STRATEGIES FOR DEVELOPING QUALITY LEARNING RESOURCES

INTRODUCTION

This chapter examines strategies for harnessing and optimising best expertise in the development of learning resources in higher education. The overall aim is to *recommend mechanisms to harness the best expertise in the country to develop high quality learning resources for widespread use in the higher education sector.*

This component of the research was intended to be not a comprehensive study but a limited and focused survey of examples from international literature and selected case studies that reflect national and, in a few cases, regional practice. (See Source Document 1b for a collection of international narratives and South African case studies.) The examples selected provide evidence of a representative range of practices that reflect the methods and mechanisms currently in use for acquiring learning resources.

The results of this survey were then used to propose possible strategies for developing and sharing learning resources. The term *learning resources* is used here to mean *resources that are used in the learning and teaching process and that are specifically developed for self-study, for example self-instructional learning materials and manuals, course materials used in distance education courses and programmes, multi-media learning resources and online resources.*

RESEARCH METHODOLOGY

The purpose of the survey referred to above was to gain a better understanding of the issues involved in creating an environment that allows the best use of the investment required to produce and disseminate quality learning resources. The insights gained informed recommendations made at the end of this chapter. To achieve this overall goal, the following activities were undertaken.

- International examples of innovative methods used for procuring quality learning resources were selected and collated.
- South African case studies that reflect diverse techniques and methods used to acquire quality learning resources were identified and collated.
- An analysis of the international survey and the South African examples of collaboration was completed.
- A resource pack of relevant information was compiled by a representative group of academics for use during a two-day workshop.
- A two-day workshop was conducted with academics from various higher education institutions to reflect on international and local practice and to brainstorm possible strategies for use in South Africa. (See Appendix 2a for List of Participating Academics and Appendix 2b for the Workshop Programme.)
- Draft strategies were developed for further discussion and refinement.
- The selected strategy was broadly circulated for comment and then further refined.

The proposed strategy that emerged from the above process follows below.

CHANGING PRACTICES IN INSTITUTIONS

Many traditional face-to-face institutions are turning to distance education methods, including use of ICT, to meet the present demand for developing the kinds of competence that enable people to function in an open, democratic information society in which change and the ability to respond to change have become the norm:

> Universities and other providers are responding to these changing demands by increasing the flexibility of their provision, offering a greater range and variety of courses that can be studied in various modes and by a number of means, including part-time attendance and distance learning. (Ryan et al. 2000)

Such a shift implies greater reliance on quality learning resources. As a result, many face-to-face institutions that have started developing learning resources for use in their programmes. They have, however, found that this is not a simple process and that development of such resources requires much more than just editing and publishing teaching texts in attractive covers. The rather complex and time-consuming process involved in developing quality learning materials is, therefore, dealt with in some depth below.

WHAT IT TAKES TO DEVELOP QUALITY LEARNING RESOURCES

Experience in this field shows that there are no quick fixes and no cheap options. Without the necessary expertise, adequate financial resources, time, and supportive organisational systems, one cannot expect to produce a quality output. Some enthusiastic academics who have rushed into the learning resource development process without giving careful consideration to these factors have come to realise this to their detriment.

The materials development process includes significant input by a range of different people such as the course curriculum development teams, subject-matter expert(s), instructional designers, graphic artists, editors, developmental testing team, the layout designer, and the production team. For online courses there is the added technical input as well.

> Internationally, norms for materials development are between 10 and 100 hours for every hour of student learning. In South Africa, most course writers (often without any staff development) are expected to produce materials at a rate of below one hour for every hour of student learning. It is not possible to produce the quality required for so small an investment of time. (*Minimum Targets for Distance Education in South Africa*, 2003)

Equally, time needs to be budgeted for planning, writing, critical reading, proofreading, and production processes. In many instances, insufficient time is allocated for these functions. Lecturers are often expected to develop learning resources in addition to their lecturing and

research tasks. In most cases, they are also expected to carry out these specialised tasks without the necessary training and support.

A PROPOSED STRATEGY

As was noted in the policy review in Chapter One, national policy processes have accorded great importance to the development of high quality course materials. Towards this purpose, 'a national network of centres of innovation in course design and development' is advocated in the White Paper (DoE, 1997: 27). The strategies for developing and sharing learning resources outlined in this section are an attempt to develop further the notion of 'network of centres of innovation'.

