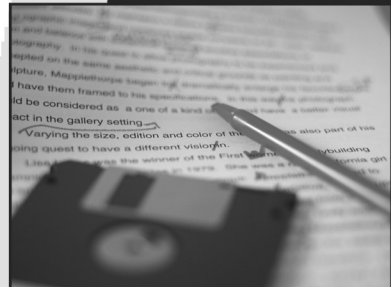


COMMONWEALTH *Of* LEARNING

July 2003



A V I R T U A L
U N I V E R S I T Y
F O R S M A L L S T A T E S
O F T H E
C O M M O N W E A L T H



For presentation at the:

15th Conference of Commonwealth Education Ministers
Edinburgh, Scotland
October 2003





COMMONWEALTH *of* LEARNING

July 2003

A Virtual University for Small States of the Commonwealth

For presentation at the:

15th Conference of Commonwealth Education Ministers
Edinburgh, Scotland
October 2003

TABLE OF CONTENTS

I. INTRODUCTION.....	1
1. Project Background.....	1
2. The Task.....	1
II. PRESENT CONTEXT OF HIGHER EDUCATION IN SMALL STATES	3
1. The Providers	3
2. Models of Access	4
3. Collaborative Relationships	4
4. Information and Communications Technology (ICT) infrastructure and its Use	5
5. Issues.....	6
Social issues.....	6
Quality Issues.....	7
Institutional issues.....	7
Technology-related issues.....	8
III. DEVELOPMENT OF VIRTUAL EDUCATION: A WORK IN PROGRESS	9
1. The Development Context	9
2. Forces of Change	10
3. Emerging Applications of ICT.....	11
Information search, organisation and packaging	12
4. Implications for Virtual Education.....	12
IV. ANALYSIS.....	14
1. The Basic Objectives	14
2. The Assumptions.....	14
3. The “Added-Value” Opportunities	15
V. A PROPOSAL FOR A VIRTUAL UNIVERSITY FOR SMALL STATES	16
1. The Vision.....	16
2. The Proposed Functions.....	16
3. The Core Activities	17
Development and maintenance of virtual systems:.....	18

Learner support systems:	18
Leadership on policy development and strategic planning:	19
Research on virtual education:	19
Internal staff development:	19
4. The Cost	19
Servers for each member site	20
VI. THE BENEFITS.....	21
VII. GOVERNANCE.....	22
VIII. ACTION PLAN	23
APPENDIX A: SMALL STATES OF THE COMMONWEALTH.....	25
APPENDIX B: MEMBERSHIP OF THE TECHNICAL ADVISORY COMMITTEE	26
APPENDIX C: COMMUNIQUE BY MINISTERS OF EDUCATION	27
APPENDIX D: LEARNING OBJECTS AND THEIR ATTRIBUTES (By David Porter, David Porter And Associates)	29
Granularity	29
Interoperability	29
Common Object Standards	30
Instructional Design Options	30
Systems Overview.....	30
APPENDIX E: COSTING MODE	32
Notes and Assumptions.....	32
Cash Flow Requirements	35

I. INTRODUCTION

1. PROJECT BACKGROUND

The Commonwealth Ministers of Education, at their meeting in Halifax, November 2000, directed The Commonwealth of Learning (COL) to develop a proposal for a virtual university to particularly serve the small states of the Commonwealth, using existing structures and capacity. (See Appendix A for a list of the small states of the Commonwealth as defined by the Commonwealth Secretariat.) Recommendations will be presented at the meeting of Commonwealth Ministers of Education in 2003.

The President of COL established a Technical Advisory Committee (TAC) to assist with the process of developing the recommendations. The TAC is comprised of regional representatives from small nations in the Commonwealth plus representatives of various Commonwealth organisations selected on the basis of their direct interest in, and relevance to, the development of information and communications technologies (ICTs) and higher education throughout the Commonwealth. The COL President is chair of the Committee and is assisted by a senior consultant and several members of the COL staff. The names of the participants are listed in Appendix B.

Penultimate recommendations were presented to a Committee of Education Ministers in March 2003 at a consultation hosted by the Seychelles Minister of Education. The names of the Ministers that participated in this Consultation are listed in the communiqué attached as Appendix C.

