Basic Learning Materials Initiative

The Guide Guide

A practical handbook for writers of teacher support materials

Andrew Clegg

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Acknowledgements

The first part of this guide draws heavily on a lucid analysis of trends in teacher education and curriculum reform carried out by Wout Ottevanger as part of his doctoral thesis, University of Twente, Netherlands, 2001. I am particularly grateful to him for letting me have early access to the work. He carried out his field work on the use of teacher support materials in this country as part of the work of the INSTANT (In-service and assistance to Namibian teachers) Project from 1991 to 1996.

I am grateful also to John Clegg and to Kristen Danek (formerly of UNAM) for ideas used in chapter 7 on language.

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The Guide Guide

A practical handbook for writers of teacher support materials

This guide was produced following a workshop held from 31st October to 2nd November 2000 for staff of the National Institute for Educational Development (NIED) and makes extensive use of the ideas brought to the workshop by participants.

The handbook is designed to be of practical assistance to NIED staff given the task of producing teacher support materials.

The Guide Guide is divided into several sections each serving a different purpose.

Background

This section examines the design and use of teacher support materials both in Namibia and worldwide and is covered in Chapters 1, 2 and 3.

Teacher needs

Chapters 4 and 5 consider the different requirements, in terms of support materials, required by teachers at different stages of their professional development and how these needs should influence the design and content of the materials.

Content and methodology

Chapters 6 to 9 consider factors that influence content and methodological aspects of teacher materials. it includes a substantial section on how to design materials that support not only the subject but also the language through which it is taught.

Layout

Chapters 10 and 11 focus on layout issues for both paper and elecronic materials.

Evaluation

Chapter 12 proposes a comprehensive instrument for evaluating teacher support materials.

Contents

Chapter 1

An overview of major educational reform movements of the last 50 years

Over the last forty years or so there have been two major 'waves' of educational reform each with clear characteristics. Namibia embarked on a 'second wave' reform following independence in 1990

In the last forty years or so of the last century it is possible to see two broad waves of educational reform in the western world and countries influenced by the west. Both waves were influenced by concerns that the system, as it was operating, was not properly serving national needs.

The first wave - academic emphasis

The first phase was triggered in part by needs of national recovery after a devastating worldwide war but perhaps more specifically by a sudden single event in 1958, at the height of the cold war, when the USSR unexpectedly upstaged the USA by launching the first artificial satellite. This led to a major reconsideration of educational systems and curricula in the USA and Europe, led by reforms in mathematics and science. These reforms were pushed by a massive increase in funding from both the public and private sectors.

One characteristic that emerged in this wave of reform was the beginning of the move to place the child, rather than the teacher, at the centre of all education activities, though the teacher remained in full control of the teaching and learning process and the class was the teaching unit.

This wave of reform, influenced as it was by the need to increase the pool of high level expertise, tended to focus on academic achievement. The main beneficiaries were the high performing learners and it was channelled to them via selective educational systems.

The second wave - education for all

The first wave, with its academic emphasis and associated selective practices was superseded by the second when the emphasis shifted towards educational equality and 'Education for All'. The move continued the process of handing

responsibility for learning over from the teacher to the learner. This move, was, in part, driven by a shift of emphasis from Piagetian interpretations of the learning process towards more constructivist interpretations which tended to give more support to the view that 'Education for All' was an achievable goal.

The table below contrasts the main emphases of the two waves

Some characteristics of first and second wave educational reforms

First wave	Second wave
Preparation for a career	Education for all
Generation of knowledge	Application of knowledge
Focus on the discipline	Focus on societal issues
Broad coverage of content	Less content making for more effective learning
Mastery of content	Ownership of content
Subject in school	Subject in the community
Building of conceptual models	Personal decision making
Teacher as originator of knowledge	Teacher as manager of learning process
Whole class working as a unit	Individual or group work

(adapted from Ware, World Bank, 1992)

These 'waves', like all other similar broad educational observations, should not be interpreted too rigidly. The essentials of both have, of course, been around for centuries and sound educational reformers take care to advocate that the new ideas should build on, and not displace, the best of the older system.

In southern Africa, the matriculation examination was fairly typical of a first wave reform. Being a reform that benefitted mainly the academic elite, because of political and social conditions, it tended to become, however, identified mainly with the minority white population while the majority remained excluded. This was particularly the case in subjects like mathematics and science. The reforms in Namibia and South Africa after majority rule, driven, as they were, by the requirement to open up educational opportunities equally to all, are characteristic of the second wave.

Ware's table above notes that one characteristic of the change from 'first wave' to 'second wave' isa reduction in syllabus content in order to make room for the desired classroom reforms in effective learning. There is much evidence here (and indeed elsewhere) that when problems have occurred with the implememntation of 'second wave' reforms, they have ofetn been linked to a reluctance to reduce the syllabus content. This point will be revisited.

Chapter 2

Curriculum reform - some major issues for materials writers

Much research has been carried out in the last decades into effective mechanisms for bringing about sustained changes in the classroom. A great deal of it points to the futility of many of the attempts, particularly those based on teacher materials. It is important to learn from this work if mistakes are not to be replicated.

Discrepancies between curriculum reforms and class-room realities

Discrepancies between curriculum reforms and classroom realities heve been much discussed and is of central concern to materials writers.

The following analysis of the curriculum by Goodlad, Tye and Klein (Curriculum inquiry; the study of curriculum practice, McGraw-Hill) is helpful in studying the relationship between the intentions of policy-makers and school realties. Namibia has a wholly new curriculum and it can be seen in the form of documents. But these documents do not necessarily tell us much about what is happening in the schools. This results in a number of different perceptions of the curriculum:

- *ideal* curriculum – as it lives in the minds of the designers;
- *formal* curriculum – the written curriculum documents;
- *perceived* curriculum – as the curriculum is perceived, especially by teachers;
- *operational* curriculum – how the curriculum mani fests itself in the classroom;
- *experiential* curriculum – how the curriculum is expe rienced by learners in the classroom;
- *attained* curriculum – as manifested through learning outcomes.

The ideal curriculum and formal curriculum together are also called *intended* curriculum. Likewise, the perceived and operational curriculum together is also called *implemented* curriculum.

In an ideal world, all these curricula would, coincide and it is instructive to ask, in Namibia, how near to coincidence they are . Even more informative, perhaps, would be to consider where the main differences arise and how might teacher materials be best designed to minimise them. Should the materials be aimed at making the implemented curriculum

as close as possible to the intended curriculum perhaps? Or should they be addressing the experiential and attained curricula? These are questions that must be considered as they clearly affect the nature of the materials.

Stages in implementation of a reformed curriculum

Another aspect of curriculum reform of importance to materials developers is an acknowledgement that reform takes place in stages. Three stages can be identified:

- initiation
- implementation
- consolidation and institutionalisation

Each phase requires rather different kinds of support materials and support mechanisms. All phases require, as a basis, ideas on the interpretation and elaboration of the syllabus. The first phase might require, in addition, exemplary material for teaching whole lessons using the new methodologies promoted by the curriculum. The third phase might require resources and ideas that teachers can draw upon to refine and develop their practice.

It is important to note that within the overall picture of curriculum implementation, there will, at any given time, be teachers at each stage of development and that professional development programmes and teacher materials should be available to support each phase. This is not currently recognised in all regionsin the country.

The desirability of new methodologies

Curriculum reform in Namibia, as elsewhere in Africa, (and indeed, the world) has tended to be pushed from the top, usually in response to major political changes such as independence. Reformers have been influenced by changes elsewhere, most particularly in western Europe and the USA. As a consequence, curriculum changes have involved the imposition of western-style methodologies and researchers have noted cultural tensions that have arisen in consequence.

There are many areas where outside influences are evident but a number might be mentioned as important examples that have arisen in Namibia.

- The move towards learner centred teaching can lead to situations in which teachers may feel that their traditional authority is being undermined.
- Certain aspects of the new curriculum, (such as a full and open treatment of sex education and the teaching of Darwinian theory) may conflict with traditional cultural or religious values.

- There is a tendency to fail to recognise and give appropriate status to, indigenous and intuitive knowledge, particularly if it conflicts with imposed curricula. There is prima facie evidence that this may be a significant factor associated with widespread poor performance in mathematics.

The lessons to be learnt from these issues is that curriculum materials should be culturally sensitive, that they should encourage the open discussion of cultural issues, rather than impose foreign values, that changes should be eased in gradually to allow acclimatisation, and that the syllabus scope and sequence and teaching and learning must take cognisance of these matters.

INSET as a means of promoting change

The euphoria brought about by a major political change such as independence frequently stimulates a great deal of curriculum change and teacher development. Teachers feel the need for change and are more than willing partners in the programmes that are developed. Under such revolutionary conditions, INSET and teacher materials can often be very effective. But they tend to become markedly less effective as time passes and the country settles into a pattern of 'normal' education delivery.

For INSET to function as an agent of change in a 'normal' situation, it must be part of a long-term comprehensive strategy that involves workable professional development structures, rewards for classroom improvements, effective classroom support and regular follow-up activities. All these must be present for INSET to have a measurable impact. Further, it all must be closely linked to a firm pre-service foundation and those responsible for the pre-service activity must share an overall vision with those responsible for INSET. Teacher materials, however good, are not likely to have much impact in the classroom unless all this additional support is present.

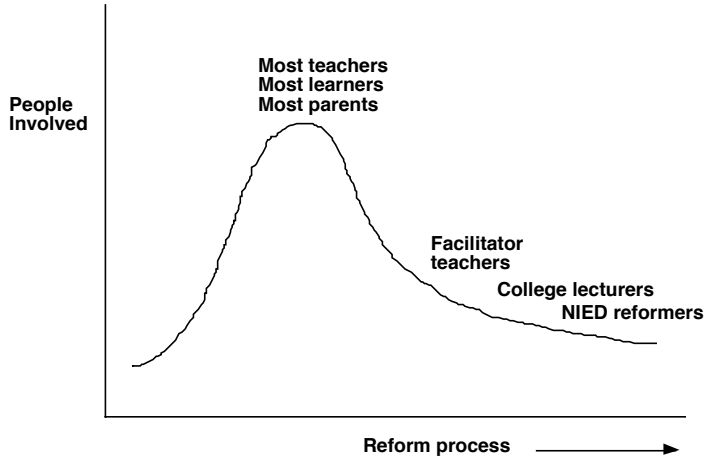
Dialogue between all stakeholders

It is well recorded that effective teacher materials are those that respond to teacher need, as perceived by the teachers themselves, not teacher need as perceived by administrators and curriculum developers. It is worth therefore considering in a little detail what teacher needs usually are.

Many observers note how closely the interests of teachers and the interests of learners, as gathered by research instruments, frequently coincide. The over-riding interest of the learner is to pass the examination; all else is secondary. The over-riding interest of the teacher also to get the learner through the examination. This combined force tends to

promote 'banking education' in which the teacher deposits the knowledge in the account of the learner, to be withdrawn and spent in the examination. With luck, a little might remain in the account after the examination.

This combined force tends to promote a situation where many practitioners are left behind in the reform process which is being pulled by those in the system who have different interests, the curriculum reformers, college lecturers and those teachers with an interest in reform. The figure is a diagrammatic representation of this process.



A diagrammatic representation of the reform process

There is a danger, when reform is drastic and rapid, that the curve may become too stretched, leaving the teachers too far behind, undermining the whole process. This then creates a situation when the reform process can be seen to failing, fuelling demands to halt it.

Under such circumstances, the reaction of the reformers can be to become more aggressive and push harder for further changes. There is then a danger that teacher materials and related training programmes, aimed at promoting the reform will tend to focus on what, it is perceived, the teachers are doing wrong, rather than building on existing elements of good practice. The further the materials are from existing practice, the more likely they are to be ignored, and the more likely is the reform process to founder.

The lessons from this are many:

- Involve parents and pupils in the process from the start. They should be active in pushing the process not resisting it. (In this respect, it is worth noting how easy it is to introduce ICT into the curriculum; there is no resistance to overcome.)

- Involve teachers in materials development from the very start, to build on existing good practice and to introduce new ideas incrementally, giving them chance to take root.

- Listen to the problems that teachers report as they struggle with the reform. These are often not directly related to the reform but may be peripheral. (A common one is inability of the school management to make appropriate changes in timetabling, or, more often, an inability to see that such changes are needed.)

- Proceed slowly with a reform and build on existing good practice.

- Arrange professional development sessions in such a way that teachers come away from them with something that, if they implement it, will save them time and effort and not involve them in additional effort. A good example is a good topic test or examination paper.

- Ensure that pre-service trainers are also involved in INSET programmes.

- Tailor the activities to the needs of the teachers rather than to the demands of the curriculium.

Chapter 3
Reform in Namibia since 1990

Reform in Namibia has been sudden, complex and extensive. It is hardly surprising that some aspects of it have proceeded more smoothly than others. Reflection is needed, not least on the role that teacher materials have played and can play, in the future

Compromise

The two columns of Ware's 'wave' analysis (page 2) broadly describe educational systems before and after independence in 1990. But in Namibia, as elsewhere, old influences die hard and the Broad Curriculum for Formal Education was a series of compromises made in order to satisfy demands of all stakeholders, while retaining the major elements of reform.

One area of compromise, made in order that the new order should be seen to be 'maintaining standards' was that the necessary reduction in content load in order to facilitate a more learner-centred approach, has not been made in many of the syllabuses and there is strong evidence from the classroom that this is a major impediment to successful reform. International comparisons in a number of subjects, notably mathematics and science, suggest that the Namibian curriculum has a tendency to introduce topics too soon and to expect too much of learners when it does so. This is particularly noticable in Grades 4 and 5 when learners need additional time to cope with the change in the language of instruction.

Until structural issues such as these are addressed, it is unlikely that teaching materials that advocate changes that require additional classroom time for effective implementation, will have any significant impact.

