factors seem crucial in order for

teaching and learning to be improved:

* availability of books and materials
developed to meet the needs of an
integrated curriculum and the locality of the
school;

* access to relevant resources (farm,
practical facilities, not necessarily owned
by the school);

* support by the local community/parents;

* participation between the school, local
community members and all relevant
stakeholders in the development of
educational programmes;

* sustained government support;

* examinations tailored to the requirements of the curriculum.

● curricular reform cannot solve all the problems faced by rural schools; complementary social and economic reforms must go hand in hand with curriculum development;

● contextualisation of learning in rural schools is a strategy which has been attempted in various educational programmes, illustrated by those examples above where an effort has been made to relate the content of the curriculum to the local environment. A number of difficulties are shown to be associated with this, including the constraints placed upon teachers by workload, general conditions and lack of experience as well as the driving force of examination-oriented learning which acts against the introduction of more flexible

approaches to teaching and learning;

● some teachers do believe, apparently, that using the environment in teaching-learning situations enables children to appreciate and understand the world around them. In rural areas, therefore, agriculture could provide a unifying theme, since it is familiar to the lives of most rural children.

These examples from the literature reveal a number of benefits, but at the same time there are many critical factors which can lead to the success or failure of the strategies described above. In order to shed more light on these factors, and in an effort to gain a real understanding of what contextualisation means in practice, case studies were carried out by the authors in four countries, Tanzania, Sri Lanka, India and Ethiopia. The findings of these case studies are presented in detail in Volume II of this paper, but an overview of the research process is presented in section 7, in

order to provide a basis for the discussion of issues and implications in section 8.

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7. The research study

7.1 Aims of the field research
7.2 The research questions
7.3 The research methodology
7.4 Summary of the country studies

7.1 Aims of the field research

The purpose of the field research was to gather information about schools which have used agricultural experience of learners as a means of contextualising teaching and learning. The research examined the implications for teaching and learning practices, resources, school management and teacher training, and evaluated the impact of this practice on school attendance, school performance, development of school-community links, and on teacher, pupil and parental attitudes. Case studies were used to examine the capacity of agriculture to act as a familiar vehicle for the development of young rural learners' basic skills of literacy, numeracy, and other life skills which are perceived as necessary for a fruitful and productive life. The research attempted to highlight the

problems which may arise in attempting to use agriculture in such an innovative way and aimed to identify examples of good practice which would be of use to educational policy makers and practitioners.

7.2 The research questions

Based on the above aims, the main research question was developed:

- *To what extent have rural primary schools attempted to use agricultural experience as a means of contextualising teaching and learning?*

This main question was then sub-divided into nine specific research questions:

1. To what extent is contextualisation of teaching and learning reflected in education policy statements

at different levels?

2. What practices have teachers developed and used in order to contextualise learning?

3. What are the existing levels of knowledge, skill and attitude amongst teachers towards the process of contextualisation?

4. What are the attitudes of learners, community members and policy makers towards contextualisation?

5. What evidence is there to suggest that teachers use agricultural experience as a means of contextualising teaching and learning?

6. What factors enhance or constrain the use of agricultural experiences as a means of

contextualising teaching and learning?

7. What is the impact of contextualisation on the process of teaching and learning?

8. What is the role of contextualisation in strengthening and developing linkages between the school, home and community environments?

9. What are the implications of contextualisation for educational planning and practice in the future?

7.3 The research methodology

The methodology was designed specifically for this research to find answers to the research questions detailed above. It proved through the use of a qualitative, triangulated approach to be very successful in meeting the aims of the research. The selection of countries for the study was made entirely on

the basis of published papers that included, either directly or indirectly, some reference to contextualising teaching and learning in rural primary schools. In some cases (Tanzania and India) direct contact was made with the authors of the papers, who then became the collaborating partners. In the other countries (Ethiopia and Sri Lanka), following contact with the authors, recommendations were made to find appropriate collaborators.

Designing the methodology was a long process and required modifications before and during the fieldwork. The process started with the design of a table that detailed the key issues (identified from the research questions), methods of data collection, potential sources of data and the type of data to collect in order obtain information on the issues. Following this, eight case studies were carried out; these were located in two rural primary schools in each of four countries. Field work of one week in each school was undertaken to obtain an understanding of the particular school in relation to the key

issues. Schools were selected by the collaborating partners following a set of guidelines, the most important being as follows:

● One case study school was recognised as an "innovative" school, where a school is perceived to be innovative if it conforms to some or all of the following:

     * there is a degree of flexibility in the curriculum, either in the basic construction or in the way the teacher interprets it and teaches it;

     * children are encouraged and able to discuss issues in class;

     * some attempt is made to use children's out of school experience in the learning

process;

* teachers use and/or develop resources based around children's out of school experience and knowledge;

* there is some degree of continuous assessment;

* parents and community members have some involvement with the school;

* there is an attempt to use local technology in teaching and learning (resources relevant to local community and easily obtainable);

* there is some degree of integration of subject matter across the curriculum;

       * some evidence of teacher support;

       * some element of decentralisation.

    ● The second school was in the same vicinity as the first, but did not necessarily need to have a reputation for innovation (an 'average' school).

    ● Brief overviews of two more rural primary schools were undertaken through one day visits, in order to provide more supporting data for the case studies.

In the schools, data collection was through informal, semi-structured interviews and three participatory activities, namely order ranking, matrix ranking and mapping. Separate questionnaires were constructed for the headteacher, teachers (2 groups of 4 teachers per school), pupils (group interviews of 6 - 8 per group) and community members (group interviews of 4 - 6 per group). Matrix ranking, which

involved ranking ten methods of learning against each other by preference, was undertaken by pupils and teachers. Pupils also completed mapping diagrams, a drawing activity that was designed to illustrate 'what pupils did at home', 'what pupils did at school' and whether there were any learning connections between the two environments. Classroom observations, along with the participatory activities, provided supporting evidence to the interviews and more information on the teaching and learning processes in the schools.