2. THE TASK

The Ministers' directive to develop the proposal for a Virtual University for Small States "using existing structures and capacity" challenged the TAC to think in terms of how a virtual university might "add value" to the current status of higher education in the small states. In other words, the Committee needed to identify the appropriate combinations of functions that would add value to what is currently available – keeping in mind that adding value may be in the form of increased access to learning opportunities, enhanced programme quality or lowered costs of providing access to learning. To consider these aspects of adding value, the Committee members first had to understand the current higher education models in the small states, and then think beyond the traditional ideas about what constitutes a university.

The Committee engaged in a two-part process for dealing with these challenges. The first involved analysing the current situation of higher education in the small states. The data for this analysis were generated through background papers prepared by members of the TAC. The second part involved the TAC members meeting in Vancouver in April 2002 to validate the picture of what currently exists and to develop a draft vision for what a virtual university should focus on and how it could be organised.

During the Vancouver meetings, the members of TAC received several presentations about current developments and initiatives underway in virtual education throughout the world and the way that ICT is enabling it. They vigorously debated the functions and "core business activities" that would be appropriate for a virtual university serving small states, as well as the way such a university would need to relate to existing institutions and organisations.

A draft Report describing the results of those deliberations was prepared and circulated to all Commonwealth Ministers of Education asking that it be discussed with their officials and that comments be provided to COL. The Report was also posted on the COL website with a request for any interested parties to review the proposal and offer comments to COL. The COL Board was given a briefing at it's

meeting in Durban during the 2nd Pan Commonwealth Forum on Open and Distance Education in July 2002. The Consultant also gave two public briefings during the Forum.

COL received feedback from over 30 Ministers and many more individuals in response to the requests for comments. While there were many helpful suggestions regarding the implementation of the proposal, none of the comments argued that the Proposal was inappropriate. Indeed, many of the comments from established institutions, and some private sector organisations, proposed a variety ways their organisation might be able to assist if a Virtual University for Small States was to be established.

The Consultation convened by COL and hosted by the Seychelles Minister of Education in March 2003 was the next stage of the review process. At the end of the two and a half day Consultation the Ministers attending declared their strong support for the establishment of a Virtual University for small Commonwealth states and requested COL to prepare the Report for presentation to their colleague Ministers when they meet in Edinburgh in October 2003. A copy of the Communiqué issued by the Ministers at the end of the Seychelles Consultation is included in Appendix C.

The Report that follows is based on the initial work of the TAC with additions and amendments added on the basis of the discussions held in the Seychelles. The recommendations it contains will be considered at the Conference of Commonwealth Education Ministers in October. If the recommendations are accepted, COL will proceed with the process of implementation as described later in the Report.

II. PRESENT CONTEXT OF HIGHER EDUCATION IN SMALL STATES

As stated, the first step in the work of the TAC was to establish a clear picture of the current state of higher education in small states. Members of the TAC prepared background papers on each of the regions in which the small states are clustered: the South Pacific, the Caribbean, Africa (The Gambia and Southern Africa), the Indian Ocean and the Mediterranean. The results are summarised here.

1. THE PROVIDERS

- The institutions in small state countries fall into two main categories: indigenous and foreign.
- In the South Pacific, Caribbean and Indian Ocean regions, the indigenous institutions can be further grouped into regional and national categories.
- The primary regional institutions are the University of the South Pacific (USP), the University of the West Indies (UWI), and the University of the Indian Ocean (UIO). The University of South Africa can also be deemed a regional institution as it provides programmes to some small state countries in Southern Africa and the Indian Ocean even though it is not located in a small state country.
- The national providers in most small states typically include one or more universities, two-year community colleges and professional/technical training institutes. Many of these institutions began through an association with a foreign institution (usually in the UK or the US), and in several cases the relationships still continue.
- The foreign providers are those institutions, usually from the developed economies, that have established a physical presence within a country in order to either offer programmes in a traditional teaching mode or to support the institution's distance education offerings in the country. However, it is worth noting that there are examples of national providers that act as the "front" for a foreign institution in terms of marketing programmes and providing administrative support.
- Among the regional providers, USP and UWI were created and funded by the states they serve. UIO, however, while modelled on the other two, is funded by the European Union. UIO also differs from the other regional providers, being a network of several higher education institutions in the region that collaborate in terms of programme and course offerings as well as research.
- While USP and UWI are the largest providers of university-level education in their respective regions, many of the states they serve also have national colleges and other institutions, and in some of the larger states a national university exists as well. Some of the latter enrol students from other states in the region either on-campus or via their emerging distance education programmes.
- The programme offerings of regional providers tend to be more comprehensive than those of national institutions – the latter being typically more focused and specialised. Regional providers are taking the lead in interdisciplinary study and research through a wide variety of theme centres and institutes.
- In the African region, the offerings of national universities tend to be more traditionally academic, resulting in some criticism for not offering programmes that are more relevant to labour force needs.
- Some international agencies also act as providers. One example is the International Telecommunications Union (ITU) virtual university that works through national agencies to provide ICT-related training.