The complexity of the Namibian reform process

Namibia entered the 'second wave' reform arena quite late because of the date of independence. As a consequence the reform has been considerable, abrupt and multi-dimensional. The three main dimensions of the reform have been:

- curriculum reform to focus more on societal issues and less on purely academic ones
- towards activity based methodology
- towards education for all

All three dimensions have implications for materials production, and any materials produced should be evaluated against criteria that must be developed from these. There is evidence, particularly in the examination system and results, that the third element may currently be a rather neglected component. This is not surprising as there are few examples for Namibia to follow; effective equal education for all has been a very recent development wherever it has occurred.

Impact of teacher materials - lessons from the first decade

In the implementation of any reform process, two features have commonly been given major prominence. These are the production of good quality teacher materials and workshops to promote them. It is doubly unfortunate, therefore, that there is much international research evidence to show that, by and large, teacher materials tend to be infrequently used except under specific circumstances and that workshops alone are ineffective as a vehicle for reform. Evidence here suggests that Namibia is no exception to these generalisations.

A closer examination of a number of key issues that have emerged here in the last decade may yield ideas for strategies to ensure that teacher materials in future may be more effective.

The impact of early professional development activities

- Change was particularly effective in the early 'revolutionary' phase but less so in the later 'normal' phase. There is little evidence that materials from the earlier phase are still in regular use.

- Early professional development activities seem to have been successful in generating an understanding of the need for a change towards more activity-based instructional methods but less effective in giving the teachers a repertoire of usable techniques. 'Second generation' materials must address this but more needs to be known about the reasons for the failure of earlier materials

- There is evidence that the main teacher material used, even in subjects that are, or have been, assisted by projects that stimulated much material, is the learner textbook, often well annotated by the teacher.

The evolution of a professional development infrastructure

- Most regions have largely abandoned the professional development programmes characteristic of the earlier years, in favour of a greater concentration on in-school help. There is evidence, however, that such programmes tend to become inspections rather than professional support activities. The notable exceptions to this trend are Ondangwa East and West regions.

- The informal 'cluster' based self-help professional development activities characteristic of the early days has given way to a more formal structure. At present, however, this structure is under-developed and there is a need for professional development activities to evolve, together with associated teacher materials, that are appropriate to this new structure.

- A pivotal component of the new structure will be Teacher Resource Centres (possibly to be renamed as Educator Development Centres) and these will be equipped with electronic access to teacher materials. The consequences of this for teacher material design are considered further in chapter 11

School academic and subject management

- The tendency, particularly in primary and junior secondary schools, for subjects to be rotated amongst teachers, regardless of the training and content background of the teacher has been a major contributory factor inhibiting the emergence of professional subject cadres

- The lack of timetabling expertise amongst senior staff (and probably also an inability fully to understand the impact of poor timetabling) has meant that, in secondary schools, teachers, rather than learners frequently have move around from classroom to classroom. Learning spaces are therefore never 'owned" by subjects and resources of the kind advocated in teacher materials can never be effectively accumulated and used.

- Lack of subject, and department, management training has meant that there is still very little evidence of self-help professional development with schools.

Examining and testing

- Teacher materials seldom offer assistance on the design and construction of good items and tests.

- There has been little consensus on what constitutes appropriate continuous assessment in an activity-based classroom and less on methods of assessing it. Teacher materials have seldom addressed this issue effectively.

- The UCLES IGCSE system, while containing many sound ideas, evolved in the UK at a time in the 1980s which was a period of transition there from 'first wave' to 'second wave' characteristics. Since then, many changes have been made worldwide in the light of experience but these have not been reflected in the IGCSE because it is much more difficult to change a system that is marketed world-wide and relies, for its attraction, on its stability. The next generation of teacher materials would benefit from a study of other assessment systems and practices which may offer simpler and more effective and appropriate assessment ideas

The language problem

This has emerged as a particularly intractable problem and is considered in detail in Chapter 7. It has been addressed in some depth through the English Language Teacher Development Project but that was confined to the teaching of English in schools and had little impact on the teaching of other subjects in English.

Chapter 7 has a number of suggestions on how teacher materials could incorporate ideas that would lessen the language burden in lessons and also help with the teaching of the kind of English that is important for the subject concerned.

Chapter 4

Who are you writing for?

One reason why the influence of teaching materials has been disappointing is the mismatch between the demands of the materials and the needs of the target teachers.

Stepwise developmental model

Namibia, like most countries in the region undergoing educational reform processes, has a wide variety of schools ranging from the well endowed to the extremely impoverished. Likewise, the teaching force ranges from professionally qualified degree holders to unqualified teachers with little more than a primary certificate. The professional development needs of such a force range widely, as does the capacity of individual teachers to respond to, and benefit from, professional development programmes.

For new teaching methodologies to take root, it is desirable to have a receptive and professional teaching force that is working in well-resourced schools. Professional development materials, and related activities, frequently, tend to be written with the professional teacher mainly in mind and ignore problems of teacher insecurity and impoverished provision which impose strict limits on the capacity of the school to accommodate the change.

To clarify this complex situation it is helpful to construct a stepwise development model (after Beeby[1]) for both the teachers and the school environment. The model lists four stages of development for both, classified as follows:

- unskilled
- mechanical
- routine
- professional.

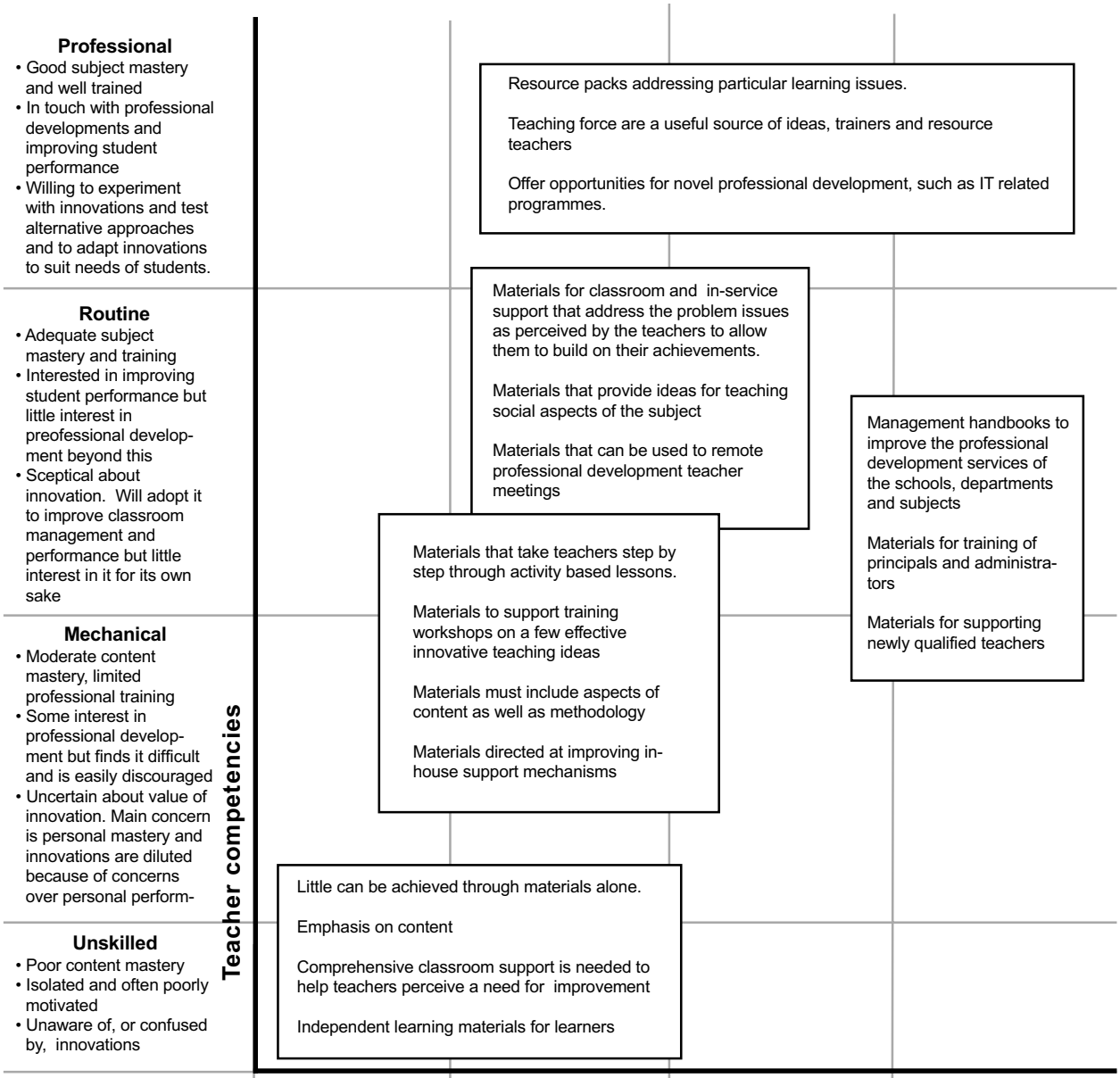
The two axes of the chart opposite show the characteristics of schools and teachers at each of these four levels, along two axes. This allows us to consider the kind of materials and support that is most appropriate for teachers at any level in schools at any level.

The chart also shows some suggestions for differentiated materials directed at specific circumstances.

The top right hand corner of the chart represents the situation in which skilled professional teachers teach in a professionally run school. This is the situation that can most readily embrace change and arguably do not need the assist-

School and teacher developmental model showing appropriate teacher materials

(after Beeby)



	Unskilled	Mechanical	Routine	Professional
Teaching techniques	• Rote learning, copying from blackboard, no individual learning	• Memorisation, limited variety of instructional techniques, focus on exams	• Memorisation still dominant but some activities.	• Self-motivated learning, reflective practice, ability to pursue new ideas, long-term planning, individual, group. and differentiated work common
Textbooks and materials	• One textbook used by teacher. No other learning materials	• Textbooks available to learners but not to take away	• Variety of texts and materials available, including a library.	• Broad availability of different types of materials.
Support	• Sporadic, mainly administrative, focussed on compliance with regulations	• Inset infrequent and usually focussed on compliance with regulations and standardised application of materials	• Some medium term planning using a variety of texts, inset emphasising a variety of classroom approaches. Role of school management important	• School is main source of support, inset is focussed on the development and expansion of professional skills

ance of extensive teacher materials to help them do so. But a look at the characteristics of most teacher materials will show that they tend to be directed at this cadre.

The converse is also true. Schools that have made best use of materials directed at the less professional teacher, are often those at the higher professional levels.

Using the model

The model can be used as a guide to the kind of teacher materials needed. The checklist below will help to identify the level the teacher materials are aimed at and the model can then be consulted to give guidance of the main focus of the materials

- Which developmental level of teacher and school are you writing for?
- What is the main problem(s) and needs experienced by these teachers?
- Do the materials address these problems and needs?
- What should be included in the materials to make them appropriate for these levels?
- What other important points should you take note of to make the materials usable? (readability, layout, language level, availability of teacher materials, class sizes, availability of electricity and water, etc)

The next chapter further elaborates these ideas.

[1] The developmental model proposed by Beeby concerned educational quality and was later adapted de Feiter et al to include teaher development. It is further adapted here to include the characteristics of relevant teacher materials

Beeby, C. (1966). The quality of education in developing countries. Cambridge, MA: Harvard University Press.

De Feiter, L., Vonk, H., & van den Akker, J. (1995). Towards more effective science teacher development in southern Africa. Amsterdam: VU University Press.

Chapter 5

Different kinds of teacher materials

Teacher materials serve a variety of different purposes. It is important to identify not only the target teacher group but also the purpose of the materials. Both will affect, considerably, the nature of the materials

Analyses of teacher materials in Namibia and elsewhere show that they fall broadly into the following categories. The nature and mode of use of each category leads to marked differences in content and layout.

- Syllabus support
- Materials to support a specific classroom reform programme
- Materials to support professional development programmes
- Teacher resources for specific topics
- Teaching 'specifications'
- Learner textbooks
- Textbook support materials
- Distance learning materials

The characteristics of these categories are considered further below as is the level of professional development of the target teachers. It can be seen that the great majority of teacher materials imply a target operating at a professional level. This means there is often a mismatch between the materials and teacher needs.

Syllabus support - schemes of work

The phrase 'scheme of work' has come to have a variety of meanings depending on the context. In this handbook it is taken to mean a sequence of activities, given in outline, for a given time period, such as a term, a year or a phase, designed to cover the syllabus topics

An example of a syllabus support document is shown over the page (UK National Curriculum - Geography) together with a further example explaining how it should be used.

Unit XX Investigating rivers

Geography Grade x

ABOUT THE UNIT

This is a 'long' unit. In it, children learn, through fieldwork and research, about rivers and the effects they have on the landscape.

The unit focuses on:

- the components of the water cycle
- how rivers erode, transport and deposit materials to produce particular landscape features
- the characteristics of a river system in another part of the world

This unit may be shortened to a 'medium' unit by leaving out the final section. The unit offers links with literacy, mathematics, history, IT and science.