Semi-structured interviews were held with key informants (policy makers, educationalists, researchers, etc.) to obtain their views on the present state of education in the country. Appropriate literature and reports were also consulted to provide background information on the national, regional and local contexts of the school.

Full details of the methodology can be found in Volume II of

this report.

7.4 Summary of the country studies

Volume II of this report comprises four, detailed case studies based on the research in Tanzania, Sri Lanka, India and Ethiopia. In the following section, the conclusions from the findings are given only.

7.4.1 Tanzania

The findings of this research indicate that, in Tanzania, a very large gap exists between the plans made by centralised curriculum developers and educational policy makers on one hand and the reality of daily life in schools on the other. Problems exist in both urban and rural schools, some of which are very similar, such as dilapidated buildings and a lack of equipment, and others which are more area-specific. Urban schools tend to have much larger class sizes, of up to

150 pupils. Rural schools still suffer from large class sizes, but not to the same degree. On the other hand, rural schools suffer because their development depends largely on parental contributions, which in turn depends on parental perceptions of the value of education; many rural people have very little cash income and are becoming more reluctant to spend it on education which seems to be failing their children and themselves. This is because the goal of many parents is for their children to give them economic support in future years. This is less likely to happen if their children do not gain a place in secondary school, are unable to find employment, or lack the skills and knowledge which would enable them to set up business on their own. Hence the anticipated rates of return are much less, and the investment dries up from the grassroots. Teachers also are becoming demotivated as their salaries remain low and are difficult to obtain, especially in rural areas where transport is lacking or extremely expensive. Schools in rural areas also lack access to information, there

being few radios or newspapers available, and even fewer visits from schools inspectors who have no transport to reach the remoter schools.

Many of the teachers who contributed their views in this research are disillusioned with their working conditions and the lack of opportunity for professional development. Constant curriculum changes, an inflexible examination system, few secondary school places and an over-reliance on books and materials which cannot be obtained are strangling the process of teaching and learning. Teachers resort frequently to physical punishment. Teachers' salaries are insufficient for normal living expenses. In order to ameliorate this situation, headteachers may try to reward their staff in some way, perhaps by giving them small presents occasionally, funded by proceeds from the school *shamba,* but this is impossible where a school has no land or opportunities for income generation. As a result, teachers *"cannot afford life",* as one headteacher put it, and look for

other opportunities for income generation to the disadvantage of their pupils. For all these problems, some teachers are committed to their profession and *"love teaching",* saying that they would like to continue their careers as teachers. Many teachers interviewed, including some of those who are frustrated with their lot, mentioned that teaching is an important way of serving the community and of helping others.

A particularly worrying issue is the evidence for a link between parental income and educational progression of school children. Those who can afford it will pay for extra tuition for their children. If their children fail to gain a place in government secondary schools, they may pay for a place in a private school. The rate at which private schools, and even community-built day-secondary schools are increasing is worrying in itself, as the pool of experienced secondary school teachers is becoming more and more thinly spread. Thus the quality of teaching may be threatened at this level

also. There is even the suggestion that teachers may deliberately underteach during normal lesson time to ensure that enough pupils will demand that their parents pay for "tuition". The quality of "tuition" itself is also suspect in some cases. According to one respondent, teachers advertise themselves as *"good"* teachers by dressing well and appearing confident in order to impress parents. *"When they see us with good clothing, they think we are good teachers".*

Contextualisation as a means of improving learning is close to Nyerere's original concept underlying "education for self-reliance". Teachers like the idea of it, as long as they feel in control of the situation to some degree, and are encouraged to adopt it as a strategy during their pre-service training programmes. The benefit of having a *"picture in the mind"* when learning was mentioned on several occasions. Parents appreciate the idea of linking schooling to the home environment, as long as intimate details and confidentialities

are not betrayed. Pupils describe the learning process at home as easier than at school because there is the absence of pressure from time, and because they are not called upon to deal with complex abstract concepts. If these preconditions for effective learning could be incorporated partly into school learning, the level of achievement might be improved; many respondents cited overloading of teachers and pupils resulting in exhaustion and boredom and the complexity and irrelevance of the curriculum as major obstacles to learning and performance. The obstacles are sometimes increased by schools inspectors, who, on their rare visits to schools, are likely to be focusing on achievement of educational objectives through transmission of content rather than through an integrated learning process. Teachers may even be reprimanded for attempting to use innovative teaching methods which stray from the rigid structure of the teacher's guide.

There is certainly potential for agriculture to be used as a

means of contextualising learning in rural Tanzanian primary schools where it is common that more than 95% of pupils come from an agricultural background. An important point arising from this country study, however, is that agriculture varies tremendously from region to region, and even from village to village. The income of farmers may also vary considerably, as does the level of their education. There are implications here for the strategies a teacher must adopt in order to relate a child's agricultural experience to the content of the curriculum, since it is essential to take into account this diversity of experience as well as to be sensitive to the nature of the child's home environment, be it financially and educationally supportive or quite the opposite.

It is important to note that a gulf between community and school priorities will have a deleterious effect on the effectiveness of teaching and learning practices. As stated by the District Academic Officer, *"if authority at school is with the teachers and at home is with the parents, the pupils are*

caught in the middle". It is necessary to enable parents and teachers to work more closely together, in order to create a healthy climate in school. Appropriate teaching and learning strategies which link the home and school environments may help to bridge this gulf but in order to do this, teachers require training and support, and pupils and parents require information and reassurance that those aspects of their culture which they value are not threatened.

This study adds strong support to the idea that professional development of teachers is seen as a key to improving pupils' learning. Parents want to see the teachers of their children equipped to perform to their full capacity. Pupils expect teachers to be able to deliver the goods, enabling their children to progress to secondary school. Teachers rank training and support as the most important inputs they need. Policy makers want to see the teachers in their region receive training in order to motivate them and enable them to be more effective. Developments are taking place in other

regions and districts to try to address this, such as the creation of teachers resource centres (funded by Dutch and Danish aid programmes), and the development of locally relevant curricula (funded by German aid programmes). Interventions such as these in the District where the research was carried out would be of great value to everyone involved in teaching and learning.