2. MODELS OF ACCESS

All regional and national institutions serving small states began as campus-based teaching institutions. In the case of regional institutions, satellite campuses and learning centres have been created in some larger states in the region. The exception is the UIO, which began as a network of existing institutions, none of which offer any off-campus courses via distance education.

The USP and UWI have adopted a bi-modal mandate with distance education delivery models featuring prominently in their operations. In fact, USP has adopted a strong multimodal policy that is enabled by its ICT infrastructure capacity. These two institutions are the largest distance education providers among the Commonwealth small states.

All institutions are faced with demands for increased access to their programmes with the result that several national institutions, even some in the states served by USP and UWI, are becoming bi-modal and are incorporating distance education into their overall teaching strategies.

In all of the aforementioned institutions, distance education began as it has in most other places, with correspondence courses. In most instances, the model is still one of print-based courses supplemented by face-to-face tutorials and occasional visits from home campus faculty. A notable exception is USP, which has been using satellite-based course delivery for some time and has recently upgraded their network to enable two-way digital interactivity among their campuses and centres.

The use of outreach centres is almost universal among the institutions involved in distance education. These centres provide a place where students and tutors can interact and, increasingly, where access to ICT equipment and connectivity can be provided.

The workplace is also becoming an important point of access to learning – obviously most often for employee training. However, while the ICT infrastructure is likely to be more available in the workplace, the policies that enable and encourage employees to use it for educational purposes are often lacking.

Another strategy for the enhancement of access, not related to course delivery, is the creation of mechanisms whereby students can gain recognition for prior learning. The UWI has taken some interesting initiatives in this regard by creating transfer arrangements with some national colleges that provide advanced placement for students who have completed a college programme. As well, it also has agreements with other institutions that allow articulation of course work (e.g., in the area of teacher training) and the awarding of qualifications in conjunction with the co-operating institution.

While there is some evidence that the convergence of distance and campus-based teaching models is starting to happen in small state institutions, it is not progressing as rapidly as in other parts of the world. There are examples of this convergence at USP and UWI, however it is most evident at the University of Mauritius where distance education materials are used regularly to complement on-campus teaching. There, nearly 50% of all modules offered in the first year are taken through distance education methods.

The number of programmes offered by foreign providers entirely by virtual means is increasing.

3. COLLABORATIVE RELATIONSHIPS

The Technical Advisory Committee (TAC) is of the view that much more collaboration will be required if small Commonwealth states are to use virtual systems effectively and efficiently. The resources needed to establish the technical platforms, content databases and provide the necessary faculty training and development is beyond the ability of any one institution. For this reason the Committee examined the current state of collaborative activity. The following points are illustrative:

- The most evident examples of collaboration are found in the Caribbean, the Pacific and the Indian Ocean regions where states have collaborated on a regional basis to form UWI, USP and UIO.
- UWI and USP have articulation agreements with a number of colleges, technical institutes and private sector providers that allow students advanced standing on entry. USP, for example, is committed to the development of a “seamless” system for students. At UWI there are also examples of franchise agreements between institutions that allow a partner organisation to offer some lower-level courses.
- The concept of “franchising” is evident in some collaborations between national and foreign providers in the Caribbean, Pacific and Indian Ocean regions. There are also examples of private/public sector collaboration in these same regions.
- There is little evidence of collaboration among states in the African region. There are facilitating mechanisms in place, such as the Distance Education Association of Southern Africa (DEASA) and the SADC Technical Committee on Distance Education, however these have not yet led to any significant collaborative activity such as shared programme/curriculum development, materials development, inter-institutional transfer policies or training.
- Other than articulation agreements that the regional providers have put in place, there is limited evidence that the above forms of “dynamic” collaboration are a priority for any of institutions in the small state regions. The importance that higher education institutions have historically attached to keeping all such activities “in house” seems alive and well among the small state institutions in their distance education initiatives. However, there is a growing realisation that it will be impossible for most of the institutions to implement more virtual models of education unless ways are found to share costs and expertise and increase economies of scale.

4. INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) INFRASTRUCTURE AND ITS USE

The ICT infrastructure development in small states is critically important to the way a virtual university can function. The following points provide an overview of the current state of affairs:

- The importance of an ICT infrastructure that enables states and regions to survive and compete in the global economy is recognised by almost all small state governments. Therefore there are plans and initiatives underway to ensure it will be available. Generally, ICT infrastructure is reasonably accessible in urban areas, but hardly accessible at all in rural communities. In island states, there is some variance between the larger and smaller states, with the smaller states tending to have less access to ICT.
- As most higher education institutions are located in the urban areas, there tends to be some access to computers and low-speed Internet connections. However, the tasks and processes most likely to involve the use of computers are those related to administrative functions. Functions such as the delivery and tuition of courses and student support have very low application of ICT. The notable exceptions are where interactive networks have been established between the home campus of an institution and several outreach centres (e.g., Namibia).
- ICT infrastructure providers, whether in the private or public sector, tend to have a monopoly, which limits competition and makes access costly. USP provides an exception; it has established a broadband interactive network enabling voice-, data-, video- and text-sharing among its campuses and centres. UWI has plans to develop a similar capacity.
- The development of “learning centres,” or places where students can access ICT appliances and connectivity, is becoming commonplace as a strategy for distributing learning opportunities beyond the home campus. The Namibian Open Learning Network illustrates how centres can be

linked and used by several institutions. Learners are also using Internet cafés where they have ready access.

- Open source software (e.g., Linux) and low-cost computers, such as the Simputer (India), offer the prospect of lower-cost options in the development of ICT infrastructure. Other software such as Citrix, that enables different computers to work together, is likely to be important given that institutions in small states are often the recipients of donated computers of differing ages and speeds. Generally, the decreasing cost of hardware will enable the barriers of cost to be dealt with more easily.

5. ISSUES

Clearly, any proposal for a virtual university must be, and be seen to be, contributing to the resolution of some of the issues relating to higher education in the small states. The Technical Advisory Committee members were therefore asked to identify those issues that were felt to be of major importance. As expected, the issues identified vary from region to region, within regions and across the different types of institutions. They tend to cluster in the categories of social issues, institutional issues and technology-related issues.

Social issues

As far as this project is concerned, one of the most important challenges is inter-institutional collaboration, which will be an important aspect of any virtual university initiative for the small states. However, institutions of higher education have tended historically to defend their autonomy with greater vigour than they have sought to collaborate. The issue of competition versus collaboration therefore requires some analysis.

Competition and collaboration are usually thought to be mutually exclusive. As a result, organisations that compete for similar markets have tended to carry out all of their core business functions “in house,” in order to be independent and competitive in the market place. This is referred to as *static competition*.

However, because of the forces of globalisation and increasing applications of ICT, organisations are now seeking ways to collaborate in order to be competitive in new markets. The potential benefits of doing so include achieving economies of scale, sharing resources and distributing risks and capital investment costs. However, while such collaboration may be necessary to pursue some new market opportunity, the organisations involved often remain highly competitive in the domestic marketplace. This is referred to as *dynamic competition*.

One of the anomalies of higher education is the fact that institutions have, for years, engaged in dynamic competition in the area of research while remaining very much in static competition in terms of their teaching functions and the recruitment of students. However, this is now changing. There are increasing numbers of institutions engaging in dynamic competition, often with the assistance of private sector communication industry partners. The goal is to create virtual universities for the purpose of capturing greater market share in programme areas such as management and technical education. Institutions realise that the amount of capital investment and the scope of the academic resource base required exceeds the capacity of any one institution. And these examples involve well-known institutions from developed economies!

Other specific social issues exist:

- At both USP and UWI there is pressure for more service from some of their country constituents who feel they are not getting the level of service they should – particularly those countries that

are without a campus. The development of the distance education activities at these universities was, in part, a response to this issue.