PLACES

- School locality
- Wider context
- Physical and human features
- Links with other places

SKILLS

- Observe and question
- Collect and record evidence
- Analyse and communicate
- Use geographical vocabulary
- Undertake fieldwork
- Make maps and plans
- Use globes, atlases, and maps
- Use secondary sources
- Use ICT

THEMES

- Rivers: systems, features
- Weather: microclimates
- Environment: impact, sustainability

LANGUAGE

In this unit, children are likely to use the following vocabulary:

- water cycle, rainfall, source, spring, river, riverbed, stream, hill, slope, steep, mountain, waterfall, valley, channel, lake, mouth, erosion, pollution, landscape

They may also use:

- tributary, dam, reservoir, drain, floodplain, meander, canyon, rapids, estuary, delta, weathering, transportation, deposition

They following grammatical and stylistic aspects of language may be important;

- Using impersonal ways of writing and the passive voice
- Using causal connectives; because, therefore
- Structuring a report, summary paragraphs, table of contents, picture and diagram captions, etc

RESOURCES

- local maps
- measuring tapes
- ranging rods
- floats
- stopwatch
- clipboards
- data handling and graphing package
- primary geography textbooks
- globes
- maps and atlases
- CD-ROMs
- access to the internet
- desktop publishing package

PRIOR LEARNING

It is helpful if the children have:

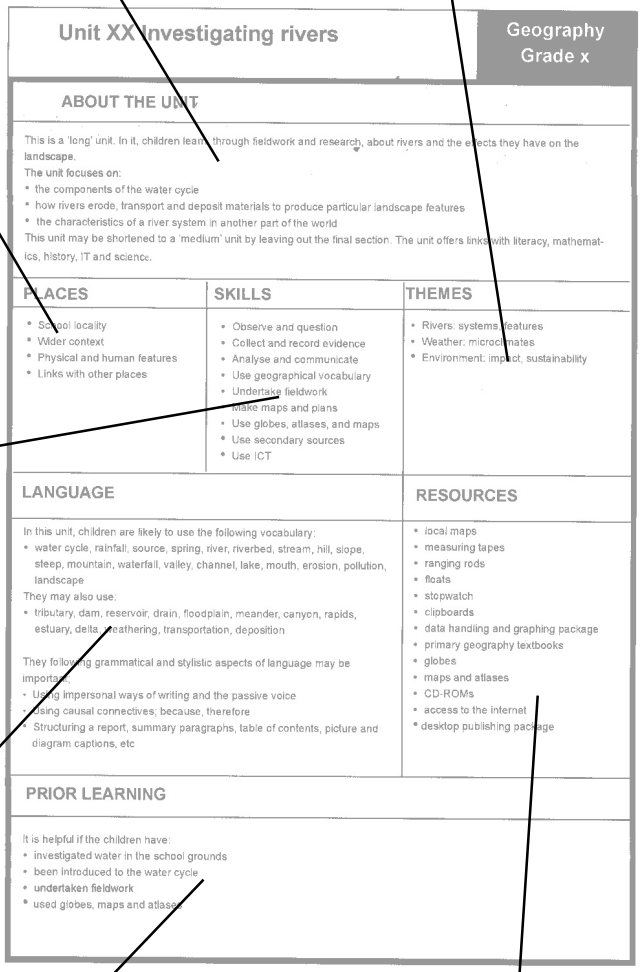
- investigated water in the school grounds
- been introduced to the water cycle
- undertaken fieldwork
- used globes, maps and atlases

An explanation of the unit framework

About the Unit
Gives a summary of the main features of the unit

Themes and Concepts
Shows where this unit fits in the general structure of the geography syllabus

Where the unit fits in
Indicates prior knowledge and skills, links with other areas of the curriculum, and the next unit to be studied on the same topic



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PLACES	SKILLS	THEMES
• School locality • Wider context • Physical and human features • Links with other places	• Observe and question • Collect and record evidence • Analyse and communicate • Use geographical vocabulary • Undertake fieldwork • Make maps and plans • Use globes, atlases, and maps • Use secondary sources • Use ICT	• Rivers: systems, features • Weather: microclimates • Environment: impact, sustainability

LANGUAGE	RESOURCES
In this unit, children are likely to use the following vocabulary: • water cycle, rainfall, source, spring, river, riverbed, stream, hill, slope, steep, mountain, waterfall, valley, channel, lake, mouth, erosion, pollution, landscape They may also use: • tributary, dam, reservoir, drain, floodplain, meander, canyon, rapids, estuary, delta, weathering, transportation, deposition They following grammatical and stylistic aspects of language may be important: • Using impersonal ways of writing and the passive voice • Using causal connectives; because, therefore • Structuring a report, summary paragraphs, table of contents, picture and diagram captions, etc	• local maps • measuring tapes • ranging rods • floats • stopwatch • clipboards • data handling and graphing package • primary geography textbooks • globes • maps and atlases • CD-ROMs • access to the internet • desktop publishing package

PRIOR LEARNING

It is helpful if the children have:
- investigated water in the school grounds
- been introduced to the water cycle
- undertaken fieldwork
- used globes, maps and atlases

Skills
Shows the skills that will be developed in this unit. It is useful to have an overview of what skills are to be developed and to what extent, over the whole phase, to give this

Language
Indicates special vocabulary that will be encountered in the unit and also suggest points of grammar and style that might be developed

Expectations
Shows what is expected of the average learner and also what is the minimum expected of slower learners and how far the better learners might progress

Resources
Lists the resources that will be needed by this unit and suggests alternatives if they are unavailable

Syllabuses and schemes of work (continued)

Purpose	*Characteristics*	*Teacher level*
To ensure that the *operational* curriculum, as it is manifested in the classroom, is as close as possible to the *ideal* curriculum, as it was intended by the curriculum developers. Curriculum developers have an obligation to produce materials such as these to assist teachers to work towards a clearly defined common goal.	Many subjects have, the past, included these as part of the syllabus documents and these have proved useful and popular. In order to maximise their helpfulness, a reappraisal of what such materials should contain and look like would be useful. The example from the UK national curriculum contains some useful ideas on both content and layout.	All

Materials to support a specific classroom reform programme

Purpose	*Characteristics*	*Teacher level*
Usually part of a package aimed at some aspect of classroom reform. They are commonly promoted by a university department, or a group of teachers working together, or, in the Namibian context, a curriculum reform project.	The package will commonly include: • teacher material, • learner materials, • assessment materials • necessary workshop materials to promote the package. The Life Science Project materials are examples of these.	Usually intended for a specific level. Often its main impact is only at the professional level despite the intentions

Materials to support professional development programmes

Purpose	*Characteristics*	*Teacher level*
All professional development programmes, whether leading to a formal qualification upgrade or whether they are part of routine teacher support, require support materials.	Depends very much on the nature of the programme. Materials produced by the ELDT Project and by the science and mathematics projects, INSTANT and Mastep, are examples.	Usually intended for a specific level. Often its main impact is only at the professional level despite the intentions.

The 'active life' of such professional development materials

Materials developed to support these projects can now be found gathering dust on rather inaccessible shelves in schools and TRCs. This does not, however, necessarily imply, that the project was without influence. Most teacher materi-

als have a relatively short active life. They tend to become dated as ideas change and we learn from mistakes.

When producing teacher materials, it is always worth going back to past versions in order to build on past experiences rather than reinventing them. For this reason it is vital that copies of all materials, particularly electronic copies, are centrally archived.

Teacher resources for specific topics

Purpose	*Characteristics*	*Teacher level*
Support materials for the teaching of specific topics or for addressing specific classroom problems.	Commonly designed very much with the 'professional level' teacher in mind. They are often an invitation to such teachers to try new ideas. They usually do not include detail not needed by the professional level teacher such a s lesson plans, etc. They may provide ideas for addressing specific classroom problems such the incorporation of environmental issues or addressing language problems.	Professional

Teaching 'specifications'

Purpose	*Characteristics*	*Teacher level*
Materials designed specifically to bring about a clearly defined change in classroom practice	They provide **very** detailed specifications for sequences of lessons and are usually designed for use by teams of teachers and trainers and are part of a wider intensive programme of teacher development involving classroom support and follow-up work as well as workshops. In such specifications, the activities of both teacher and learners in every part of the lesson are clearly set out.	Mechanical Routine

The example on the next two pages is from some Grade 8 materials produced by the INSTANT Project. Note the use of icons and tables to indicate learner activity and expected times for each section of the lesson. The purpose of such visual indictors is to reduce the amount of less text needed to provide all the specifications

Lesson 3

Centre of Mass

What you need *Every learner or group of learners needs:*
- Regular and irregular shaped pieces of card
- Cotton
- Pencil and ruler

∆ What does this lesson look like?

This lesson will have a practical component This will be followed by a discussion of the practical results (when a worksheet could be used) and some questions on the topic will be set for homework

∆ Lesson plan and execution

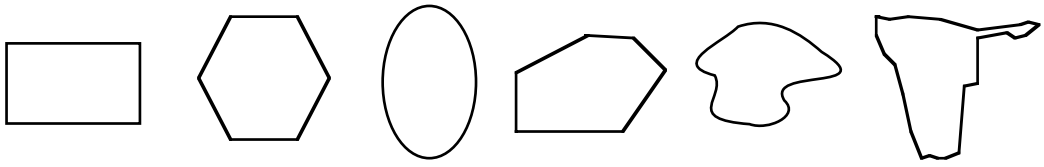
Activity	*Approximate time*
Introduction	5 minutes
Practical	20 minutes
Discussion	10 minutes
Finishing the lesson	5 minutes

- Ask a learner to stand on one foot. She will not fall over. Ask her to stand with her side against the wall and then raise her foot that is furthest from the wall. She cannot do it without falling over. Discuss why.
- Link the discussion to the previous lesson to show that there is a moment that causes her to fall over because her weight is not acting above the foot that is against the wall. Why does she not fall over when she is away from the wall? Because she adjusts her body so that her weight is over the foot that is on the ground. This can lead to the idea of a single point in her body through which her weight acts. This point is called the *centre of mass* or the *centre of gravity*. This must always be above her foot when she is standing on one leg. If it is not she will fall over

Activity

Students will be given regular and irregular pieces of cardboard or hardboard (an irregular one could be cut to the shape of Namibia)

Learners should be asked to find the point of balance in two ways.

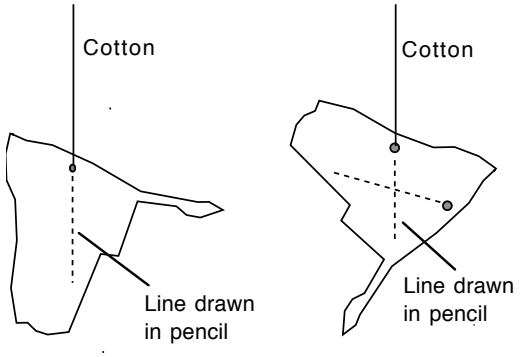


1 Balance the card horizontally on the tip of the finger. Mark the point of balance where the finger touches the card.

20

Activity (continued)

2 Hang the card from a piece of cotton as shown. Draw a staight line down the card continuing the line of the cotton. This is shown in the diagram. Turn the card



round and attach the cotton to another point and repeat the process. The must be the point where the two lines cross (see below)

This last technique will require some discussion

- The centre of mass **must** be vertically below the point of suspension. Why? If it was not the system is not balanced. One side will be heavier than the other. It will move until it is balanced
- Therefor the centre of mass must be somewhere on the dotted line.
- When you draw the second line, the centre of mass must be on that one as well. The only possible place is where the two lines cross
- Check it by doing the experiment a third time. The third line will also go through the place where the first two crossed.

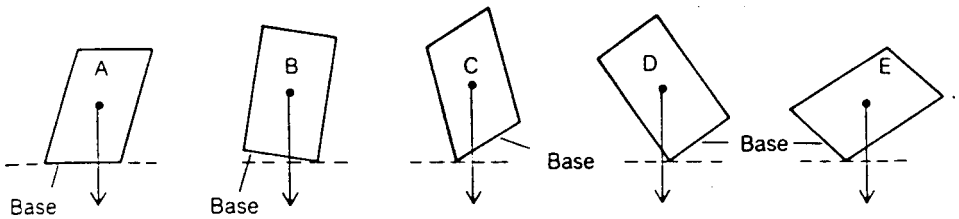
Finally show a few tricks and ask for explanations.

1 Stick a bit of lead behind Caprivi (without the learners seeing) and try to hang up Namibia with the cotton through Bagani. Caprivi will counterbalance the whole of the rest of the country (Caprivians have always known this!)

2 Put a lead fishing weight in a corner of a polystrene egg carton (without the learners seeing) and close the carton. Push the carton slowly off the edge of the desk so that the heavy corner stays on the desk until last. Then stop pushing. The carton will not fall.

Δ Homework and Assessment

1 Which of the following objects will topple over and which will come to rest standing on its base?



Answer. A, B and C will come to rest on their bases. D and E will topple

Learner textbooks

Purpose	*Characteristics*	*Teacher level*
These are not usually perceived as teacher materials but good ones are written not only with the learner, but also the teacher, in mind. They will have, hidden within them, sequences of lessons to cover specific topics	Typically they incorporate open ended questions in which children are encouraged to think about, and discuss, issues raised in the book, particularly in relation to their local environment. The author is handing over to the teacher, the task of structuring the work	Unlikely to be well used by teachers below the professional or routine level

An example of a learner text which can also serve as a teacher resource is shown below. This is designed to stimulate the teacher into producing a lesson on the functions of different parts of the human body. Learners themselves could, of course, use the book unaided but the teacher will be able to enrich the experience by taking the lesson further than is outlined in the book.

Ideally such textbooks should perhaps have an accompanying teacher guide but publishers find this prohibitively expensive because of the small market, and evidence suggests they are not widely used by teachers anyway.

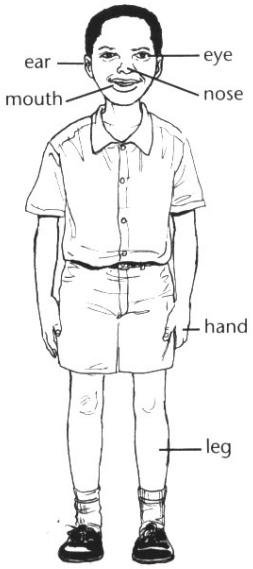
Let's find out

1 Look at this animal. It is a **human**.

2 Why does this animal need to wear clothes?
The cat does not need to wear clothes.

3 Write down what this animal uses these parts for:
legs, nose, ears, mouth, eyes

4 We use our hands for many things. How many things can you think of that we use our hands for? Write them down.



From the Grade 4 Science book published by Heinemann and reproduced with permission

Textbook support materials

Purpose	*Characteristics*	*Teacher level*
Teacher materials to support (and market) a learner textbook	• practical details for teaching activities outlined in the textbook • background notes, • answers to questions, • assessment ideas, • etc.	Most seem to imply professional level teachers but parts (such as answers to questions) are usable by all levels

These are particularly important and useful if the learners book contained a lot of activities. There is evidence that these are usually only used frequently by professional level teachers (above page 13) and this will have an impact on matters such as style and layout (below chapter 10) which can be more compact (and hence cheaper to produce).