7.4.2 Sri Lanka

Sri Lanka's education system has been developed over many centuries, and at present offers free education for all from year one through to university level. It has made concerted efforts to improve the quality of education, and a high literacy rate (88%) and low drop-out rate (4%) are among some of the country's achievements. Despite these and many other high achievements, the problem of remoteness and difficulty of access to rural primary schools still remains an unresolved problem, which in turn affects the effectiveness of these

schools.

At present rural primary schools in Sri Lanka face many problems and the case study findings revealed the following general problems:

- Inequitable distribution of resources, both human (lack of trained teachers) and physical (lack of equipment), exist between urban and rural primary school;

- Many disparities in the education system, especially between urban and rural schools;

- Poverty and health (malnourishment) are major problems which affect the pupils education;

- Handwriting skills are very bad because the pupils have no facilities in order to practice at home;

- Few reading materials are available to the pupils, such as newspapers, and many RPS's have no library;

- There are no media facilities such as television and radio;

- Many of the pupils will be unable to continue their schooling after year 9 because there are no transport facilities available;

- Classes are overcrowded and teachers are unable to manage in large schools due to poor skills in classroom organisation;

- Rural primary schools are getting smaller and teachers are not motivated in these schools as they receive no attention from school authorities (inspections or Master teachers);

- In some cases there is little parental support and lack of co-operation from the community;

- There is high absenteeism of pupils and teachers;

- Lack of infrastructure. Although transport on public buses is subsidised, often the problem is lack of bus service;

- Substantial variation between schools, divisions and provinces in the availability and deployment of primary teachers;

- Lack of incentives for all teachers, including primary level teachers, to serve in disadvantaged areas;

- Restricted opportunities for primary teachers to develop their careers within the field of primary

education.

Apart from these general problems there are many macro-problems which specifically affect the effective functioning of rural primary schools, and especially those found in the poor and disadvantaged sectors of society. Interviews with officials from the National Institute of Education and findings from the field work identified many areas that need urgent action. Recent studies (NIE, 1995) have revealed that achievements of primary school children in Mathematics, Language and Life Skills are disturbingly poor and that disparities in achievement levels are usually high between urban and rural pupils and between those belonging to different provinces; less than 30% of primary level pupils complete schooling with mastery levels in numeracy and literacy.

Often teachers working in rural schools view their pupils as being ignorant because they come from low level socio-

economic groups. These pupils, the majority of whom are likely to come from farming backgrounds, lead harsh lives in which their contribution to the family income must often come before their education. This leads to high levels of absenteeism during peak times in the agricultural year. The case studies illustrate that many children have very responsible jobs working on the farm, looking after the home and caring for younger brothers and sisters. They often work long hours and survive on low nutritional diets. They have little time and often no facilities for studying at home. No special support is offered to teachers in rural primary schools, and only a few selected schools get support from private donors. Many rural primary schools rarely, if ever, get visits from educational inspectors or master teachers who are often overworked, especially in rural areas where accessibility is difficult.

At present the education system is very examination oriented with children in years 1 and 2 already attending private

lessons in preparation for the national scholarship exam in year 5. Many of those interviewed stated that the year 5 exam put too much pressure on pupils and should be eliminated. Consequently, slow learners, disadvantaged groups and the majority of the rural population are neglected in terms of the resources for their schools and by an urban biased curriculum. The learning needs of the rural sector are often different from those of the urban sector in terms of pupils' ambitions, opportunities available to them (many are physically unable to continue with their education because of transport problems) and parental attitudes to their education.

In the past few years, Sri Lanka has revised the primary school curriculum in an effort to move towards a 'pupil-centred' approach to learning. Teaching is, however, still 'teacher-centred' and this is primarily due to the pressure on teachers to cover the curriculum and prepare pupils for the national year 5 scholarship exam. Although the curriculum has been revised, the country is still working under the same

education system, which needs to adapt in order that curriculum changes may be implemented successfully. Some educationalists believe there is an imperative need to modify the curriculum so that it is less academic and more orientated towards life skills and social skills. In academic subjects there needs to be more self learning, experiments and problem solving skills. More community involvement is needed along with more exposure to external situations so that children's general knowledge is improved. At present the curriculum is not really relevant to the lives of rural school children. Although the curriculum allows for some degree of flexibility by the teacher, during the fieldwork it was evident that few teachers knew this, or had any idea how to go about implementing their ideas. Teachers frequently stated that a contextualised approach to teaching and learning is a good idea, but they need more training and support in methods for implementing such an approach.

Contextualising teaching and learning is not recommended

specifically in Sri Lanka's educational policy. The country is looking towards 'life long learning' with activity based curricula and self-learning activities, but these are not being practised. An external donor has undertaken a pilot project, however, which closely follows the theory and practice which underlies the contextualisation of teaching and learning, through the use of an agriculture plot and nutrition programme. Generally agriculture is considered to be a poor and uneducated person's livelihood. Using agriculture as a means for contextualising teaching and learning could lead to parents interpreting this as school agriculture lessons which are unpopular in some countries. During the case studies, however, this was rarely given as a constraint by parents. In fact, on a number of occasions, parents said that such an approach would make their children *"better farmers".* There is clear evidence from the pilot study in one school that such an approach makes learning more enjoyable for pupils and teachers, and parents seem also to appreciate it. During

interviews with all sectors of the local community, the agricultural experimental plot and the nutrition programme in this school were referred to constantly. The community also is involved through the school providing a type of extension service following experiments it carries out on the agriculture plot.

7.4.3 India

India is a vast country with great variations and divides in culture, language, caste, religion and gender both between and within states. The immense population, the majority of whom live in rural areas, uneven development, and striking differences between the urban and rural populations, create an infinite and ever changing task for the country's development of education. Although enrolment is high, drop-out rates are also high and achievement levels are low. Nearly half of the population is illiterate, and the large disparity between sexes results in over 60% of adult

illiterates being female.