High quality learning resources are critical for all education, but particularly for distance education, for the following reasons:

- If well designed, they provide learners with the necessary support that will enable them to succeed in their studies.
- If shared across institutions, they offer unparalleled opportunities for professional development of higher education staff.
- If developed collaboratively there are greater possibilities for curriculum innovation and building of capacity in curriculum and materials development, as those involved contribute different kinds of expertise from a range of perspectives.
- There is too little local learning material of any quality. For learning to be effective, it needs to be rooted in the local context as well as being internationally comparable.

However, as signalled earlier in this chapter, development of high quality learning resources is complex, time-consuming, and expensive, and needs an effective set of strategies. The case study research presented in Chapter Three points out that one reason for the shortage of high quality local material is that institutions budget too little time and money for the course materials design and development process. In addition, there is a need, particularly in the context of increasing development of online courses, for greater attention to be paid to the facilitation of collaboration.

In order to propose a national approach to the development and sharing of quality learning resources there was an investigation of international and local examples of materials procurement and adaptation and collaborative materials development. At a two-day national workshop with academics who have a keen interest in learning resources development these examples, and possible strategies, were discussed.

The strategy that emerged as the most feasible is the one presented in this section: facilitation of a decentralised network of 'virtual' centres of innovation in course design and development which arise in response to need and which involve providers in diverse ways. The CHE case study research indicates that, even though institutions talk a great deal

about the difficulties of collaboration, four out of ten case studies exemplified successful collaboration. The strategy therefore is consistent with and builds on existing practice.

However, before describing the strategy, it is necessary to point out that, while there are examples of successful sharing of learning resources, there are few examples, even internationally, of successful collaboration in materials development. In addition, various factors may make the implementation of the strategy difficult:

- Because of competition for student numbers from a relatively small pool, many institutions may want to keep their best materials to themselves as part of maintaining a competitive edge.
- Although institutions of higher education claim to be agents of change, organisational structures and processes often prevent them from acting as such. A great deal of momentum is required to 'break through the inertia of existing belief systems' (Moore and Lambert, 1996).
- There may be an assumption stemming from earlier policy proposals that the new dedicated distance education institution will coordinate the process. This notion was not well received by most stakeholder presentations to the CHE. The proposed strategy, however, suggests that different centres of innovation will be coordinated by different providers, depending on competence in particular subject areas.

COMPONENTS OF THE STRATEGY

The following are the components of the proposed strategy:

- A network of virtual centres of innovation in course design and development, consisting of contributing providers organised into teams for the development and sharing of learning resources in response to specific needs and loosely coordinated as a network;
- An information service for course design and development; and
- An enabling policy environment, which provides the necessary framework, quality guidelines for the process, and adequate funding both at national and institutional level.

A network of virtual centres of innovation

Function of centres of innovation

The main function of the centres of innovation would be to design courses and develop learning resources/materials for a particular subject teaching area in response to:

- A nationally or regionally determined need; or
- A curriculum interest shared with other providers.

The centres of innovation could also be engaged in research into innovative methods in course design and delivery.

Nature of 'virtual' centres of innovation

The centres of innovation are described as 'virtual' because they would not require any specific geographic location to operate. They would depend on working relationships between the team members, who might be drawn from a range of contributing institutions.

Each centre would be constituted in a way that suits the specific purpose for which it came into being. This means that the network would have a range of differently configured centres that would emerge organically, and the number of centres would fluctuate over time. Centres would have a limited life span: when the goals had been achieved and learning resources developed, the centre would close and it would not be necessary for resources to sustain it artificially. Within such a needs-driven network, new centres would emerge on an ongoing basis.

Coordination and leadership of centres of innovation

Each centre would take the responsibility for coordinating its own design and development activities. It would not be necessary to have a central coordinating body, because this would contradict the notion of a flexible and responsive network. However, as will be pointed out below, the centres would be connected in a loose network primarily through the role of an agency responsible for coordinating information about learning resources.

Leadership in each centre of innovation would be determined on the basis of competence in teaching the identified curriculum area in which learning resources were being developed. This means that leadership would not automatically reside with the dedicated distance education institutions, although they would be expected to be key participants in centres where they had particular subject expertise and their experience in instructional design and their course production infrastructure would be a valuable contribution to the centres of innovation in which they participated.

Possible types of centres of innovation

Drawing on some of the examples of collaborative teams that emerged from review of selected South African case studies, it is possible to get a practical idea of the kind of centre configurations that one could expect to see. The following are the main types envisaged, although there will no doubt be variations and combinations.