Distance learning materials

Distance learning materials are used by teachers in two different ways.

Purpose	*Characteristics*	*Teacher level*
In pursuit of a qualifications upgrading programme	Used principally for private study by the teacher but it is intended that they should have impact on the classroom. There is, however, little local research into this impact. Examples are the part-time BETD and Mastep programmes.	Mechanical
As resource materials for teachers in classrooms at secondary level. This is particularly the case where teachers lack confidence in their own content knowledge	They contain well-explained content and frequently have, incorporated in them, learning activities that can be used in the classroom.	Something for all

This is currently an underexploited area that might be developed in cooperation with Namcol.

Chapter 6

Cross-curricular issues

Experience has shown that unless a very deliberate effort is made to introduce cross curricular issues in the teacher and learner materials and the examinations, they are neglected. This section looks at a number of these, one of which is a process, a different way of looking at aspects of normal curriculum content

This section looks at issues that span all subjects. These are divided into two categories, content issues and methodological issues. The former looks at a number of important content areas that are addressed in a number of subject areas while the latter includes issues such as the organisation of active learning, catering for all abilities and assessment-related matters.

A number of cross-curricular content areas have been identified in most modern curricula and the following are widely perceived as important

- Environmental issues
- The use of Information and Communications Technology (ICT)
- Ethical and moral issues
- HIV/AIDS
- Prevocational skills
- Democracy and human rights education

A further cross-curricular issue, that of language, is so intimately bound to all teaching activities that it is considered separately (chapter 7).

Content issues

The approach adopted for ensuring that these matters are covered in the curriculum is usually to identify a 'carrier' subject or subjects through which these issues can be taught. Experience has long demonstrated, however, that unless the content is firmly embedded within the carrier subjects, and is subject to assessment in public examinations, incorporation into the curriculum is at best patchy, and at worst, non existent.

To try and ensure that these important matters are actually covered in the classroom, their ideas should be seamlessly incorporated into teaching materials, so that they are not

seen as add-on 'extras' the coverage of which depends on the availability of time and the inclination of the teacher.

Ideas on how two of these content issues might be reflected in teaching materials have been developed by NIED and are given below.

Democracy and human rights education

This topic has a developed and approved curriculum (shown below) which will be delivered mainly through agreed humanities carrier subjects for which teacher and learner materials exist. However, there are a number of values, attitudes, skills and processes that can be realised as part of normal classroom activities across a much wider spread of subject

Human Rights and Democracy Education Core Curriculum

Core Values

Sound life
dignity, self-esteem, safety and security of persons, good health (mental, physical and emotional)

Equality
equality and equity, justice

Cooperation and Coresponsibility
sharing, caring, tolerance, collaboration, respect for the law

Freedom and Liberty
opinion and expression, association and assembly, thought, conscience and religion.

Attitudes
acceptance of self and others
respect for self and others
patriotism
sensitivity (eg, gender, race, ethnicity)

Concepts
Democracy, freedom, tolerance, peace, self-determination, rule of law (at national and international levels), equality, unity, constitution, equity, rights, respect, responsibility, values, patriotism, gender.

Skills
Communication, negotiation, decision-making, listening, analytical thinking, judgement (souind), assertiveness, critical thinking, ability to look for information.

Processes
Decision-making, conflict resolution, negotiation, team-building

Teaching materials for all subjects should, where appropriate, reflect these ideas and the attention of the teacher should be actively drawn to them. Materials writers are referred to the teacher materials that have been produced for this cross-curricular theme.

Environmental education

Enviroteach materials

Teacher materials have been produced over several years by the Enviroteach Project. Although these materials are well-produced and easy to use, they have had a limited impact mainly because the issues that they address do not feature in the mainstream curriculum and hence teachers have had no need for them. They have been used mainly by teachers who have viewed the promotion of a concern for the environment as part of their duty as teachers and they are addressed mainly at teachers operating at a professional level.

Environmental teaching processes

Current thinking on the teaching of environmental issues is now focussed on mechanisms for integrating it more closely into other subjects by developing teaching *processes* that develop concerns for the environment as part of the study of mainstream subjects.

These processes are particularly useful as they can be used by materials writers as a mechanism for devising an opportunity for active learning in any topic which has an environmental dimension.

The process involves three stages:

1 Finding out about an environmental issue.
2 Carrying out investigations into an environmental issue
3 Taking action for a better environment

Of these three activities, it is arguably the third, involving action on an environmental issue that is the most effective learning activity. It is also, unfortunately, the one least often undertaken; most teaching on environmental matters stops at the first stage, gathering information.

Because of time considerations and syllabus constraints, it is not easy to fit stage 3 activities within normal teaching periods. Many schools, however, take part in the various national competitions, such as Young Scientist, which stimulate environmental activities of this kind. Teaching materials can be a useful initial source of ideas for such activities.

This process is described in the box. This description is taken from the teaching materials already prepared which material writers should consult for further information.

Active learning process for teaching about environmental issues

Active learning can occur spontaneously but appears to happen best where it is planned and enacted with learners in their local environment. With relevant risk, issue and focus at the centre, learners can become actively involved in three interlinked processes

- **finding and sharing information *about* issues**
- **exploring and questioning investigations *in* the environment**
- **reporting and taking action *for* a better environment**

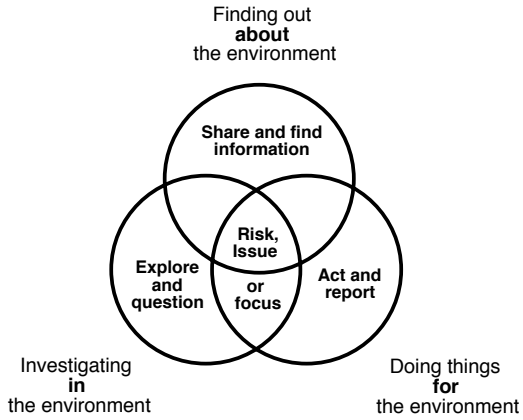
These learning processes are open-ended and can thus happen in any order and over and over again.

1 Sharing and finding more information that raises questions to be explored, reported and acted upon.

2 Exploring a question and getting information before reporting on the issue or taking action in some way.

3 Taking action by trying out an idea, exploring how it works and getting more information to make it work better

Where schools provide an active learning environment, learners are able to find out about the issues, to examine these, and to take critical action and report their ideas. To bring local or topical issues into learning programmes, simple questions can be used to guide and assess learning outcomes.



This can be encapsulated in the following diagram.

Applying the model in teacher materials

The table below gives examples of how the three components of the environmental awareness process might be applied to existing syllabus topics. The right hand column shows outline examples of the three kinds of activity that could be devised around the topic on the left

Applying the environmental education model in teacher materials

Topic	*Environment awareness activity*
Energy	**1** Study of energy sources and environmental implications such as pollution and global warming **2** Investigation into local use of renewable and non-renewable energy sources **3** Promotion of fuel efficient stoves at home. Construction and use, from readily available materials, of a solar cooker
Local Water Drainage	**1** Study of river systems and the uses that we make of them. **2** Investigation into the use of a local river system to dispose of waste **3** Campaign to promote alternative ways of disposing of waste that does not lead to the pollution of local water sources
Health problems caused by impure drinking water	**1** Study of problems caused by drinking contaminated water **2** Investigate different methods for purifying water for drinking **3** Construction and use, from readily available materials, of a solar still for making potable water

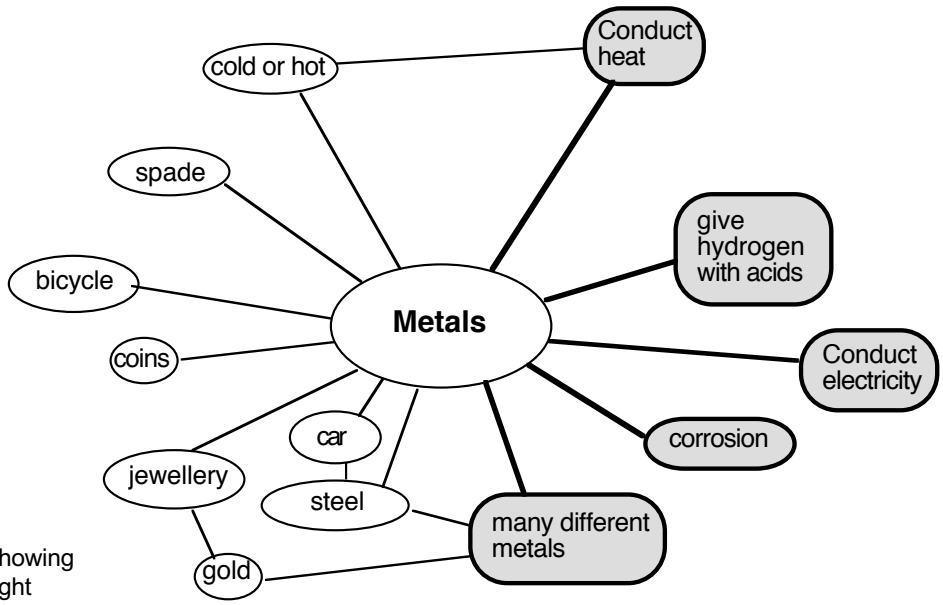
Chapter 7
Teaching the subject in English

The problems associated with teaching in a second language should be specifically addressed in teacher materials. The role of language in concept development is considered and from that a number of suggestions are made about when to use English and when not to use it. Ideas are suggested for minimising the language burden and for developing English skills alongside subject understanding.

Concept formation and the role of language

Constructivist research shows us that children usually bring to lessons some ideas about the topic of lesson. Teachers realise that it is important to try and find out about these ideas before they teach the topic, because some of them may conflict with what they have to learn. The teacher then must modify the ideas in the lesson.

We all learn many things intuitively. This means we learn them through experience. We do not use language when we learn them. Some of these ideas cannot even be expressed at all in language and these ideas are called 'tacit knowledge'. Riding a bicycle is a good example of tacit knowledge. Try telling someone how to ride a bicycle; you cannot.



A concept map showing how a learner might understand the idea of a metal

Most concepts at school are developed through language rather than through intuition. The diagram above shows some ideas that a child might have about metals. The concepts on the left are one that she might have learnt intuitively or in an earlier lesson. She will have learnt by touching metals that they can sometimes be quite cold but if they are left in the sun they can feel very hot. She will know that much jewellery is made of metals

The concepts in grey are ones that will be taught in a lesson which cannot readily be understood without language. Most of these concepts will probably be developed initially through the home language.

Home language and concept development

Many classroom studies show that children tend to use their home language to 'take over a concept and make it their own'. This is the process by which children come to understand the real nature of the concept. Only when they have done this satisfactorily can they talk about it or write about it either in their home language or English.

It follows that children should have a good mastery of their home language if they are to use it for complex reasoning in school subjects. It also follows that children should be allowed time in lessons to use their home language to internalise new ideas. Discussion with their friends in groups is a good way of doing this.

What is code switching and why is it important in learning?

Much research from all over the world, including African countries, into learning science, shows clearly that the learners that learn best are the ones that are good at code switching. So what is 'code switching'?

Children talking in the playground at break will probably will not be using English. They will probably be speaking their mother tongue. The language they are using will probably not be the same as the language they would use if they answered a question in class in their mother tongue?

The playground language is different from the mother tongue used in the classroom. The sentences will be shorter. They may not be grammatically correct. They may use words that they would not use in the classroom. They will not use many different words. The children are talking *informally* whereas in the classroom when they answer questions they will talk more *formally*. The playground talk is *private talk*. Answering questions in the classroom is *public talk*. We call these kinds of public and private talk,

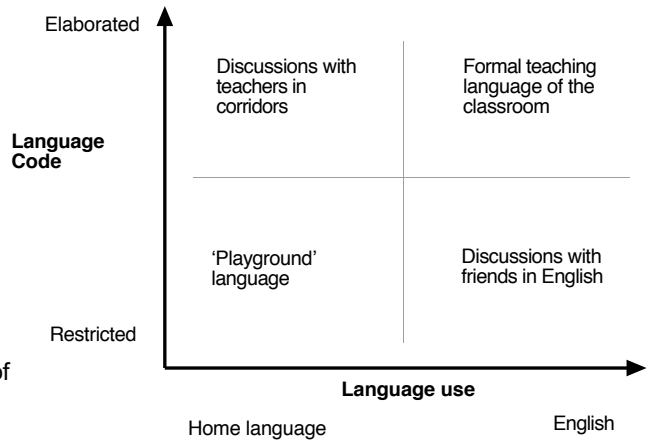
linguistic codes. Moving between these kinds of talk is called *code switching*.

An important research finding is that children who learn to switch codes easily are the ones that do better at school.

The use of different liguistic codes by the learner at school is summarised in the table and illustrated on the chart

Language Activity	*Language code*
Talking between themselves in the playground	Home language - *restricted* code (simple sentences, not well constructed etc)
Talking with a teacher in the corridor	Home language - *elaborated* code (correct grammar, fully constructed sentences, etc)
Trying to put together an idea in English - such as discussing the result of an experiment with their friends	Mixture of home language with simple English phrases and vocabulary
Answering a class question in English	English - elaborated code

Note that the classroom language tends to be concentrated in the most difficult corner of this chart; the elaborated use of English. But this is precisely the corner where learning is least likely to occur well, and so we should consider how to make use, in lessons, of other parts of the graph, particularly elaborated home language. This chapter makes some suggestions on how this might be done.



Diagrammatic representation of language use by learners

Ten principles of good language teaching

The table below shows ten straightforward principles of good language teaching. It is immediately clear that many of them are simply principles of good teaching generally. If learners are allowed to do the kinds of things that are a normal part of a good lesson, and if the lesson is well prepared so that there are plenty of aids to learning available, then the lesson will also be a good language lesson.