India has declared that it will provide Education for All by the year 2000. This in itself is a huge undertaking, and will involve expansion of early childhood care and development, universalisation of elementary education, reduction in literacy, and provision of opportunities to maintain, use and upgrade education. Improving the content and process of education should be a high priority, *'to better relate to the environment, people's culture and with their living and working conditions, thereby enhancing their ability to learn and cope with the problems of livelihood and environment'.* A recent report by the National Advisory Committee (1993), however, looks at the 'burden of learning' in the education system and the main problems associated with it, namely the emphasis on an education to gain elite qualifications, rather than a competence for doing useful things in life. This report states that *'both the teacher and the child have lost the sense of joy*

in being involved in an educational process. Teaching and learning have both become a chore for a great number of teachers and children.... the majority of our school-going children are made to view learning at school as a boring, even unpleasant and bitter experience'. Competency levels in reading, writing and numeracy of primary school children are estimated to be very low; at most only 30% of children have adequate competencies in these areas. Undue importance has been given to 'memory', instead of developing 'thinking' capabilities. To be effective, rural primary schools should equip the students to face the realities of the environment in which they live, and this is not being achieved in the current education system.

Teachers, parents and pupils all agreed that learning is easier when out of school experience is used and related to what is taught in school through the formal curriculum. They say it helps them understand things better, apply knowledge

in practical daily life situations and see the relationship between knowledge from school and real life situations. Teachers confess they don't practice this pedagogy for a number of reasons. Teachers are generally unhappy with the training they received and feel that more support in this area would enable them to try out innovative teaching methods such as contextualising teaching and learning. They do not have the necessary skills to relate school knowledge to the daily life experiences of pupils because this was not covered in their training. At present schools have almost no input in curriculum development as responsibility is at state level. The curriculum is not relevant to the lives of the pupils, and there are many teaching-learning areas that cannot be related to practical, concrete real-life situations. The majority of teachers feel they can do little to improve their teaching practices, considering the lack of facilities and harsh conditions they work under. The rigid structure of the timetable, pressure on them to "cover" the curriculum

according to a prescribed plan and the narrow requirements of the examination system allows them no flexibility to adopt innovative teaching methods. Teachers find it easier and feel more secure if they teach through books, which does not require great effort or creative, imaginative planning of learning experiences necessary for innovative teaching.

The belief that knowledge is gained by reading books and that it has very little to do with work or experience seems fixed in the minds of many parents, and is transferred to children also. Teachers feel answerable to parents, and presenting them with good exam marks will satisfy them; teachers and schools are held accountable through reference to exam results. The acquisition of such knowledge, measured through examination results, reinforces the belief that the concern of the school is to transmit knowledge to children in such a way that they can assimilate and reproduce it in the examinations. The curriculum and textbooks are essentially knowledge centred, with occasional reference to

activities of a practical nature.

There is a lack of motivation and accountability amongst many teachers, especially in rural schools where there is limited scope and opportunity for professional improvements. In rural areas there is very little opportunity of recognition or appreciation of good, innovative work by these teachers. Regular monitoring and training, they believe, would encourage their professional development and increase motivation of themselves and their pupils. In terms of initial impressions of the two schools, there was a distinct difference. School A was well maintained and attractive to look at. On the other hand, school B was hardly recognisable as a school from the outside as it had no boundary and appeared run-down and neglected. The atmosphere within in the two schools again was noticeably different. Pupils appeared happy and enthusiastic in school A, in school B they were passive and shy. Even from this small case study it is evident that co-operation between the headteacher,

teachers, and community members is vital in forming a supportive learning environment for the pupil. The fieldwork illustrated that teachers', parents', community members' and pupils' perceptions of education and their views on knowledge are important factors in using a contextualised approach to teaching and learning. Their perceptions of agriculture are important if such an approach were to use agricultural experience. The role of a good teacher, invariably, is of one who is knowledgeable and a repository of information. Learning is also seen as something done out of a book and transferred to an exam paper. The desperately low competency rates in basic subjects illustrates a need for change in the education system. The community should play an important role in changing parental perceptions of education, and contextualising the process could be an important approach to achieving these aims of developing 'thinking' rather than 'memory' capabilities, along with strengthening linkages between the learning environments of

school, home and community.

7.4.4 Ethiopia

Ethiopia has over the past few decades seen many changes to its education system due to economic and political change. A document by the Transitional Government of Ethiopia (1994) states that there has been a gradual decline in the quality of education which has been pronounced in the past two decades. Factors such as scarcity of instructional materials, overcrowding, inadequate school buildings and a decline in the quality of teacher training have contributed to the problem. Moreover, the curriculum lacked relevance with no clearly defined objectives. Instruction concentrated more on theoretical knowledge with little connection to daily life. The approach lacked problem solving skills with a high tendency towards rote learning. Participation rates at all levels were very low with disproportionately low female representation, and the few schools available were mainly

located in urban areas. The government (1994) states that almost all of the junior and secondary schools, with a total enrolment of 12% of the eligible age group, are located in the medium and large towns. Nearly 60% of rural communities have no schools. The poor access to primary schooling for children in rural areas was revealed during the fieldwork when a number of children said that they had walked long distances, taking up to two hours, to attend school. Poverty is another main reason for not attending school as children are needed to work at home where food production is likely to be a higher priority than education. During the fieldwork it was clear that many children, both boys and girls, are involved in agricultural activities daily. Pupils mentioned that homework had to be done at school because they had too much work to do at home. Overall enrolment rates are low; UNICEF (1995) estimate the primary school enrolment ratio (gross) at 25% over 1986-92.

Ethiopia's Education Sector Strategy (1994) states that *'the*

main objective of any educational system is to cultivate the individual's capacity for problem solving and adaptability to the environment by developing the necessary knowledge, ability, skill and attitude', 'in this respect the existing educational curriculum of Ethiopia had not been properly developed to meet the societal and pedagogical demands', 'the curriculum is irrelevant and with no clearly defined objectives, the teaching concentrates more on theoretical knowledge with little connection to day to day life. The approach is not problem solution and students mainly rote learn'. The strategy for education frequently refers to the use of the pupil's experiences in teaching and learning, the need for more innovative teaching methods and the need for more relevance in the curriculum such that, *'the content of the curriculum will be revised to be relevant to the needs of the community', 'the science teaching will emphasise application and will be properly linked with day to day activities of the student', 'the teaching/learning process shall emphasise*

problem solving by making the curriculum more relevant and by adopting appropriate teaching methods'.