- There is also a latent demand in small states to accommodate the large numbers of people who lack the necessary qualification to gain entry to higher education. As this issue is addressed it will obviously increase pressures on institutions to accept more students in their programmes.
- There is a widespread concern that a failure to develop a strong national or regional capacity for virtual education will lead to increasing dependency on programmes coming from the developed world.
- Small states also face the problem of the “brain drain” that results when those who have received the training and education that would enable them to make a substantial contribution to their country are enticed away. The problem is not unique to small states, but because of their size, the impact of the loss is greater. The evidence that “those educated at home tend to stay at home” gives support to initiatives that increase “in situ” educational capacity.

Quality Issues

Issues concerning “quality” in higher education manifest themselves in a variety of ways.

- As growth in the number and diversity of provider institutions continues, so does the variance in the cost and quality of the programmes being offered. This raises a question about the need for accreditation and certification bodies to protect learner interests and, concomitantly, about the role of state and national governments in higher education.
- Many small states also face the problem of new institutions appearing on the scene offering programs for which there is little or no evidence available regarding their “bona fides”. The need is growing for there to be some capacity developed that would enable the adjudication of both the quality of programs on offer as well as the credibility of the institution per se.
- Other dimensions of the matter of quality focus on the ways that new forms of delivery involving the use of ICT are being implemented. For example, in relation to instructional design, learner support systems, protection of intellectual property, and assessment.

Institutional issues

The procedures and financial management policies in place at many universities assume a traditional campus-based learning model. But this does not facilitate the expansion of distance and virtual delivery. Compounding the problem is the lack of trained faculty and support staff for the use of ICTs.

This rapid development of distance education is being driven by the need in all states to respond to increased demands placed on the higher education systems: a demand for greater access to programmes currently being offered and a demand for programmes that are more relevant to the needs of the labour force. Meeting the latter demand is particularly difficult in situations where there are uneven or conflicting human resource development strategies at national or regional levels.

Countering these demands is the common perception that distance education methods threaten the core values that have traditionally been associated with institutions of higher learning. These concerns exist among the small state institutions just as they do elsewhere. Faculty worry that distance education will erode academic quality, they tend not to see the development of materials and tutoring as part of their regular duties and they resist the integration of distance education processes with those on campus. These concerns of faculty may account for the fact that, in several regions, not all programmes can be completed through distance education.

A specific concern was expressed by several of the respondents from the African small states. At issue is the quality of the programmes at their institutions as well as the lack of qualified faculty. It was also noted that the growing convergence of distance education and traditional face-to-face teaching is likely to have much broader benefits in that region than is currently imagined by institutional leaders there.

Technology-related issues

As in most developing economies, the development of virtual education in small state countries is constrained by uneven development of ICT infrastructure. This situation militates against the development of virtual systems because of the need to ensure that access to higher education does not discriminate across socio-economic levels or among people with disabilities who may have difficulty using ICT appliances. This is why print materials still remain the core delivery mode of most distance education models.

The development of telecentres has been promoted as a means of overcoming the lack of access to ICT, but there is an urgent need to encourage multiple use of these facilities – as learning centres, institutional outreach centres, community information depots, etc. – and to ensure that the cost of using these centres is not prohibitive.

The lack of ICT infrastructure is not the only barrier to access. The utilisation cost of ICT appliances and connectivity are major concerns, as are the challenges of dealing with learners that do not have transport or suffer from a disability.

Finally, access to ICT infrastructure does not ensure that it will be utilised. As was noted in the case of Botswana, without enabling policy frameworks and trained personnel that are aware of the potential applications, not much will happen.

III. DEVELOPMENT OF VIRTUAL EDUCATION: A WORK IN PROGRESS

1. THE DEVELOPMENT CONTEXT

The need to improve access to educational opportunities at all levels is not new. In fact it is an evolutionary process that began with the innovation of print-based correspondence courses in the latter part of the 19th century. Over time, this delivery model incorporated the use of study centres and telephone networks for tutorial purposes and became known as “distance education” to connote education at off-campus locations. As real-time technologies were applied, such as radio, television and video-conferencing, a variety of additional labels emerged such as “open learning,” “flexible learning,” “tele-learning” and “distributed learning.”

As online delivery models have become possible with their capacity to enable asynchronous interactivity, the terms “virtual education” and “online learning” have emerged. They are being used, often interchangeably, with all of the aforementioned labels to describe almost any educational activity that makes some use of ICT.