Principle	***What it means***	***Consequences for teacher materials***
1 The Here and Now principle.	Language that is describing something that is happening here and now is learnt easily.	Put in hands-on activities.
2 The need to communicate	Language is learnt best if the learner has to communicate and understand.	Include opportunity for following instructions and opportunity for talking in groups about an experience
3 Using non-linguistic ways of handling information	If learners do not necessarily need to use language to learn and to organise information, then the language becomes less of a problem to them. It is helpful to *spread the language burden* over different activities. Use experiments, wallcharts, graphs, diagrams, tables, etc.	Include suggestions for hands-on work, wallcharts, graphs, diagrams, tables, etc. All thse are ways of arranging information that does not place a great language burden on the learner. All these can be used to cover the same information in different ways. The chalkboard is the most important visual aid.
4 Repetition of the same subject matter in different ways	This has already been mentioned under point 3. Think up different ways of teaching a topic it so that repetition does not become boring. Ensure that any new and/ or important vocabulary is clearly introduced as part of this, and that it is displayed permanently preferably in a special place always set aside for new words.	Include different ways of teaching parts of each topic. This is a technique that is frequently used by teachers but often the repetition makes it boring. Think of unusual interesting ways of covering the topic.
5 Allow plenty of time for learners to respond to questions	Learners need both thinking time and translation time. Do not be afraid of long silences in the lesson. Allow learners to use their first language if necessary.	This is an important issue and should be given prominance in teacher materials. Examples of questions and acceptable answers might be given, together with new vocabulary that learners may need assistance with.
6 Strong focus on key ideas.	Second language learners often find it difficult to tell the difference between the key ideas in the lesson and the less important parts that are used to illustrate the key ideas. The teacher should clearly focus on the key ideas. The key ideas should be described in a few clear words and repeated several times. The key ideas should be written down as well as spoken. They should be repeated at the end in some kind of summary.	The key idea(s) of the lesson must be clearly indicated in the materials. Vocabulary lists associated with the key ideas can be given so that these can be defined and displayed.

Principle	*What it means*	*Consequences for teacher materials*
7 Use a variety of language activities	Language activities are reading, writing, listening and talking. Include as many as possible to spread the language burden. Learners weak in one activity still have the opportunity of following the lesson through other ones and by so doing, are likely to improve their mastery of the weak element.	Include ideas for group discussions, reading from the textbook, good chalkboard work, etc
8 A relaxed teaching style, classroom banter and jokes, and an easy interaction with the learners. (banter means light and humorous talk)	Paying attention to a foreign language is much more intellectually demanding than following a discussion in the home language. Because of this, learners are much more likely to switch off. The lighter elements in the classroom discussion encourages the children to pay attention to what is being said. They do not want to miss anything	This a matter of personal teaching style and not easy to cover in teacher materials. Home language, as well as English, can be used for this purpose as it is the way that teachers use to bring out their own character in a lesson. A mixture of the two languages for this can be encouraged.
9 Make lessons as interactive as possible.	Give learners lots of opportunities to speak and to interact with the teacher and other learners. Teacher-centered courses do not help learners in their language development. Allow home language here as well as english (see below)	Suggest ideas to give learners group and/ or pair work.
10 Develop the content ideas and the language together	Good language-sensitive practice allows teachers the opportunity to develop both subject knowledge and language skills together. In other words, they support the learners in meeting the language demands the subject makes on them	Suggest a carefully structured mix of activities, many of which can be supported by non-linguistic methods of learning such as activities, charts and other visuals

Improving understanding in the classroom

This section elaborates on some of the ideas in the table above and gives some suggestion, for including in teacher materials, on how to assist learners overcome the restrictions to learning that are imposed by studying in a second language.

Spreading the language burden over different activities

Present a topic in several different ways

Presenting a topic in just one way (a lecture or questions and answers), means that if learners have not fully understood it, they do not get a second chance. Presenting the topic twice in the same way (such as teacher talk with questions and then a summary of what has been covered) means that the learner is likely to misunderstand it in the same way twice. Present it in different ways and this spreads the

language burden. If the learners do not fully understand it one way, they have a chance to improve their understanding the second and third time round.

The table below shows an example of a science topic covered in several different ways. It is a description of an actual lesson observed at Goreangab JSS, Katutura. In this normal science lesson, the topic is covered **ten** times in different ways. It is unlikely, after this, that language has prevented understanding. (But note that language might still prevent the learner from describing what she has understood, in English, and so a test result might suggest that she has not understood it well)

Activity	Method of presenting the topic
Give instructions to the learners on how to heat some substances	Giving instructions orally
Summarise the instructions on the board	Giving instructions visually using language
Draw a sketch of the apparatus on the board	Giving instructions visually using a graphic
The learners carry out the experiment. They discuss it, in their home language, as they work	Activity and group discussion in home language
Ask one of the learners in one group to describe what happened. The learner describes what happened in English.	Learner describes what happens
The question was repeated to another learner in a different group. The learner responds in English	A second learner describes what happens.
A third learner to write the result in a summary table the teacher has written on the board. This is repeated for all the experiments done	Learners get a visual summary of the important observation and conclusion
The teacher then carries out, as a demonstration, one of the experiments that the learners had already done. While she does this, she comments on it in clear English, also asking the learners one or two questions.	A further opportunity to see the experiment and to hear the english describing each bit of it
The learners write the instructions, the table and the sketch down in their books.	Opportunity for learning through writing
Homework is set to read a section in the textbook about the experiment.	Opportunity for learning through reading

Table showing how a science topic was repeated in a variety of different ways

Focus on specific language items that are characteristic of the lesson

Many lessons may use very specific language items. In science, for example, the writing up of experiments is often done in the passive voice. Close observations often use adjectives like the names of colours. Comparisons make use of phrases like 'greater than', 'smaller than', 'different from', and so on.

It is often possible to use a lesson to focus on the use of a particular language item. This can be done as a matter of routine by just adding an additional column called 'language items' to the standard lesson plan. The table below shows some examples of language items that might feature specifically in certain lessons (in this case, again, in science).

Activity	**Language item**
Classification	Similar to, different from, like, unlike, same as, Generic nouns like insect , arthropod , herbivore metal, acid , salt ....
Sequencing	(events in time) First, then , before, after that, finally
Listing	(points in a list) Firstly, secondly, fourth, fifth (etc), last, lastly
Comparing	Most, least, more, less, larger than, similar to, different from, tabulate, plot a graph
Predicting	Logical connectives - because, therefore, If.....then, The future tense; if starch is present the iodine *will turn* purple
Calculating	Mathematical language items such as plus, minus, makes, approximately, about, exactly.
Planning	First we should, let s, then, after that, finally, etc.
Drawing conclusions	Draw a graph, the results show that, looking for a pattern, same, different, because.
Writing an account of an experiment	The substance *was heated* carefully The voltage and current *were noted* .

Table showing how specific activities may be linked to characteristic language items

Group work

Group discussions about work allow the learners to develop an understanding of the topic using their home language. If the groups know that eventually they will be asked to report in English, they will probably begin to use English in their group discussions, as a kind of 'rehearsal' for reporting. This should be encouraged.

It is important that the learners are very clear what they have to do in the group work. Instructions should be clear, written on the board (or put in a diagram form like a flow chart) and repeated in home language if necessary. At the end of the group work they should report in english. This report van be verbal to the class or it can be in a written form such as writing in an exercise book, completing a table on the board, etc.

One way to help the final reporting is to put key vocabulary items or phrases on the board. (The phrases should closely match what they have to do. If they are comparing, put comparison phrases on the board, etc). A special area on the chalkboard that is set aside for language matters is a very useful.

Teacher materials can suggest both the instruction list, perhaps in a the form of a flow chart, and also the important language items that will feature in the lesson

Examples of different kinds of group work

Group practical work
The group works through an investigation and discusses it. Ensure that all are engaged in this in some way and that different group members take the lead each time.

Games.
Simple card games such as 'matching pairs' and 'happy families' can add a new dimension to most learning problems. Include card masters in teacher materials.

Role-plays and simulations.
Using learners themselves as aids to understanding is an idea that can be adapted to almost any subject from mathematics to history and can be as simple as adding up 2 and 2 or as complex as renacting an incident from the past. In all cases, the object is to create something that is immediate and that ceates a need to communicate.

Group projects and posters
The communal designing and production of something that is subsequently presented in English is a useful language learning exercise.

Information gap and information exchange activities
This kind of activity will take place when groups are talking about some group activity that they have just done. The group work creates the need for the understanding of the issue and learners assist each other by exchanging comments, usually in the home language. These are useful because there is a two-way exchange of information. A good way to use this kind of group work, from a language point of view, is to ensure that each group works on a slightly different problem. At the end they are given the additional language task of explaining to the other groups what they have been doing, in English.

Problem-solving and decision-making.
An important skill that often neglected by teachers is designing activities to solve problems. This is usually best done by learners working in groups.
Examples:
- Which polythene bag is the strongest?
- Which brand of soap works best?
- How big is the classroom?
- How fast can you run?

- How can you find out what are the most important issues in the local community.
- How far does the average learner walk to school?
- What kind of clothes are the warmest?
- .....

A surprisingly large number of topics on the curriculum can be turned into a problem that can be discussed and the solutions can be tried and discussed

Opinion exchange - discussions and debates
Social issues are often best handled by group debate. Environmental issues are examples. These can be local issues - such as what to do about an area near the school that is used as a rubbish dump, or how to encourage tree-planting - or global issues like the greenhouse effect.

Take care that one or two good linguists do not dominate the discussion.

Clear simple questions

Questions should be clear and simple (only one or two clauses) and teacher materials can give examples of good questions. Questions that can be answered correctly by just one or two words are useful. When the learners have gained the credit for answering the question correctly by giving one word, they can be encouraged to put the answer in a full sentence. The learner will not then feel penalised for not knowing the language when he does know the science

T. "What happened when you heated the water?"
L. "Bubbles"
T. "Correct, good. Can you now give the answer in a sentence"
L. "Bubbles went up from the bottom"

Teacher materials might encourage a good questioning strategy which allows learners to work collaboratively to get the correct longer sentence, either by asking around the class for it or by asking for it in the home language and then help with the translation.

Time for thought

Teachers must be encouraged not to fear silence. Immediate answers to questions should not be expected. There is probably a lot of translation going on in the classroom and that takes time. Encourage a good questioning style; repeat the question simply and clearly a few times, but *do not* try and fill in the silences by repeating the question in ever more complex ways.

Good use of visuals

The best visuals are the ones that the learners handle. Activities involving objects are very good for language teaching.

Other visuals help also. Any method of displaying information at a glance, that does not use long sentences, helps language. Tables and flow charts are very good and can be quickly drawn on the board.

The chalk board is a powerful learning tool if well used. It must ***never*** be full of a lot of writing. Use it carefully and think in advance of the best way to display the information you want to get across. You can use colour effectively to highlight key information.

The VSO book on "Making and Using Visual Aids" contains a lot of good information on how to make and use simple clear visuals.

The table below gives a number of examples of visuals appropriate for different kinds of lessons or activities. The use of very simple visuals, such as a table to display results rather than paragraphs of writing are surprisingly helpful to second language learners. Almost all lesson topics could be displayed in some kind of visual and teacher materials should make useful suggestion.

Example of as lesson or activity type	Appropriate visual
Classifying - Using a key - identification of trees using leaves	Classification tree
Putting eventsin sequence or objects in order	List, flow chart
Any activity that involves a series of events. instructions	Flow chart
Anything that generates a sequence of events or observations or results	Table
Showing geographical or spatial relationships	Map
Demonstrating similar characteristics, classifying, summarising information	Diagrams
Displaying statistical information, showing relationships	Graphs

Lesson planning; strong focus on key ideas.

Lesson objectives should be very clear in the teacher materials. Second language learners often find it very difficult to distinguish between key ideas and illustartive matter in a lesson. The key idea(s) of the lesson must be clearly identified and teachers encouraged to ensure that learners are always clear about the object of the lesson.

Key ideas should be repeated in different ways, both written and verbal. These key ideas should be obvious at the beginning of the lesson; the learners need to have a clear idea of what the lesson is to be about. The key ideas should be followed up and referred to throughout the lesson and the conclusions at the end should return to them. These ideas can be repeated in different ways, by statement, by examples, by tabulating, by interacting with the learners, etc.

Collecting information and sorting out what is important from what is not.

This is a common activity in many lessons. Learners are required to distinguish between what is important and what is just supporting information. For first language learners, picking out important information may only present a slight pedagogical problem, but this problem is much more significant in second language. The process of finding information in a text, for example, even if it is in a readily accessible form such as a table, is very laborious because the learners cannot scan through the source quickly, rejecting the redundant material. When more than one source is to be scanned, the task is often overwhelming.

Teachers must be aware of this difficulty and assist learners with strategies for distinguishing quickly between what is significant and what is not. Learners should be given much practice in these kinds of activities.

Practice can be given in extracting information and writing it down in a different form. These are sometimes called 'translation activities'. Here are some examples of translation exercises. They can be done either individually or in groups. Give specific examples in teacher materials that teachers can use in class.

- Extracting information from a written paragraph and putting it into a table.
- Writing a paragraph about the information shown in a table
- Converting a list of instructions into a flow chart.
- Converting a flow chart into a numbered list of instructions
- Writing a paragraph about what is happening in a diagram
- Drawing a diagram or sequence of diagrams showing what is written in a paragraph
- Extracting numerical values for physical quantities from statements in a descriptive paragraph

This last point is often met in modern examinations when a question is given an everyday context (physics or mathematics particularly). Learners who have not had practice in this kind of translation activity often get the answer wrong, not because they do not under the subject matter but because they cannot extract the information from the question.

Making the classroom a language-rich environment

What is a language-rich environment ?

Imagine that you are walking through a village that you know. What language do you see and hear? You will hear people talking. You may hear speaking on a radio. You will probably see words like 'Bar' or 'Coca-cola' somewhere. What else will you see and hear? What is the language that you see and hear? Is it English?

Now walk down Independence Avenue in Windhoek. What do you see and hear? What language are you seeing and hearing? Independence Avenue in Windhoek is a language-rich environment; language is seen and heard everywhere. And the language very often is English. A language rich classroom environment is one in which much language can be seen and it can readily be understood.