There was little evidence to suggest that teachers knowingly contextualise their teaching and learning practices in the schools visited. Reasons included a general lack of resources, time constraints, overcrowded classrooms and poor teacher training that does not prepare teachers for using innovative teaching methods, or for making use of local resources in their teaching practices. A new curriculum has been developed for use in primary level teacher training, and this follows the objectives of the new educational policy. Trained teachers, however, have only received minimal training in using the new curriculum and most teachers interviewed were disappointed with the level of training they had received in order to implement the new curriculum. During fieldwork, discussions with teachers revealed a keen interest to know more about the idea of contextualising teaching and learning. As a process it was not one they were

familiar with, but they felt it would be quite easy for them to practice because of pupils' daily contact with agriculture. A major objective of the previous curriculum was 'education for production'; so agriculture was taught as a separate subject and all schools had agriculture plots and agricultural teachers. The new curriculum for basic education focuses on a general curriculum where agriculture is incorporated into subject areas such as science.

In the 'innovative' school, teachers were trying hard to make learning relevant to pupils. During interviews with pupils they were able to easily identify areas where agriculture had been brought into subject areas. The most frequent example given was measuring land area in a maths lesson. Teachers gave examples, such as a maths lesson in which pupils were asked to calculate the number of radishes they could plant in a certain area. They say that implementation of ideas and concepts involving agriculture are taken up more and greater interest is shown. In this particular school, pupils placed a

strong emphasis on teachers being able to *'explain by giving illustrations and examples so that lessons can be easily remembered';* they also mentioned that a good teacher 'uses *different teaching methodologies'.* Generally parental attitudes were agreeable to such an approach. They appreciate their children telling them about their school work, particularly if parents also gain something from their children's schooling, for example new agricultural technologies or practices to improve general health. Where practices have been transferred to the community (e.g. vegetable growing and water filtration), it has proved to link the community with the school and has improved parental awareness of the importance of a basic education. Many teachers are past pupils of the school which appears to have helped in linking the school and community.

Agriculture as a subject was incorporated previously into curricula so resources for initiating a contextualised approach

to teaching and learning, through the use of agricultural experience, are in abundance. As the majority of children come from agricultural backgrounds, and experience agricultural practices daily, it is an area extremely familiar to them. Parents' and teachers' attitudes to a contextualised approach to teaching and learning are very positive. Teachers already try to use pupils' experiences in their teaching practices but many feel they do not have sufficient training to enable them to use this knowledge effectively in teaching new concepts. The new curriculum is relevant to pupils' lives and does allow teachers to use their own examples and bring outside experiences into classroom learning. Despite the poor condition of schools and a general lack of resources, teachers state their main problem is insufficient training to enable them to implement the new curriculum.

7.5 Issues and implications from the research findings

In this section, summaries of the main conclusions of the case studies have indicated key areas of importance which emerged during the research, both in terms of general issues relating to rural primary school education, and some specific issues relating to contextualisation of teaching and learning.

The final section of this report will highlight some of the most critical issues, and discuss some implications of contextualising teaching and learning which arise from the literature and from the findings of the field research. These may be of value for the future development and application of the concepts presented in this paper.

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8. Issues and implications from the research

8.1 Issues

8.1.1 Recognition of contextualisation of teaching and learning in education policy statements.

The education policy statements of many countries

emphasise the importance of relating the content of the curriculum and the processes of teaching and learning to the local environment. In most countries a national curriculum is still produced centrally, although there is a tendency towards decentralised educational planning. This latter movement is compromised somewhat by the retention of control over a national examination system by central planners. Contextualisation of teaching and learning is not mentioned explicitly in national policy documents, but the underlying concepts appear to be appreciated and approved by those in positions of influence at a national level. The desire is expressed often to make the curriculum relevant to the local environment, and to encourage teachers to develop teaching practices which relate the content of the curriculum to the local context. What is lacking in most situations, however, is the support and infrastructure at local level to enable teachers to put the policy into practice. A number of national and international NGOs and donor agencies are encouraging

teachers to develop and use innovative practices such as improved and more appropriate methods of teaching and learning, and alternative ways of interpreting the curriculum. In time, influence such as this may bring about a more widespread realisation of the value of contextualisation by national policy makers and encourage them to facilitate its practice through interventions at local level.

8.1.2 Teachers efforts to contextualise learning.

The most common pedagogical approach used in rural primary schools in developing countries is still "chalk and talk". When chalk or a blackboard are not available, the result is teachers talking. Pupils in the "average" schools visited in this research were rarely required to participate actively in lessons, other than to repeat by rote what had been said by the teacher or to sing and clap. Project work and topic-based learning were not in evidence in the majority of the schools. In all four countries in the study, the school timetable is divided

into short periods and is subject-based, so that teachers are impelled to cover a certain amount of the subject matter as laid down in the teachers' guide. Teaching aids and materials, particularly those which relate to the local context, are often in short supply or lacking altogether. Regular teacher absences means that a great deal of "catching-up" has to be done as well, leaving little time available in the lesson for teachers to try anything other than "banking" of knowledge. Evaluation of learning is also extremely difficult for teachers in those countries where large numbers of pupils crammed into small desks in a dark classroom is the norm. Demotivation of teachers due to the many constraints which they face on a daily basis tends to discourage interest in the development of innovative practices, and the absence of regular support means that those teachers who do experiment with alternative teaching and learning methods feel unsure and unconfident whether they are on the right track.