- *In-house development model*
  A specific institution could emerge as a centre of innovation within the network because of its expertise and pioneering work in a particular area. It would take responsibility for developing learning resources in-house and would establish its own design and development team comprised of suitable internal and external people. In this model, the originating institution has full control over design, development, and production processes. Learning resources are used in-house, but can also be made available for use and adaptation by any of the network members. Most dedicated distance education institutions make use of this type of approach to develop their learning resources.

- *Inter-institutional partnership*
  A need might arise for learning resources in a priority area such as teacher education. Selected institutions might agree to co-operate in developing the required learning resources, with each one contributing according to what is required and possible for each partner. This would result in different types of collaboration.
  An example of where this type of collaboration has occurred is in the delivery of the National Professional Diploma in Education, in which certain providers developed some of their own materials but also procured further materials from other providers and entered into different contractual arrangements for each. Other providers did not develop any of their own materials, but acquired what was necessary from a range of sources.
  As a result of such partnership agreements, materials reach more students than they otherwise would. Longer print runs of materials help to amortise the development costs and bring down the unit print costs.

- *Multiple teams centrally coordinated*
  In this type of collaboration, learning resource development teams drawn from a range of institutions are centrally coordinated by one organisation. A good example of this type of collaboration was the South African Institute for Distance Education (SAIDE) Study of Education Project, in which nine mixed-media teacher education modules were developed by cross-institutional teams from a range of organisations.
  These materials are now being used in a wide range of teacher education programmes, and are in demand because they are specifically prepared for active independent learning, strongly contextualised for the South African teaching situation, and equip teachers to meet the demands of the new school curriculum.

- *Regional network*
  A good example of a regional network is the Southern African Development Community (SADC) regional environmental education programme. In 1993, the SADC's Environment and Land Management Sector initiated a programme to support environmental education processes in the Southern African region. The aim of the programme was:

  > To enable networking partners, at all levels, to strengthen environmental education processes for equitable and sustainable development in the SADC region, through

> improved networking, resource material production and increased training capacity. (SADC Regional Environmental Education Centre, 1999, Umgeni Valley Project, Howick, South Africa)

A key task of the programme was to develop, produce, and distribute a curriculum framework for environmental education practitioners in the region. Because contexts across the various countries in the region varied greatly, it was decided not to develop a single curriculum, but rather to create a framework that provides all partners in the regional network with a common vision of how to approach the development of differentiated learning resources that are suitable for their particular contexts.

As seen above, the configuration of centres can be varied, but there are some basic guiding principles that will characterise a well-functioning centre, such as:

- A shared vision of the purpose and outcomes of the learning resources often encapsulated in a curriculum framework endorsed by the partners;
- A strong leading and coordinating team located in a specific institution;
- Good information flow between all parties in the centre;
- Access to suitable expertise;
- Agreed acceptance of roles and responsibilities for the development of the resources;
- Appropriate funding arrangements; and
- Strategies for dissemination of the learning resources developed.

These principles have emerged from the practical examples of collaborative learning resource development cited above, as well as from relevant literature.

An information service for course design and development

Organisation of the information service

For collaborative initiatives in learning resource development, whether on a small or large scale, information is necessary – information about existing materials, other providers with similar interests or particular expertise, and constraints on sharing materials (such as copyright issues).

Although an independent information agency could be established, coordination of interactions between the proposed centres of innovation would not necessarily have to reside with a single agency. However, a common information service is essential.

In the workshop with academics referred to above, there was a strong feeling that, if an information agency were established, it should not:

- Duplicate what already exists;
- Be regulatory; or
- Be identified with any particular institution.

It was also felt that opportunities should be found to link up with national initiatives such as the Education Portal Project, which aims to provide access, among other services, to a database containing a selection of reviewed education-related websites targeted at educators, educational administrators and policy makers, and learners in the school sector. This project has done extensive work in identifying the needs for such a portal, as well as establishing the specifications and systems of the portal itself. Linkages with national projects such as this would be essential for exploring strategies to create a database of learning resources for use in the higher education sector.

Goal and functions of the information service

The long-term goal of the information service (whether or not performed by a separate independent information agency) would be to encourage providers to lodge their learning resources as open content that can be freely accessed by anyone and used as is or re-versioned for a new context. By making learning resources available in the public domain through release of copyright, individuals and institutions do not necessarily have to relinquish their intellectual property rights. Such an arrangement seems particularly appropriate where development of the learning resources is funded by government.