Teacher materials should give ideas on how teachers can create such an environment in their classrooms.

How can we create a language-rich classrooms?

Good visual displays

Good visual displays that have clear language that describes or explains the displays are useful. They should be changed regularly. Topics currently being taught in the room can be illustrated by posters and by concrete examples. Current newspaper cuttings related to the topic are useful in the higher grades.

A 'new word' display board

This is a useful primary teaching idea that should be adapted to secondary subjects also. Whenever a word is used that is new to most learners, attention can be drawn to it and its use, and it can be added to the word display board (or poster). It should not remain there for long. Such a display is only useful when the context of the word is part of the current lesson.

Glossary of current words

A glossary of words that are part of a topic can be put on display for the duration of the topic. Glossaries of terms used in each topic can be built up on the display board and added to (by the learners) as the topic progresses. Old glos-

saries from previous years should not be used as the process of creating the glossary is a language learning activity.

The 'nature table' and the 'interesting mathematics' or 'local history' corner
This is a well-known primary technique that can be extended into any room. Items of interest can be exhibited but they should also be clearly named so that the name can be read across the classroom. The items on display can be items of general interest, or items taken from the current topic, or items of general interest. Even though the items in the corner may not be relevant to te current topic, a little discussion about them is good for language development and good for developing a liking for the subject and so is time well spent.

Teacher materials can list possible items for the 'interest corner'

Reading

Encouraging reading

The best way for learners to improve their reading is by reading! Teacher materials should encourage the use of good learner texts. Some ideas on how to do this follow.

Pre-reading activities

Suggest some pre-reading activities to build up the learners' background knowledge before reading by doing pre-reading activities:

- predicting what the text will be about by looking at the title
- discussing the topic in groups
- answering opinion questions such as "I agree/I disagree" with statements about the topic,
- brainstorming about the topic
- introduce new vocabulary

'During reading' activities
Train learners how to skim and scan a passage before doing in-depth reading.

Learners will also need training in 'finding their way through' a specific book. They will need help in sorting out the main text from other text such as activities, picture captions, etc, which may be separate from the main text. They will also need help with getting information from tables, graphs, pictures and diagrams (see 'translation activities, above page 33)

'After reading' activities

There are many ways to tell if learners have understood a passage. The usual way uses reading comprehension questions but these are dull and time consuming. Below are some other ideas for teacher materials;

- have learners add a title to a passage that doesn't have one
- ask learners to write their own questions and give them to their classmates
- ask learners to summarise the content of the passage
- ask learners to guess what happens next, or what happened before the event
- ask learners to presenting the content in another way such as by drawing something that illustrates the text, making a map, listing events, making a diagram or flow chart, etc (see 'translation activities' above page 39)

Writing

Why learners should be given writing tasks.

There is a tendency amongst teachers of a number of subjects in a second language to minimise the amount of writing that is done. Because the children are so bad at it, the argument goes, it is not a particularly rewarding exercise as far as learning the subject is concerned. However this creates a number of problems:

- It denies the learners a vital opportunity to practice free writing skills

- It also fails to take into account of their needs in public examinations. In the latter case in Namibia, in both the IGCSE and JC examinations most subjects, learners are not penalised for lexical and grammatical mistakes, but this is not the case in the english examinations at these levels which must be seen, even by other subject teachers, as of equal importance.

- Lack of practice at marshalling thoughts on paper leads to a lack of ability to do it in an examination. The examiner may then be unable to give the candidate benefit of any doubt arising from ambiguity due mainly to lexical or grammatical mistakes.

- Writing a personal activity and it is when they are doing it that learners have a chance to think carefully about the correctness of their English. This is something they cannot do in speech. And when they are thinking about the language, of course, they are also thinking about the concepts they are writing about. This is the 10th characteristics of good language teaching listed on page 33

Techniques for encouraging writing skills

Training in writing skills

The subject teacher must develop a repertoire of techniques which will allow the learner to develop writing skills by degrees. Many teachers develop such ideas in response to difficulties in the subject content rather than language and so there is nothing mysterious about them. Here are some of possible ideas for teacher materials:

- Give careful guidance in writing. The guidance might be visual such as writing a sentence to explain what is happening at different points in the water cycle or describing how a pictured piece of apparatus works.

- The sentences may be started off by the teacher and left for the learner to complete.

- The sentences may be written in response to questions about a table of results.

- The selection of a phrase (from several given ones) to fill a gap in a given sentence.

- The completion of a piece of writing for which subtitles are provided.

- Completion of a table or grid with short phrases. Subsequent use of the grid to answer questions.

- Writing frames. The learner is given the subheadings of a piece of writing, together with sentence starters and key words and phrases that are appropriate. This is a good way of writing, for example, an account of an activity. Headings such as these can be used:
  - What we were trying to find out
  - What equipment we used
  - What we saw (or 'what we measured', or 'what happened')
  - What we found out

  Under each of these headings give essential vocabulary and some useful phases to help and remind them what to write.

Task such as these can become a vehicle for language teaching in subject lessons. The teacher can then proceed from the elementary to the more difficult as the mastery of language progresses.

Treat writing as a process.

Learners will not produce a perfect essay or composition the first time they write it. Therefore, an assignment such as, "Write 100 words on the topic of "Early Mankind,"' will not produce very good results. It also does not help learners

improve their writing. Give them opportunities to brain-storm on a topic (e.g. clustering, listing, discussions, free writing, etc.), to organise their ideas, to write a rough draft, and to get and give feedback through peer editing. Take all parts of the writing process into consideration when marking as well.

Home language will feature a lot in this thinking process and lead to the final draft in English. Note, however, that it is not a good idea to do the whole process in home language and then do a final translation into English. This does not permit the thinking of language to take place at the same time as the thinking about the content, which is important (page 30)

Write about something that they have experienced
Think of all the activities that are the normal part of active learning. All these process can involve writing of a kind that is easier than free expression. Learners can make lists, outlines, recipes, reports, journals, graphic presentation of data, tables, figures and charts, and design models. All these encourage writing and also are good content teaching.

Teachers can help with each process by giving useful phrases for each activity

Incorporate creative writing tasks into the content class.
Learners often enjoy this and it adds an extra, more human, dimension to the teaching. Poems, such as the diamante, acrostic, or haiku, work well.

F*armers*
Humble, poor
Enjoying, growing, hardworking
Faithfully, noisily, selfishly, powerfully
Stealing, imposing, counting
Royal, amazed
Emperor

***S**ulphur*
***C**alcium*
***I**odine*
***E**rbium*
***N**itrogen*
***C**arbon*
***E**lements*

Matthew Perry sailed.
He came to Japan to trade.
He brought them presents.

When to use home language and when to use english

Principles

Current thinking favours the use of both home language and english in lessons taught mainly in english. It is important, however, to know when to use each language. There are two important points for inclusion in teacher materials:

1 Concept development usually requires the home language

Most learners usually think in their home language. They need to be able to use this to 'internalise' new concepts. They will need time and help in lessons to do this.

2 Formal classwork, tests and examinations require English

Once learners have internalised concepts they must be able to express them in English. They will need help with this process

When home language might be used

Here are a few examples when home language might be used.

- When learners are talking about the ideas in small groups. This is a very important feature of second language teaching. It allows learners to assist each other in a way that the teacher cannot; the teacher cannot talk with all the class as individuals.

- It is best to use simple English to explain new ideas wherever possible. Home language can be used by the teacher if he or she runs into problems with explanations in english. Always follow up again in english, perhaps after learners have had time to discuss the idea amongst themselves.

- When the teacher is giving instructions, to make sure they are understood. Give first in English, then in home language, then again in English.

When English might be used

- On all formal occasions in class; when questions are asked and answered. Allow first, simple (one word) answers and then encourage learners to form sentences.

- When groups are reporting on their group work. The group work will have been conducted in the home language and so the results of it must eventually be translated into english. Learners tend to do this in a natural, gradual way as their thinking about the topic develops.

- In all written work and testing.

Mixing languages

Mixing English items in the home language
In some subjects, particularly mathematics and the sciences, the home language may not have the vocabulary needed to express the precise meaning required. In such circumstances, borrowing from English frequently occurs. This is helpful to the process of internalising concepts during informal discussions. It should not, perhaps, be used when formal home language is used unless the use of the borrowed word(s) is common.

Mixing home language items in English
This is often helpful when new ideas are introduced that involve new vocabulary. Teachers may wish to add the home language word for something (or a home language phrase describing it) as part of an explanation in English.

Using Afrikaans when it is not a home language
Because Afrikaans is the main cross-cultural language in Namibia, it is sensible to use it in situations where it may enhance learning, particularly if other strategies are failing. It can be used at the informal stage of learning to assist learners grasp concepts, but not at the stage in the learning process when the aim is to express the learning in English. It will be of most use in situations where there is no home language that is common to the whole class, such as occurs in areas such as Katutura. It may be useful, for example, to give instructions both in English and Afrikaans (and then English again) to ensure they are understood. In these circumstances, all that has been said about home language can also apply to Afrikaans.

Language policy

The early language policy developed shortly after independence, although expressing clear political ideals, imposed some undesirable limitations on classroom practice which in turn has led to a conflict between what teachers, through experience, have felt desirable, and what they are required to do in practice. At the time of writing a revised laguage policy is being considered for use in schools which should allow teachers much greater freedom for multilingual teaching where appropriate. This will legitimise much current practice.

What is important from the point of view of teacher support materials, is that there must always be clear reasons for any language activity, whether in the home language or English.

Examining and Testing

Testing and assessment are used for many purposes. Four common ones used by teachers are:

- diagnostic – to help plan a learning programme
- formative – to monitor the learning process as it is happening and to give it direction
- summative – to find out what has been learned and how the learner is able to make use of it
- skills assessment – to find out the extent to which skills have been grasped.

Serious problems can arise when the real performance is masked by poor language skills leading to an inability to understand fully what the question is about. It is often very difficult to distinguish between poor performance due to language problems and poor performance related to grasp of content.

It is vital that teachers are aware of these difficulties. This section offers ideas for overcoming them through developing test items that test language as well as content.

Consolidation activities that help both content and language

The table lists a variety of exercise types that can be used to consolidate both content and language learning at the end of a lesson or topic.

<table>
<tr><th>Question type</th><th>Description or example</th></tr>
<tr><td>Complete table from a list</td><td>A table is drawn that relates several aspects of the topic taught. Learners are asked to complete the table using key words from the topic text</td></tr>
<tr><td>Complete sentences using a table</td><td>
<table>
<tr><td rowspan="3">A chicken
A cow
A zebra
A lion
A child
A fish
A frog
.....
.....</td><td>eats
drinks</td><td>meat
grass
seeds
fruits
things in the soil
water
things in water</td></tr>
<tr><td>lives</td><td>in open spaces
under the ground
in a house
in water</td></tr>
<tr><td colspan="2">builds a nest
needs lots of space
doesn't need much space</td></tr>
</table>
</td></tr>
<tr><td>Heads and tails activity</td><td>Beginnings and ends of sentences are shown in incorrect order. The learner is required to match the heads with the correct tails</td></tr>
<tr><td>Make up a sentence using missing words from a list</td><td>We can get water from a tap, a well or a …… Water can contain germs from …….. or humans. Germs can make you ill. In most towns in Namibia, water is ……. Water is purified by adding a chemical to it to kill the germs. You can also kill the germs in water if you …….. it.

Words: animals boil purified river sewage cockroach</td></tr>
</table>

Question type	Description or example
Write some sentences about a picture using words and phrases provided	Picture, words and phrases are provided. Learner is asked to make up true sentences about the picture
Matching captions to pictures	Show a set of small pictures in correct order representing the events in activity, labelled with numbers, plus a set of wrong-order captions labelled with letters. Children match numbers and letters e.g. A6, B2, C5 etc
Matching pictures to captions	the reverse of the procedure described above
Drawing pictures to match given sentences	Simple idea to test the understanding of a sentence. Can be expanded into drawing a series of ralated pictures abourt a series of sentences
Write sentences about a picture or pictures.	Learners write sentences about a picture. They can be given various degrees of help Sentences may be started or a set of phrases or words supplied
Show a set of pictures in the right order. Learners write complete captions either freely, or if they need support, provide a box with useful words	*Here are some pictures of parent animals and young animals. Match the parent with the young one.* *(Small sketches of ostrich, ostrich egg, elephant, baby elephant, butterfly, caterpillar, snake, snake egg drawn in random order)* *Now label each drawing. These words will help you; ostrich, ostrich egg, elephant, baby elephant, butterfly, caterpillar, snake, snake egg*
Make a poster using words given	A useful way of testing broad understanding of a whole topic
Complete true sentences given a particular grammatical construction	..... is bigger than .... has smaller feet than ..... These are examples where the connectors are shown. There reverse gives items and the learners insert the connectors (from a list oif necessary) that connect them

Examples in italics are taken from Science 4, the Grade 4 Science textbook published by Heinemann

Contextual examination questions

It is accepted modern practice to try and relate the content of examination questions to everyday life. This also tests the ability of the learner to apply knowledge learned, to a new situation. However, there is much evidence that unless it is done sensitively, the verbiage can easily obscure the content in the question, for a second language learner. The learner cannot answer the question because he or she cannot understand it, not because he or she does not know the content.

There are two solutions to this:

- Teachers must take care to devise questions that do not use too much difficult language. Pictures and diagrams can be used to provide the context instead of a lot of text.

- Learners must be given training in recognising such question types and in mastering procedures for getting the information out of them before solving them.

Ideas for training in solving contextualised problems that could be incorporated in teacher materials.

1 Train learners to express context questions using pure content
There are six times as many students as there are teachers. If there are five teachers, how many students are there? Express this as a mathematical relation.

2 Ask learners to ***devise*** *contexts for questions*
This example starts with a a mathematical relationship and asks for a context.