Even with these constraints, however, there is evidence from

the field research and from the literature that many teachers do attempt to contextualise learning by relating the content of the curriculum to the experience of their pupils. This is achieved by using examples with which pupils are thought to be familiar. Health and nutrition topics are often related to the home situation. Where agriculture is taught as a subject area, the pupils' experience of their family's farming is drawn upon in many cases. Even though such strategies are common, it becomes clear from the case studies that the majority of teachers who use such a practice are not aware of its real potential. They realise that pupils seem to understand an abstract concept more easily when examples are given with which the pupils are familiar. Planning of such strategies seems rare, however. Often examples are given on an *ad hoc* basis when it becomes clear that a concept is proving difficult to understand. Some teachers interviewed during the research stated that the value of using locally relevant examples had been discussed during pre-service training, but

they could not recall or suggest ways in which such a practice could be planned. Some teachers' guides and pupils' textbooks use examples which are supposedly familiar to children, but many of these examples are urban-based, or are actually unfamiliar to a large proportion of the school population.

Photo 1 'free drawing activity', India (School A)

Views expressed by teachers through interviews and ranking exercises suggest that they appreciate the value of contextualising teaching and learning and would like to learn more about it. The researchers experienced difficulty initially in reaching a common understanding of the concept of contextualisation with teachers. In fact, teachers were being asked to reflect on their pedagogical practice in this research, and it was clear that they were rarely called upon to do this explicitly in their normal working lives. From ranking exercises, teachers in all the countries studied stated that

they preferred to give examples and use practical activities as a means of helping pupils learn. The way in which teachers interpreted certain pedagogical practices varied, however. "Practical" activities in some schools meant pupils writing exercises, for example. The discussions which emanated from the ranking exercises did help to highlight these differences. Pupils also interpreted methods of teaching and learning in different ways, which emphasised the complexity of methodological planning for teachers with limited awareness of pedagogical approaches or the confidence to use them.

Photo 2 'geography lesson', Ethiopia (School A)

On several occasions, teachers stated that they had learned a lot from being involved in the research process, and would even use some of the methods developed to gather information in their own teaching. On two occasions when return visits were made to case study schools, innovative

strategies were observed being put into practice; for example a class in India carrying out "free drawing" (Photo 1) and a group of pupils in Ethiopia creating a map of the village in the school garden using earth and sowing flower seeds (Photo 2). This suggests that the practice of some teachers may be influenced greatly by support and opportunities for professional development.

8.1.3 Evidence for the use of agricultural experience by teachers as a means of contextualising teaching and learning.

In rural schools, agricultural experience and materials from the local environment are utilised by some teachers as a basis for teaching and learning. The case studies reveal some examples where pupils bring in agricultural materials such as plants and seeds, or foodstuffs, which are then used to illustrate abstract concepts. This technique was found to be used in mathematics teaching (Photo 3). Pupils were

sometimes taken by their teachers to the school garden or neighbouring farms where they performed activities which are based on and related to non-agricultural subject areas such as geography. Farming themes are frequently used as a basis for language teaching, and agricultural topics and examples appear in many school textbooks, such as the examples provided earlier in this report.

Photo 3 'mathematics lesson', Sri Lanka (School A)

8.1.4 Factors which influence the use of agricultural experiences as a means of contextualising teaching and learning.

The research has revealed a number of factors which seem to influence the use of agricultural experience as a means of contextualising teaching and learning. Firstly, support for teachers seems crucial. This may come from the headteacher, from pupils, from other teachers, parents,

policy makers and schools advisors or inspectors. Donor support or recognition of a school as a "model" or "pilot" school does seem also to raise the prestige of the school in the locality. This in turn seems to be a motivating factor for teachers and pupils, and encourages community members and parents to be more supportive of the school and its activities.

The influence of the headteacher in a school seems, central to the development and use of innovative teaching practices. Where a collegial atmosphere is created, and staff of a school feel that they can discuss freely problems and complex situations with each other regardless of position in the school hierarchy, experimentation and innovation has an opportunity to flourish. Support from the local education authority is also important. In some cases, schools inspectors discourage teachers from attempting to use alternative methods of teaching and learning for fear that the situation might go out of control. Although national policy statements

favour the use of contextualisation in schools,

teachers' guides do not seem to reflect this, and so teachers feel wary about moving away from what is laid down on the printed page, even though they may be surrounded by rich and varied resources outside the classroom and school environment. The rigidity of many primary school curricula discourages teachers from moving beyond the boundaries of the subject area, and frequent curriculum changes leave teachers feeling that they have enough to cope with just to cover the subject matter. Large class sizes, shortage of time, and a lack of confidence in dealing with classroom organisation all contribute to teachers feeling that they cannot move easily beyond the use of traditional talk-based teaching.

Some rural schools do not have land or gardens on which they can carry out agricultural activities, and it is felt by teachers that this constrains the use of agricultural examples

in the teaching of other subject areas. A lack of knowledge of local agricultural practices is cited by many teachers as another reason they are reluctant to draw on agricultural experience; pupils may have more knowledge in this area than the teachers. This should not be seen as a major constraint however; since most rural schools are surrounded by vast areas of agricultural land; many local farmers are themselves parents of school pupils, and often would welcome visits from teachers and pupils.

8.1.5 The attitudes of primary school pupils, community members and policy makers towards contextualisation.

Just as the teachers favour the process of contextualising teaching and learning, those pupils, community members and policy makers interviewed seem also to think that it is a practice worth utilising and would like to explore its potential. Many respondents stressed how important it is to base new learning on what is known already. There is no doubt that

education is still viewed as being a very important factor in the lives of young people, and a successful outcome of primary education is expected, especially bearing in mind the considerable investment made in it. Generally, the main target for pupils at the end of primary schooling is to pass their examinations. Many members of rural communities who have a very low income are prepared to offer part of the little money or materials they have to assist with the development of their local school or, in some cases, to further the chances of their children progressing to secondary school by paying for private tuition. Parents and pupils interviewed were of the opinion that schools should do whatever is necessary to give pupils the best chance of achieving a successful outcome from primary schooling. A strategy such as contextualisation which seems, logically, to lead towards better opportunities for school pupils to perform well is very attractive to them.