However, the present reality is that most learning resources currently available still have copyright implications. This means that users must be able to gain access to the originating provider to negotiate a license to use the materials for adaptation or re-versioning. This situation will probably continue to exist in the foreseeable future. Users would need information about the types of exchange and transfer arrangements that are indicated for the resources they want to use. Links could be made to the websites of the originating providers where more detailed information could be found about the selected resources and about the kind of licences required for using and adapting the learning resources.

The functions of the information service available to the network of centres of innovation and contributing providers would be to provide:

- An indexed database of available learning resources in specific subject teaching areas;
- Resource links to a selection of reviewed education-related web sites;
- Information about:
  - Funding sources and how to access funds;
  - Capacity building services that are available;
  - Licenses and contracts; and
  - Copyright conditions;

- Guidelines and other support mechanisms on different methods of acquiring learning resources, such as transfer, adaptation, re-versioning, and a range of collaboration methods; and, in due course,
- Access to open content resources developed by selected centres of innovation.

As centres for innovation and the information service become operative, the role of publishers within the process would need to be considered. They could be collaborative partners in a centre of innovation, and could play a role in quality assurance or in disseminating the learning resources that are developed.

Enabling policy environment

Because of the difficulties of collaboration and the environmental factors mentioned above, the Ministry will need to establish conditions under which collaboration in course design and development becomes not only possible, but makes a contribution to the quality of teaching and learning that is on offer.

Funding

The development of quality learning resources demands financial and human resource investment for which many institutions do not adequately budget. Among the main macro influences that seem to impact negatively on the ability of institutions to work together in the common pursuit of learning resources development is the allocation of financial resources.

The question of funding is one of both policy and incentive. Thought needs to be given to the idea of coupling funding incentives to learning resource development, particularly in areas of national priority like science, technology, and health. In such instances, funding is used as a lever to achieve a desired national goal. Centres of innovation would submit proposals for the development of particular learning resources and funding would be granted on merit.

In the new funding framework for public higher education, it would be possible to fund the development of learning resources out of the proposed teaching development fund. It is also suggested that the Department of Education initiate discussions with the Department of Labour to make available funds for learning resource development through the Sector Education and Training Authorities (SETAs), and that consideration be given to the use of donor funding for the development of resources in areas of national need.

Institutional recognition for learning resource development

In South African higher education, providers are rewarded for their research record, and there is generally no recognition of either individual academics, units and departments or the institution as a whole for excellence in teaching and learning or, more specifically, for the time-consuming and difficult process of developing high quality learning resources.

Enabling policy at institutional level would need to include:

- Recognition that involvement in developing learning resources is part of the learning and teaching strategies deployed in the institution;
- Incorporation of learning resource development into the workload of lecturers and the allocation of adequate time for the development of such resources; and
- Provision of professional development for lecturers as they move into a new role as materials developers.

Setting of standards for quality learning resource material

In the same way that the HEQC has set guidelines for good practice in teaching and learning, it is important that guidelines for quality material resource development are also established.

It is proposed that the network of centres of innovation be linked with existing regulatory and quality assurance agencies. A regulatory body like the HEQC could possibly accommodate, through its quality promotion and capacity building functions, a specific 'learning resources' focus.

Existing expertise in quality assurance located in various organisations and institutions could also be harnessed for this purpose. Nadeosa, SAIDE, the dedicated distance education institutions, and face-to-face institutions that offer programmes using distance education methods might usefully be drawn into the process, assisting with evaluations and capacity-building in this field.

As has been noted, national criteria for distance education provision already exist and have been further developed by Nadeosa as part of its biennial courseware awards. These could be used as a resource for the development of a national framework of criteria that is applicable to all institutions. Another resource that could feed into the above process is the criteria for the development and evaluation of quality learning materials developed by Nadeosa.

ISSUES REQUIRING ADDITIONAL CONSIDERATION WHEN DEVELOPING AND SHARING QUALITY LEARNING RESOURCES

Institutional readiness for partnerships and collaborative learning resources development

Many efforts at collaboration that start off well run into difficulties because not enough thought was put into assessing the needs and kinds of resources required. Key elements that have to be in place for successful partnerships and collaborative projects are strong funding support, a range of necessary expertise, institutional support, policy supports and incentives.

The reference group comprising academics who participated in the learning resources workshop compiled the following list of elements that have contributed to successful partnerships and collaborative projects:

Rationale and incentives

- Mutual interest and benefits proved to be an important foundation on which collaboration was built.
- Insistence on joint recognition and equality of the partners helped to reduce tensions and conflicts considerably.