Give learners a problem such as 9 – 3 = ?
Ask them to devise contexts for this question. Examples might be:
- What is the difference between 9 and 3
- I have five cows and three die. How many do I have left
- Mary is 9 years old and she is 3 years older than Dutte. How old is Dutte

3 Give practice in developing standard step-wise procedure for extracting data from context questions.

This example is taken from a science problem:
The electrical system of a car runs off a 12v battery which stores 40 amp-hours of charge. If the car headlights have a power output of 24 watts each, (a) what is the current taken by the headlights, and (b) how long will the fully-charged battery last if the lights are accidentally left on.

Procedure for solving problem (a)
Step 1. Identify the unknown variable (*Answer, I*)
Step 2. Identify the known variables (*Answer V, W*)
Step 3. Identify the formula used to solve the problem (*Answer I=W/V*)
Step 4. Are there any little tricks in the question that might lead to a wrong answer if missed? (*Answer, the car has 2 headlights, not 1*)
Step 5. Solve the problem

Chapter 8
Methodological issues

Teacher materials are usually designed to illustrate how a given content can be taught by methods that use the kind of methodological techniques that the system wishes to promote. This section draws attention to a number of such techniques.

Study skills

Teaching materials frequently forget to mention study skills. Children somehow are assumed acquire them naturally without help. Teacher materials should reflect the need to teach study skills and provide exercises that allow children to develop these skills. This is not so, particularly in the case of children from educationally deprived backgrounds. This checklist of study skills is not complete as there are many more subject-related ones.

- getting information from a paragraph
- using an index and a table of contents
- sorting out important information from illustrative material
- using a dictionary
- using the library
- learning and remembering skills
- revision skills
- how to answer questions
- writing down information for others to read

And now:
- using the internet and CD-ROMs as sources of information.

Active learning

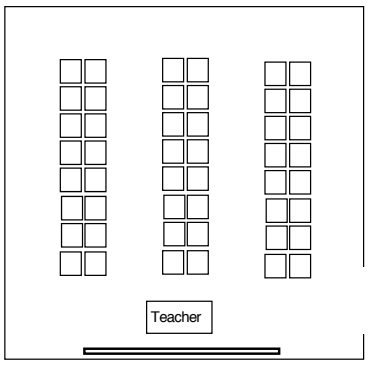
Revolutionary or evolutionary change?

The Ministry of Education, after independence, adopted a policy, the purpose of which was to introduce a culture of active learning in the classroom. Many evaluation reports since then suggest that success in this endeavour has been patchy. The reason for this only limited success is probably not lack of effort on the part of those leading the reform, but an underestimation of the problems involved coupled with a less than full-hearted associated reform of curricula. Many of these problems are analysed at some length in chapter 3 and will not be repeated here.

Observations in schools and discussions with teachers suggest that a significant reason why active learning methods have only taken root selectively is that a number of simple issues related to their introduction were either not addressed or, if they were, were hidden in rather complex reform programmes that the teachers were expected to implement. It is not the intention of this document to repeat any of the ideas presented to the teachers, but rather to try and distill from them, a number of simple and basic ones that can readily be adopted by teachers which will allow a gradual, rather than a wholesale change in existing teaching patterns. Curriculum change is most likely to be effective in the long term if a 'think big, start small' attitude is adopted. Here are some small ideas that might be included in teacher materials.

1 Seating arrangement

Active learning manuals frequently advocate sitting learners in groups. This is often impracticable as there is not enough room and the teacher cannot get round the class easily. Teachers return to the conventional arrangement of rows of desks across the class facing the board. Secondary teachers who may wish to change this arrangement are frequently prohibited from doing so by timetabling logistics, which often require them to move from room to room when the learners stay put, make any furniture rearrangement too time consuming to be practicable.



Seating arrangement to facilitate group work in large classes

The compromise solution illustrated here is surprisingly seldom found. This arrangement encourages group work and also allows the teacher to service the groups from the front fairly easily.

2 Group work

Design short group sessions. This will allow the insecure teacher to experiment without it being a major commitment. As confidence grows these sessions will become longer. Almost all conventional teaching scenarios can be simply converted into a group sessions; discussing a picture in a textbook, jointly solving a problem, answering a question, designing a poster.....

3 Materials for group work

Do not advocate many special materials for group sessions. This makes them easier to plan and also allows the teacher the security of knowing that the session can be ended at any time. Alternative ideas involving more special materials might be added as appendices at the end of a topic for use by the teacher at a higher professional level, and by professional development staff.

4 Textbooks
Student texts are widely recognised as key agents in classroom change (see chapter 2). It is therefore particularly unfortunate that the great majority of the textbooks produced for the new curricula tend to promote the old approach using the new content. They are, in general, heavy in content, linguistically convoluted, have few open-ended activities, investigations or even questions, and there seems little evidence that those responsible for their layout have any understanding of designing for readability.

All this is perhaps hardly surprising; publishers know full well that books that allow the new content to be taught by the old methods will prove the most popular by a rather conservative teaching profession that feels threatened by such a major change. Furthermore, the adaptation of an existing 'old-style' textbook, usually of South African or Boleswa origin, is the publisher's cheapest option.

As the textbook is arguably the main weapon in the armoury of classroom reformers, this situation should perhaps be addressed by subject panels much more critically than it is at present.

5 'Hands-on' work
'Learning by doing' is important not only in science. Small 'hands-on' exercises that are easy to organise offer classroom variety and are not heavily dependent on language.

6 Work outside the classroom
This has the same value as 'hands-on' work. Examples should be simple and clear to encourage it to happen.

7 Drama and role play
This is not easy for the inexperienced teacher and requires a classroom situation that is very different from the normal one. Nevertheless, simple examples can be given, together with clear instructions on how to organise it.

8 Training the learners
The importance of training learners to behave differently in class is very often overlooked. Learners are as insecure about their new role as the teacher is and they need to have a clear idea of what is, and what is not, acceptable behaviour in unconventional classroom circumstances. For this reason, it is useful to introduce new ideas gradually, starting with short small sessions and building up as class and teacher settle into new roles. This must be stressed in teacher and workshop materials.

9 Consolidation activities
Group work left without subsequent consolidation exercises is of little value. Several different consolidation experiences are suggested, particularly for second language learners.

This part of the lesson is likely to be concerned as much with the expression of what has been learned in English, as with the consolidation of the actual learning.

10 The lack of a culture of active learning in the school

If there is no culture of activity-based learning in the school, its introduction by one lone teacher will be very much more difficult. It is quite common for such ideas to be rejected by the learners themselves who feel that they are not being taught 'properly'. For this reason, it is much easier if there is a concerted effort to introduce activity-based lessons across many subjects by a group of teachers working together and sharing experiences. If the teacher has to work alone, activity methods are more easily introduced gradually, starting small but 'thinking big'. Teacher materials should reflect this need.

Differentiated learning materials

Teacher-directed lessons proceed at the same pace for all learners. This tends to be an 'average' pace and as a result the faster learners are not challenged and the difficulties (often language-related) of the slower ones are not addressed. Activity-based learning offers opportunities to support learners who learn faster than the majority in the class and also those that are having difficulties. A concentration on individual and group work offers an opportunity for remedial work with slower groups and additional work with faster groups at some stages of the lesson. All learners will follow the 'core' of the lesson but at some stage they may find themselves doing different things according to their need.

1 Core activities

Each lesson should have a core activity and consolidation work that is done by all learners. This should preferably involve some kind of group work or other opportunity for the learner to internalise the ideas (in home language) followed by consolidation exercises. These will be done by all learners.

2 Extension and remedial work

Further consolidation activities can be tailored to the different needs of the children. Some activities can be designed to extend the faster learners while others can be further simple examples that reinforce and repeat in a different way, the core activities. Teacher materials should have examples of both of these kinds of activities.

Sometimes these extension activities may be almost identical for both groups but the faster learners may do them rather differently from the slower learners - this is most easy to

achieve in the more 'creative' subjects and least easy in the subjects, like mathematics and science which are closely linked to a body of knowledge that must be covered.

3 Homework questions
Teacher materials should have examples of homework questions complete with model answers if possible. There is an opportunity here of introducing 'open-ended' questions (where the answer is not pre-determined) that provide an opportunity to extend the brighter learners.

Assessment

Of all aspects of learner-centred teaching introduced since 1991, the reform of in-class assessment procedures has arguably made least progress. In part this may be due to the

Question type	Notes for teacher materials
Repetitive questions to give practice in a procedure to be mastered	Graded examples with answers are useful
Topic items to test basic knowledge	These are the kind of questions that teachers have few difficulties with. Examples of good ones, with answers, are desirable. These are useful when a sure knowledge base is required for the learner to build upon. They should not be confused with questions that test understanding.
Items to test understanding	It is useful to provide a few, together with answers. It is also helpful to show in the teacher materials, by examples, the difference between these and questions which test only knowledge.
Items to test the application of knowledge to new situations	These present particular problems to teachers. As well as providing examples, it would be useful to provide an outline of techniques for writing such questions. Begin the question, for example, with data or a context (a paragraph, description, drawing etc) and then ask questions about the data. A particular problem here is language. Learners may have difficulty with the language of the context rather than difficulties understanding the application. If a method of contextualising the question can be used that is not heavily dependent on language, it is preferable. Examples can be pictures, graphs, tables, maps, lists, flow-charts, etc.
Building a test or exam	See the guide to assessment techniques published by DNEA swhich covers this thoroughly. An important point for teacher materials is to remind teachers that the questions must vary in difficulty so that all learners can achieve at least something.
Questions that help with English as well as content	These are rather specialised and examples could be given. See **chapter 7** on language
Assessment of skills	This has not seriously been attempted in subjects other than the practical ones. The UCLES formulae for skills assessment are rather complex and simpler ones can be designed that do the same thing. A simple method of assessing skills widely applied is to identify components of the skill that the learner either masters or does not master and give one mark for each component mastered.

Assessment tasks that might form part of teacher materials

fact that it is a difficult and complex issue and in part it may be due to rather over-complex schemes of assessment reform, based on the UCLES model, that have been proposed.

DNEA has produced a Guide to Assessment that gives much useful information which will not be repeated here. The table on the previous page is a checklist of different assessment tasks that can be used to suggest ideas which could be included in teacher materials.

Format of questions

DNEA has adopted the formatting rules used for IGCSE papers. These are strict but clear and should be checked so that questions in the guide conform with the questions that might be set in public examinations. These rules concern matters such as rules for mark allocation, rules governing the dependence of subsections of a question on each other, rules for the construction of multiple choice items, and so on. the reader is referred to the DNEA publication, 'A Guide to Assessment'

Chapter 9
Gender issues

Two separate issues are briefly considered, gender bias in the classroom and gender neutrality in the teacher materials themselves. The first issue is covered well in other documents such as subject policies and some hints are given on methods of creating gender-neutral materials

Gender bias in the classroom

The reader is referred to policy documents on gender issues within the service and gender issues in the classroom for more information on this topic. Some issues of this general nature, however, affect the nature of teacher materials and these are briefly mentioned below

Traditional 'single gender' subjects

Subjects like home economics and CDT have traditionally been largely single gender subjects. This tradition has been carried forward to influence the 'new' technologies such as ICT. This gender bias has even been reflected in teacher materials produced for the siubjects. In such cases, great attention should be paid to all aspects of the materials to ensure that the reader's attention is continually drawn to the fact that the subjects should be gender neutral. A useful way to do that is to use rather frequently, the pronoun associated with the opposite gender; 'she' for CDT and 'he' for home economics

Role models in the classroom

Teaching aids and still, even, textbooks, frequently reflect traditional gender stereotypes in illustrations. Biologists are often portrayed as women and physicists are men, for example. If teaching aids such as these are promoted in teacher materials, it is best to ensure that they are either gender neutral or that they promote the opposite of the stereotype.

Classroom activities

Activity based learning is a central plank of governement policy. Whether because of genetic differences between boys and girls, or because of the roles they are required to fill in society, likes and dislikes of boys and girls frequently differ.

Because of this, activities that may appeal to most of one group may be disliked by most of the other. There was considerable evidence to suggest, for instance, that in the USA and UK, the move, late last century, towards increased practical work in the sciences , particularly physical science, contributed considerably to the decline in interest in the subject by boys compared with girls.

Care must be paid to the kind of activities promoted in teacher materials to ensure that the activities themselves are not, overall, preferred by one gender over another. This is particularly important in subjects such as CDT where a new approach is required which ensures that the learners themselves have a considerable influence on the nature of projects undertaken.

Gender neutral teacher materials

The teacher materials themselves must be written in a gender neutral style both grammatically and in content. Below is a checklist that may assist in this.

Examples	Are the examples in the materials showing applications of concept, gender neutral?
Illustrations	Where illustrations are used, is one sex favoured over the other? Do the illustrations betray traditional gender stereotypes?
Traditional roles	Do the examples and illustrations reinforce traditional stereotypes for males and females in society?
Use of pronouns	Are male and female pronouns used equally? A good way of avoiding this is to use the gender neutal plural 'they' and 'their' wherever possible
Use of names	Are girls names used as much as boys names? Does the use of names reinforce any stereotypes?
Questions	Are the questions set in the guides geneder neutral? Do they reinforce stereotypes?
Activities	Is there a good mix of activities that would appeal to both girls and boys?

Chapter 10

Layout and production issues

Good layout is vital. If the materials are not easily accessible, they are unlikely to be used. Materials must be easily navigable and easily readable. This section gives a number of hints on good layout and related matters such as grammar and style

Navigability

It must be immediately clear how to use the guide and what it contains. A table of contents is important and a layout that has a clear structure that is common to all sections and sub-sections should be used. A section might be a particular topic and a subsection could be an individual lesson

Readability

This is the first level subheading. It is in a sans serif font It is right justified

The teachers must be able to know what is on each page without having to read it all. Reading the details then becomes much easier. Using a variety of ways of getting across the information will help this but they must be used consistently throughout the document.

There are many formatting considerations that contribute to the readability of the document. These include margins, indents, character size, number of columns etc. This will be the layout for the 'main story'. There may be other text with different formats but it is a good idea to stick to just one basic one.