There are certain attitudinal issues which work against contextualisation being used effectively, however. Discussion

of home life and the domestic situation is taboo in some societies. Some parents feel uncomfortable with the knowledge that their children may discuss openly what is thought to be intimate and private to the family. Discussion between children and parents is often difficult anyway, due to societal norms about acceptable relationships between adults and children. Many children emphasise the value of learning to be respectful to elders and find speaking openly to a teacher in a class rather daunting. This situation does depend on the attitude of the teacher as well, however. Teachers who had established a rapport and unthreatening relationship with the pupils in their class are more likely to tolerate and welcome classroom discussion, and even pupils presenting ideas or writing on the blackboard. For some teachers, this type of activity is very threatening, and it was stated even by teachers who were supportive generally of contextualisation that there was a high risk element involved when asking pupils to talk about their experiences openly.

8.1.6 The role of contextualisation in strengthening and developing linkages between the school, home and community environments.

Earlier in this report it was stated that the learner can play a vital role in strengthening linkages between the three "learning environments" of the school, the home and the community. Contextualisation can, in theory, enable the learner to link the learning experiences in these three environments. The teacher, by contextualising teaching and learning can facilitate this process. From the research findings, it becomes clear that this does happen.

Parental support for their children's schooling is an important factor; parents in rural communities seem to find it easier to understand what their children are learning when it is based in a context with which the parents themselves are familiar. They feel able to talk to their children and are not embarrassed by their apparent ignorance of "school

knowledge" if the learning, even that centred around abstract concepts, is familiar to them. From discussions it was noted that many children

relate differently to their fathers than to their mothers. Evidence from the studies suggests that fewer mothers have completed or had the advantage of primary education than fathers. In many societies, young children seem to communicate more easily with their mothers than with their fathers, for social and cultural reasons, and mothers who cannot relate to the experience of schooling may become frustrated, as do their children who feel unable to talk to them about what they have learned at school. This emphasises the importance of girls' education, as those who become mothers themselves will have to face a similar situation; maternal support to school children would seem to be a very critical factor. Lubben et al (1996) have noted that at secondary school level, girls seem to find contextualised materials more attractive, and these may assist them to learn difficult

concepts more effectively than through traditional methods which tend to favour boys. At primary school level an implication of this is that, through improved teaching and learning, the numbers of girls who leave school with higher levels of achievement and qualifications may increase. In turn this may result in greater numbers of female teachers, and also more women with a more positive perception of schooling, therefore encouraging more girls to attend school. Contextualised teaching and learning may become a positive factor in improving the opportunities for girls to achieve success in primary schooling.

In the field research there was considerable discussion with pupils, teachers and community members about what "real learning" consists of. School pupils from several countries wondered whether learning subjects through the medium of agriculture was "real". What is learned at home, and particularly, what is learned about agriculture through personal experience seems often to be undervalued because

of the elevation of school learning to a more prestigious position. Integrating agricultural experience into more traditional "academic", and hence more highly valued, subject areas may help to break down the barriers between the different learning environments, and thus create a more conducive learning context. It is vital, however, that any agricultural component or reference introduced through a process of contextualisation is integrated in an appropriate and meaningful way. Parents should be aware that reference to agriculture or the local environment is not diminishing the value of schooling in any way, but instead creating the potential for an outcome from primary education which they feel is very desirable for themselves and for their children. Otherwise there is a strong likelihood that such an innovation would be rejected outright.

8.2 Implications for contextualising teaching and learning

The research findings show that the learning environment in many rural primary schools still leaves much to be desired. In particular the following problems, which were identified during the field work, seem common to most rural primary schools:

The School Environment

General problems in the school system

- Inequitable distribution of resources, both human (lack of trained teachers) and physical (lack of equipment), between urban and rural primary schools;

- disparities in the education system, especially between urban and rural schools;

- falling enrolment in many rural primary schools, and unmotivated teachers in these schools as they

receive no attention from school authorities (inspections or master teachers);

● substantial variation between schools and regions in the availability and deployment of primary teachers;

● lack of incentives for all teachers, including primary level teachers, to serve in rural and disadvantaged areas;

● restricted opportunities for primary teachers to develop their careers within the field of primary education;

● low salaries which are not paid on time;

● poor conditions (housing, transport).

Pedagogical problems:

- lack of in-service training or support for professional development;

- lack of knowledge and skills in terms of content, methods of teaching and teaching aid development;

- teachers unable to manage in large schools due to poor skills in classroom organisation;

- overloading.

Problems relating to the curriculum

- new curricula being introduced but not ready on time, and constantly changing;

- teachers are not consulted about curriculum

development;

● overcrowded curricula with too much content to cover in the time available;

● textbook and teachers' guide development and availability does not keep up with changes in curriculum;

● recommended equipment and resources not available, especially for practical activities;

● much of the content not relevant to the lives of rural children;

● more emphasis needed on "foundation" subjects (maths, science, English, agriculture);

● lesson periods too short and restrictive.

Physical problems within the school

- few reading materials available to the pupils, such as newspapers, and many rural primary schools have no library;

- few media facilities such as television and radio and often no access to an electrical supply;

- overcrowding and large classes;

- high absenteeism of pupils and teachers;

- lack of teaching aids;

- lack of textbooks and teachers' guides which often do not arrive on time;

- lack of stationery and no money available to buy

materials;

- shortage of classrooms;

- buildings in poor condition;

- shortage of desks and furniture (cupboards, tables, chairs);

- school area too small which restricts the space available for a school garden/agriculture plot or a sports field;

- few first aid facilities or a trained first aider;

- shortage of teachers' housing;

- either no staffroom or insufficient space for staff;

- inadequate school security.

The Home Environment

- poverty which leads to pupils being kept at home to work on the farm, to look after siblings or to work in other labour;

- poor health and malnourishment of pupils;

- no facilities available for pupils to do school work at home;

- parents cannot afford to buy their children basic equipment (pens, chalk) for school;

- no parental support; a demotivating factor for pupils;

- lack of parental awareness to the importance of their children's education.