Institutional readiness

- Institutional readiness to collaborate in terms of infrastructure, financial support, and available expertise.
- Support of senior management.
- Well-developed curriculum and course outlines by the partner institutions made it easy to incorporate the shared learning resources.
- A clear understanding of the need to develop both the materials and the delivery systems of the course or programme.

Thorough planning

- Design of a reliable management business plan that is informed by an accurate needs assessment.
- Capacity-building strategies incorporated into the design of the collaborative project.

Strong project management

- A competent convenor who has a positive outlook and who fosters cooperation and teamwork.
- Clear definition of roles for the partners involved in the development process.
- Locating the coordination of the collaborative project within an enabling environment.

Adequate capacity

- A small team that has the right blend of expertise.
- Inputs by specialists into the design and shape of the programme at crucial times resulted in a better product.
- A representative reference group of people who work in the field and who make inputs at crucial times helps to build contextual realities into the materials.

Apart from the institutional readiness of working in partnerships, individual institutions also have to create the kind of organisational infrastructure and systems that allow for more flexible learning and teaching methods. The following extract points to some important areas that need attention:

Courses

- Entry arrangements which ensure greater access and equity for students from various backgrounds.
- Degree and course plans which set out specific learning outcomes and generic graduate qualities, and the ways in which each will be achieved.
- Course content which takes account of students' backgrounds and recognises that we live in a global community.

Teaching and learning

- Use of learning materials and technologies which are appropriate to the subjects and needs of students.
- Teaching methods which free up time, place, mode and pace of learning.
- Information literacy and support programmes which assist students to become independent lifelong learners.

Organisational arrangements

- Teachers working in networked partnership with academic support specialists.
- Organisational structures, planning and resource mechanisms which enable rapid, networked support to flexible learning.
- Collaborative networks across campuses and with outside bodies in order to free up modes of teaching and the range of courses available anywhere, any time.

Evaluation of experience and practice in flexible learning

- Research into the educational, social, technological and policy issues underpinning university teaching and learning in a rapidly changing environment. (Moran and Myringer, 1999: 61–62)

An enduring problem, particularly in face-to-face institutions, is lack of understanding of what it takes to develop learning resources for flexible delivery methods. The organisational arrangements are not geared for this change in the roles of educators, and usually no additional time and resources are allocated that would facilitate such activities.

Copyright issues

Without proper attention to copyright issues, collaborative projects set up to develop and share learning resources are doomed. Numerous examples, both in South Africa and internationally are testimony to this potential problem. Tony Dodds captures the copyright challenge well when he comments:

> Issues of intellectual property and copyright, moreover, which are being recognised as barriers to materials exchange throughout the world, will continue to complicate collaborative ventures in the sub-region. (Dodds et al., 1999)

Douglas Shale endorses this view and adds that the use of technology complicates the issue even more.

> Many issues arise from the transition brought by videoconferencing and the Internet/ Web. The time-worn issue of copyright and intellectual property will become even more problematic. The academic will believe that he or she owns the course because that is the situation with lecture materials. However, because a course can have an abiding life independent of the creating academic, the university must also have some rights regarding course use and revision. (Shale, D. 1999)

Tension between the needs of originators of articles and materials and the need for providing open access to these to a network of partners will probably always exist. The challenge is to work within international and national copyright regulations, and to explore what can be done to facilitate transfer and widespread use of these learning resources.

Some key issues that would need to be resolved are:

- Open content and how to avoid it being used for financial gain;
- The possibilities of joint copyright; and
- Copyright conditions for e-learning.

The following serves as an example of the kinds of conditions applied by Unisa to any institutions wanting to use or adapt any materials that Unisa has developed.

An annual licensing fee is levied. The fee is based on the number of students who will use the material. If the institution wants electronic access to the materials, a separate agreement is entered into. Unisa holds copyright over all materials that it has been involved in generating. Where it has partnered other institutions, they are contractually bound to seek permission from Unisa before making any adaptations. In Unisa's case, these contracts are drawn up by their in-house legal department. DALRO could conceivably be approached to perform the same function.

It is anticipated that the findings of the national investigation commissioned by the Department of Arts and Culture recently to examine, *inter alia*, how best to ensure that intellectual property serves to empower marginalised communities by facilitating a free flow of information, will benefit any initiatives set up to establish the 'network of centres' discussed above.