This is a second level subheading. It is in a sans serif font and is left justified

Two thirds-one third layout.

A good layout for a teacher guide (and also a pupil text) is called the 'two thirds-one third layout' like this page. One third of the page is a left hand margin. This does not mean it is wasted, many useful things can be put in the margin and also it gives room for the user to make margin notes - very important in a teacher guide. Note - if you use this layout, it is not a good idea to centre any headings as they dont look centred, they just look wrong.

This is a widow. It has become separated from the rest of the paragraph

'White space'

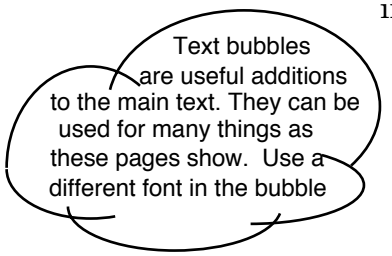
White space on the page is not wasted space. If you squash as much material in as you can, noone will read it, or if they do, they will not understand it. In a teacher guide, white space also gives space for teacher annotations.

Justifying type

Type that is straight against the left margin is left-justified. Type that is against the right margin is right justified. Type that is straight against both is full justified. Full justification looks neat but it is not as easy to read as left justified type. This paragraph is full justified. It is not recommended for teacher materials

Subheadings

You should have a main heading and two or three subheadings, but not more. Each will have a different typeface and size and position on the page. Stick to this throughout the document (it is worth teaching yourself how to use 'styles' in Word or Pagemaker. It makes setting up different subheadings very easy and it also makes making a table of contents easy)



Using the margin

You can put diagrams, pictures or text boxes in the margin or you could extend things like tables or descriptions of activities across the whole page into the margin.

Headers and footers

These are bits of text that appear on every page at the top and bottom. Page numbers are usually part of a footer but you can put other things there, such as the name of the current topic. You can also put things like horizontal lines in them. But dont go wild and create a document that just screams out ' look everyone, I have learned how to use headers and footers'.

Page breaks

Try and ensure that these dont come at an inconvenient place. A bit of text that is the first line or two of a new paragraph that sits at the bottom of the page, lonely, split from the main part of the paragraph is called 'widow'. Text that is the last bit of a paragraph on a new page is called an 'orphan' because it has been separated from the rest of its family. Widows and orphans must be controlled.

Serif and sans serif fonts

There are two commonly used categories of fonts, serif and sans serif. A serif is a French word that describes those little curly bits at the edge of each letter.

This is written in a serif font called Century Schoolbook.

This bit is written in a sans serif font called Arial, as are the headings and the first two level subheadings of this document.

Look at a newspaper layout; the headlines are usually sans serif and the stories are serif. This is a good idea for a book also. The common serif font, Times Roman, is not very easy to read. Experiment with others.

Font size

This is commonly measured in the old printers unit of 'point size' The main story in this document is in 11 point, the margin headings are in 14pt

Dividing up the text

A single long 'main story' is very dull. Items like equipment lists and activity instructions can be separated and placed in boxes by themselves either in the margin or, if large, extended across the whole page. Other ways of highlighting certain pieces of text, such as 'balloons' or 'clouds' could be explored

Use of Icons

Icons are small symbols that help the reader to navigate through the materials. A clock symbol with a number next to it could indicate the time expected to do something. A small picture of a child doing home work could indicate homework. Some symbols are already widely known like chemical hazard symbols. The use of icons in teacher materials is shown on page 20

Use tables and diagrams and pictures

These are useful ways of presenting much information in a readily accessible and logical way.

A few ‘don’ts’

Here are a few formatting ideas to avoid - they all make the page less readable.

Dont:

- indent paragraphs
- underline
- italicise
- full justify
- mix fonts

Grammar and style

Language is a living thing and rules to do with grammar and style continiually change. Additionally, rules in english vary from region to region. It is therefore not the intention of this document to offer prescriptions beyond a few important ideas related to readability.

Paragraphs

These should be kept short and each paragraph should deal with one idea only. The idea should be clearly expressed at the beginning and all subsequent sentences illustrate or develop it. This helps the reader greatly.

‘Carpets of text’

Even if paragraphs are short, reading the document is difficult if there is no further guidance about the content. It is therefore a good idea to plan the document so that the lowest level of subtitling can be used several times on a double page (as on this page for example). This enables the reader to see at a glance what the text is about. Nothing turns off the reader quite as much as ‘carpets of text’

Sentence length.

Keep sentences short. Clauses that are obviously linked to each other can be joined but do not join too many of them.

Connectors

Connectors are important because they transmit the logic of the sentence. And, but, therefore, because, either...or, etc. They link clauses together in a logical way. Make sure you use the correct one.

Using commas

Read the sentence and use a comma when you feel there is a natual break. One useful rule is that commas are often used in pairs, to separate out a subordinate clause.

The 'apostrophe s'

This strange quirk of english grammar seems to cause a lot of problems. It has only two uses:

- when a letter is missed out as in don't (do not).
- to indicate possession as in "Today is Shakespeare's birth-day" (the birthday of Shakespeare)

It is completely incorrect to use it for a simple plural (despite what you see all around you!).

There is a praiseworthy move to abolish the apostophe s which should be encouraged. If you are in doubt, dont use it. But be consistent.

Abbreviations

Abbreviations like 'eg' used to be written as e.g. This is strictly correct as the full stops indicate missing words. Common usage now omits the full stops. The same goes for initials of people.

Capital letters

'Proper' nouns should start with a capital letter. Proper nouns are names of people or places or things. The problem is that there is a grey area when it is not clear whether the noun is a name or not. Should you write about the subjects english and mathematics or English and Mathematics. It probably does not matter; but be consistent.

Chapter 11
CD and web resources

Teacher materials should be available on CD and on the web. As the end-user will require them in paper form, this will have little impact on their design. However, the medium provides an opportunity to improve their navigability using bookmarks and hyperlinks and to provide an easily searchable repository of materials.

Materials in electronic format

A standard for teacher materials

There is a need for the country to adopt a standard for the preparation and dissemination of teacher materials in electronic format. The standard should have the following characteristics:

- Materials produced by any word processing, graphics or publishing package should be readily converted into it
- Materials on paper should be readily converted into it in such a way that the text can be recognised as text and copied
- Files should be small, portable and quickly downloadable
- Files should be openable on all computers
- Materials should be capable of incorporating all kinds of diagrams and images
- Competent amateurs should be able to make materials suitable for the web or CD-ROM
- The materials should be read-only but copiable
- The materials should be capable of being read via a browser interface because many schools will be using a platform that may not fully support other software

Additionally, to exploit the electronic medium, the files should be capable of being bookmarked and hyperlinks both within and between documents should be possible.

Current packages

Currently only one software package satisfies all the criteria, Adobe Acrobat. It has the additional advantage that the Acrobat reader is a separate small, widely available and freely copiable package that now exists on most computers because it is included in almost all other software packages in order to allow the instructions to be read. Acrobat files can be opened in a browser which has the Acrobat 'plug-in'.

The Adobe Acrobat software (not the free reader) can also be used to download a complete web directory and convert it into Acrobat (.pdf) format in such a way that all the links in the original work faithfully in the copy. This will allow CD-ROMs to be made at the user site via the web, rather than centrally and they can be customised so that only required files are copied from the site. Further, CD-writers allow normal cheap CD-writable disks to be used many times until the disk is full (650Mb) without the loss of previously recorded data. Teachers can therefore bring disks to centres such a TRCs, with internet access and a CD-writer, and update their disks from the resource web, with items like the latest examination papers, etc.

Web-based resources

Teacher resource material should be available to all on a website. Many schools now have internet access and, if Schoolnet is able to meet successfully the challenge it has set for itself, all schools should have essentially free internet access by 2005. Very soon the barrier to internet communication will not be the lack of the hardware but limitations in the ability of the teachers (though probably not the learners) to make exploit it.

Because the rapid changes in technology involved, there is little point in being too prescriptive about the nature of teacher resource web pages; these will evolve as the technology changes. However, a number of guidelines at this stage are useful.

Web pages

The pages must load rapidly

The pages must be as free as possible for gimicks and graphics that will slow down their loading. Frames, and graphics and anything that cannot be displayed in a short HTML script should be avoided.

Page indexing

A clear hierarchical index with cross-links should take the user in a s few steps as possible to the documents wanted.

Software standards

Web pages are usually in 'HTML' format. These can contain links to documents that are in other formats such as Word documents. Such documents in other formats are either viewed in the browser window or are downloaded when the link is activated. HTML documents themselves, if they have more than just basic text, are made up of more than one file and downloading and printing them successfully is sometimes problematic.

Currently the best solution is for the teacher documents themselves to be in Acrobat format. This (in 2001) is the standard for web-based documents of a kind that can be rapidly downloaded and easily printed or pasted into other materials. They are readable using the free Adobe Acrobat Reader software and are relatively small, even when they contain complex graphics.

Most browsers can be adapted using an Acrobat 'plug-in' to read Acrobat files in the browser window so that the file is opened before a choice is made whether to download it. This usually happens automatically when Acrobat Reader is installed.

Chapter 12

Evaluating teacher support materials

Criteria are proposed against which teacher support materials can be evaluated

This instrument is proposed for the evaluation of teacher support materials. The list is comprehensive in nature but every criterion will not be applicable all support materials. Evaluators must first consider to what extent each criterion is relevant before using it as an evaluation tool.

1 Function of the guide

What is the target group?	
What are the needs of the target group?	
Are the nature and content appropriate for the target group?	
Is the readability appropriate for the target group?	
Are the needs of the target group met by the teacher materials	
Is the purpose of the guide clearly evident and where does the guide come on the 'spectrum' of support materials?	
Can the guide be used alone or are other documents or texts required?	

2 Planning teaching and learning

Does the guide include examples of schemes of work	
Does the guide deal adequately with long-term planning issues?	
Are exemplary lesson plans needed and are they included in the guide?	
Does the guide offer suggestions for equipment that might be acquired to teach the topics (more) effectively?	
Does the guide offer suggestions on effective ways of managing the resources needed to teach the programme?	

3 Faithfulness to syllabus

Does the guide follow the syllabus?	
Are there adequate syllabus references?	
Are exemplary lesson plans needed and are they included in the guide?	
Does the guide distinguishe between content that is part of the syllabus and illustartive content that may be beyond it?	
Does the guide distinguish between core and extension materials	
Does the guide cover adequately all assessment objective mentioned in the syllabus?	

4 Cross-curricular issues

Does the guide include references to cross-curricular themes wherever appropriate?	
Are all appropriate cross-curricular themes identi-fied and included?	
Are the cross-curricular issues fully integrated into the teaching programme of the guide	
Are suggestions made for asseeing the cross-curricular elements	
Is the guide gender-sensitive?	
Does the guide address issues appropriately, across the whole Namibian ethnic spectrum	

5 Content and background knowledge for teachers

Does the amount of content knowledge provided in the guide match the likely needs of the target group?	
Does the guide provide background knowledge beyond the syllabus and textbook?	
Does the guide provide a Namibian context for the knowledge?	

6 Is the guide appropriate for a learner-centred curriculum

Are activities the central feature of the approach advocated in the guide?	
Are the instructions for the activities easy to follow?	
Are issues associated with planning activities (and clearing up afterwards) clearly detailed?	
Are the activities interesting?	
Are the activities easily achievable in a typical classroom at the professional level at which theguide is directed ?	
Is the level of the activities appropriate?	
Is the aim of each activity made clear?	
Does the guide indicate how to consolidate what might have been learned through the activities	
Is the timing of activities clearly indicated?	
Is it clear how the activities fit into the overall pattern of the lesson?	
Is advice given on how aspects of theactivities might be assessed?	
Does the guide offer adequate strategies for (a) discovering and (b) handling, the knowledge that learners might bring with them to the topics?	

7 Use of visuals

Do the materials have suggestions for making and using visual aids?	
Do the materials include posters?	
Do the materials contain suggestions for the good use of the chalkboard?	
Do the visuals suggested support the learning of English as well as the subject?	
Do the materials include ohp masters?	
Are there any novel suggestions for posters created by learners?	

8 Assessment and homework ideas

Are there many examples of homework ideas?	
Are the homework ideas clearly set out and easy to follow?	
Do the materials specify what kinds of assessment tasks are required?	
Should any other kinds of assessment objectives be considered?	
Are there examples of test items of a variety of kinds that address all the required assessment objectives?	
Are marking schemes clear and do they satisfy syllabus requirements?	
Does the format of the examples and the marks allocated match DNEA criteria?	
Are there clear ideas of how assessment objectives associated with skills and/or activities might be assessed	
Are there any helpful ideas on how to construct appropriate test items to meet the required assessment objectives?	

9 Teaching in English

Does the guide outline problems that are likely to arise from teaching the subject in English?	
Does the guide offer any solutions to these problems?	
Does the guide provide any suggestions on how to assist learners master the English needed to study the topic (glossaries, etc)?	
Does the guide offer suggestions for visuals that will assist with the understanding of the English encountered during learning?	
Are any questions suggested that will improve understanding of both the topic and the English language simultaneously?	
Will the teaching strategies advocatedhelp minimise the language burden?	
Are the teaching startegies advocated also good language teaching strategies?	
Do the materials contain ideas for encouraging reading and writing?	
Do the materials contain ideas for training learners to get information from text?	
Do the materials contain guidance for training learners to display information in a readily accessible way either through clear writing or the use of graphics and tables?	

10 Layout

Is the overall layout attractive?	
Is the guide easy to navigate?	
Is the guide easy to read?	
Is appropriate use made of visuals such as diagrams, photographs and tables	
Does the guide make good use of different ways of displaying information for easy assimilation such as lists, flow charts, trees, etc	
Is there a table of contents?	

11 Web and CD-ROM based materials

Are they easily navigable exploiting facilities such as hyperlinks and bookmarks?	
Are they easy and quick to download?	
Do they print out accuately?	
Are they up-to-date?	
Can you copy and paste information and graphics easily from them?	