The Community Environment

- lack of co-operation from the community in aiding the school;

- poor infrastructure (transport) preventing pupils from continuing their education in areas where secondary/high schools are not nearby;

- occasional desire by community members to control school activities;

- unreliable water supply or absence of clean water locally;

- vandalism at the school

8.2.1 Conditions necessary to introduce innovative teaching and learning methods

Certain conditions in rural primary schools make innovative approaches to teaching and learning difficult to introduce. The most crucial appear to be:

- large class sizes;

- too many short lesson periods per day, each allocated to a different discipline;

- lack of basic materials for teaching aid development;

- lack of support by schools inspectors and teacher trainers who fail to visit schools, or try to enforce traditional practices which are inappropriate;

- lack of in-service training and support which could free teachers, mentally, to experiment;

- poor motivation of teachers;

- increasing numbers of young teachers entering teaching who would prefer to be doing something else and are incapable of teaching large sections of the curriculum;

- the inflexible, centralised curriculum development and examinations system.

Certain conditions do support the use of contextualised teaching and learning in rural primary schools, however:

- enthusiasm of teachers to do the best for their pupils;

- enthusiasm of pupils to perform well;

- enthusiasm and support of many parents for schooling, especially from those who have themselves received an education;

- a willingness amongst parents to encourage their children to discuss their schooling, and to offer help with problems and recognition of their achievements in school;

- the supportive nature of teachers towards each other, especially from the headteacher;

- the close relationship between many rural schools and their surrounding community;

- improved progression rates of primary school pupils to secondary schools, taking some

psychological pressure off teachers;

● the vast resource base surrounding schools, which is almost entirely agricultural;

● the real demand from all parties for teachers to be provided with professional development in terms of pre- and in-service teacher training;

● teachers who hail from the local community in which the school is located;

● the presence of an agriculture teacher in the school, or teachers who have a knowledge and understanding of the local agricultural context, in order to use agricultural experience as a means of contextualising teaching and learning;

● land available within the school, for agricultural-

based activities.

Teacher training and support is a critical factor if the process of contextualisation is to be adopted in rural primary schools. Teachers need to reflect on their pedagogical practices, and to question their attitudes towards "real learning". Many teachers do use a range of excellent practices on a daily basis, but they may not be aware that they are in fact doing this. Awareness of successful approaches to teaching and learning will certainly contribute to the development of more innovative strategies. Finally, if teachers, pupils and community members can develop a view of education as a good in itself, then there is a far greater chance of building a learning environment which has a chance of achieving real success.

8.3 Opportunities for further research and intervention

This research has revealed many opportunities for further

research into the contextualisation of teaching and learning in rural primary schools. There does seem to be potential for some of the many problems discussed in this paper to be addressed through the development of models and strategies for education programmes which are based on a process of contextualisation. As discussed here, attempts have been made to adjust the content of the curriculum so that it becomes relevant to local conditions by introducing "localised" topics and activities, for example, through the "community school" movement. Teachers rarely have been involved in this process, however, and relatively little emphasis has been placed on the development of appropriate strategies for curriculum development or teaching and learning based on the immediate context in which the school is located. The process of contextualisation enables teachers in primary and secondary schools to interpret the content of the curriculum (which may be designed nationally, or at local level but still non-negotiable) by relating it explicitly

to the local environment, and this may prove to be a means of implementing the rhetoric of decentralising the curriculum process.

As described above, prerequisites for such a process to yield successful outcomes include favourable school structures and systems and a supportive policy environment. Opportunities should exist for cross-subject work and whole-staff development. The support of parents is vital, especially where strategies utilise the integration of pupils' home experience into the learning process. Parents should be aware, therefore, that a contextualised process of education will not inhibit their children's access to activities outside rural areas. The existence of productive, complementary linkages between school, home and community is of great importance, and it is necessary to break down existing barriers. Contextualisation of the curriculum will by its very nature involve the wider community, thus making it accountable to the community in which it is taught. It is desirable that parents

increase the level of their support for the school-based education of their children. An holistic approach to community education, which addresses the learning needs and aspirations of community members both in and out of school, for example involving literacy programmes, may help to overcome many of the problems associated with the provision of education in rural areas.

With these points in mind, it is suggested here that the following areas are worthy of research and intervention:

● encouragement and facilitation of the development of educational practices (teaching and learning strategies, development of learning materials, assessment and evaluation procedures, curriculum development), which value and take into account the knowledge, experience and culture of members of schools and the wider community;

- provision of training and support for teachers and trainers in rural primary schools and in the local community who will base strategies for teaching and learning on a process of contextualisation;

- facilitation of the development of structures and functions in schools and training organisations which complement and support the process of contextualisation adopted by teachers;

- evaluation of the impact of contextualised learning on the development of knowledge, skills and attitudes of learners, in schools and in the wider community;

- evaluation of the impact of contextualised learning on community productivity levels, employment, and on academic progression of learners and teachers;

- studies of the effect of contextualisation strategies on parental opinion of the value of schooling. As a result of research and intervention in these areas, the following outcomes may be achieved:

- self-supporting groups of teachers and trainers with the capacity to adapt and develop curricula, within the framework of educational policy, through a process of contextualisation;

- creation and adoption by rural schools and training organisations of structures and functions which support and enable the process of contextualisation;

- readily adaptable, sustainable resources of innovative methods and materials for training, teaching and learning, shared and disseminated through networks of teachers and trainers;

● strategies and models for planners and practitioners which may facilitate the integration of experience and knowledge of learners into basic and community education programmes in different locations;

● indicators and guidelines for decision makers at national and international level to consider when planning the overall structure of school and community education programmes, and to assist donors in making policy decisions relating to educational funding.

The research on which this report is based has shown that many teachers, community members and policy makers have demonstrated the willingness and ability to innovate in order to create the most effective learning environment for children in rural primary schools. Considering the difficulties faced in schools in rural areas of many countries throughout the world,

teachers in particular are to be wholly commended, encouraged and supported in their goal to enable children to benefit from schooling.

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Contextualising teaching and learning in rural primary schools: Using agricultural experience - Volume 1 - Education Research Paper No. 20, 1997, 64 p.

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