The changing role of publishers

Technology is changing what publishers do and how they do it. This has started to impact on the different functions and roles played by this sector. Various functions previously bundled together can now be more easily separated out. This has led to a range of different kinds of publishing models:

- *The traditional model.* A publisher who does everything for you, develops, produces, markets, and sells the book.
- *The customised model.* The lecturer selects from a variety of content and chooses a delivery form. The publisher packages it as required.
- The POD (Print on Demand) model. Content is developed and kept in digital storage and only printed out upon demand.
- *The partnership model.* The institution/lecturer and the publisher form a collaborative arrangement. The institution/lecturer develops and controls content and quality, the publisher is responsible for production, marketing and distribution.
- *The open access model.* Content is made freely available subject to conditions specified in an open content licence. This usually ensures that the content cannot be sold or changed without permission, hence ensuring a measure of quality control.

The roles that publishers can play include some or all of the following, depending on the collaborative arrangement agreed:

- Publishers can be collaborative partners in the same way as other organisations. In fact, academic publishers who create teams of authors are often the facilitators of collaboration, given that they commission authors from different institutions and develop material for students from a range of institutions.
- Publishers can play a quality assurance role, ensuring that content is assessed and reviewed especially in relation to its intended audience.
- Publishers can play the role of producers, preparing, formatting and packaging content in different forms (print, web-based, CD, etc.).
- Publishers can promote content and inform people about it, letting the intended audience know that it exists.
- Publishers can distribute and disseminate content.

In each of these instances, publishers can provide the finances for what comprises, in each case, specialised and costly activities.

SUMMARY

In the 1997 White Paper, the Ministry expressed its support for the development of high quality learning resources in higher education:

> The Ministry supports the development of a national network of centres of innovation in course design and development, as this would enable the development and franchising of well-designed, quality and cost-effective learning resources and courses, building on the expertise and experience of top quality scholars and educators in different parts of the country. (DoE, 1997)

In order to give effect to its support, the Ministry should establish an enabling environment in which a virtual network of centres of innovation in course design and development can flourish.

This would necessitate commitment from the Ministry to:

1) *Advocate the establishment of a virtual network of centres of innovation in course design and development.*
   The proposed network of centres would spread the course design and learning resources development function across institutions, create diverse opportunities to involve the dedicated distance education institutions and encourage a rich mix of inter-institutional, cross-institutional, and regional collaborative ventures in the development and sharing of learning resources. The centres of innovation are described as virtual because they would not require any specific geographic location to operate. They would depend on working relationships between the team members, who might be drawn from a range of contributing institutions. Each centre would be constituted in a way that suits the specific purpose for which it came into being. This means that the network would have a range of differently configured centres that would emerge organically, and the number of centres would fluctuate over time. Centres would have a limited life span: when the goals have been achieved and learning resources developed, the centre would close. Within such a needs-driven network, new centres would emerge on an ongoing basis.

2) *Set up and fund an information service.*
   This service could be located within an appropriate existing structure(s) so as to avoid unnecessary duplication. It is suggested that linkage with other national information service projects such as the National Education Portal should be further investigated. The information service would provide information about existing materials, about other providers with similar interests or particular expertise, and about constraints on sharing materials (such as copyright issues). It would also provide information on funding.

3) *Establish mechanisms for centres of innovation to access funds.*
Funding arrangements that currently prevail often inhibit institutions from sharing and using each other's resources. When institutions are locked in competition with each other for student numbers, their willingness to cooperate in initiatives that they perceive as compromising their income base is diminished. Some mechanisms for consideration are:
   a) Identification of areas of national need where learning resources would be necessary, and provision of funds for materials development in these areas.
   b) Making available funding (possibly from the teaching development fund in the new funding framework) for centres of innovation to put forward proposals for the development of learning resources. Funding would be granted on the merit of proposals, which would be assessed by a specially appointed team.
   c) Recognition of the development of learning resources as teaching outputs, and reward of institutions for their development and production.

4) *Ensure the development of guidelines for the production of quality learning resources.*
Existing processes of quality promotion should be strengthened by providing a specific learning resources focus. A framework of guidelines would provide the direction necessary for institutions to begin to transform practices that are counterproductive and costly, and to embark on collaborative learning resource development practices that will result in quality resources where economies of scale can offer economic benefits in the long term.
Cognisance needs to be taken of the underpinning principles that inform the proposed strategy. These include creating an enabling environment in which a network of centres of innovation for collaborative resource development can flourish. Equally important is identification of the most appropriate mechanisms by which information and resources can be effectively shared, including the challenge of lodging open content resources on the Web for wide access.
Implementation of such a strategy is highly complex, and needs careful consideration. It is therefore proposed that the Ministry of Education establish a specialist task team to further investigate the above proposals and strategy and to support and review pilot initiatives prior to expanded implementation.