The use of all these terms may be confusing to those who are unfamiliar with the history of distance education, and it is also not helpful in the development of an inclusive view of educational systems and the use of ICT. It serves to maintain a conceptual dichotomy between the traditional classroom-based delivery model and all others when, in fact, the most significant effect of the use of these technologies is to bring about a convergence between traditional education models and what is most frequently called distance education.

A much more integrated vision of learning venues and opportunities is needed in a world that requires educational systems to be capable of responding to education needs throughout life. Such a vision must accommodate the reality that learning occurs in a variety of venues – the classroom, the home, community learning centres and the workplace. It also needs to incorporate the use of technology in facilitating the provision of educational opportunities, wherever they are occurring, by making them more accessible and of higher quality, and by improving the effectiveness and efficiency of delivery methods.

However, this integrated vision includes several different learning modes. For the purposes of this report the terms used to describe these modes are defined as following:

- *Flexible learning* describes learning opportunities that can be accessed “any place and any time.” The term relates more to the scheduling of activities rather to any particular delivery mode. For example, a flexible learning environment can be provided in any of the venues mentioned above.
- *Distance education* connotes a physical separation between the learner and the teacher with a variety of mediating processes used to convey content, provide tutoring and conduct knowledge assessment. The term should not be applied, therefore, to on-campus learning venues.
- *Open learning* refers to the policies of the educational system in which the learning activity is occurring. Policies that permit open entry to learning, liberal transfer of credits and recognition of prior learning would be indicators of an open learning system. Such policies are often not part of a distance education system, yet the two labels are often used together and interchangeably, which can be very misleading.
- *Online learning* and *e-learning* have emerged as terms to describe the application of ICT to enhance distance education, implement open learning policies, make learning activities more

flexible and enable these learning activities to be distributed among many learning venues. The term *virtual education* has been chosen for this project because online learning tends to connote a greater emphasis on the use of computers and the Web, and e-learning tends to be used more often in the context of business operations and ICT-enabled staff training. In other words, we regard online learning and e-learning as specific subsets of the larger concept of virtual education.

This clarification of terminology is not trivial. The issues involved in the evolution of virtual education models need to be debated in a context in which all parties have a clear understanding of what each label means and implies. As well, as time advances, ICT will be increasingly used to enhance all forms of learning, at all educational levels, making it even more important that the nature of the ICT application not be misconstrued because of the label used.

2. FORCES OF CHANGE

Governments and international development and aid organisations are experiencing a growing sense of urgency to respond to the challenge of providing education in a changing global market. Following are some of the forces that are creating this sense of urgency:

- World population in 2015 will be 7.2 billion, up from the current figure of 6.1 billion. Ninety-five percent of the increase will be in developing countries. People in most countries will live longer, which will add to the demand for access to education as well as health and other services.
- The current focus on achieving universal primary education, and the further development of secondary systems, will put more pressure on small states to increase higher education capacity.
- Globalisation, the largely unrestricted flow of information, ideas, cultural values, capital, goods and services, and people, which is driven by the global networked economy, will enhance not only the demand for education, but create need for more diversified content and greater flexibility of access to educational opportunities. Two trends that run parallel to the globalisation process will have a significant impact on the development of global systems of virtual education:
 - The creation of more small and medium-sized enterprises.
 - An increasing desire to defend cultural, linguistic and religious identities.

Both trends complicate inter-institutional collaboration and militate against the flow of globalised content across borders.

- Exponential growth of scientific knowledge continues to be accompanied by a widening gap between developed and developing countries, the latter being unable, single-handedly, to acquire the basic infrastructure necessary to access that knowledge.
- The emergence of a post-industrial information age, the “knowledge economy,” plus the explosive growth and distributed nature of new knowledge creates a demand for continuous upgrading education that is difficult to provide through face-to-face classes.
- The “knowledge economy” also creates demands for greater access to tertiary education and for “work-ready” graduates.
- There is growing reluctance on the part of governments to fund the increasing demand for higher education via traditional delivery models.

The Commonwealth of Learning has stated that “the provision of education will be the biggest challenge for most governments as they attempt to attain the ideal of peace, freedom and social justice, while striving at the same time to position themselves to generate more wealth and compete in a global market.”

And governments are recognising that this challenge cannot be successfully met without substantive reform to their education systems.

3. EMERGING APPLICATIONS OF ICT

The use of ICT in higher education has thus far been marked by applications to the delivery of existing courses using technologies such as video conferencing, e-mail for tutor/learner correspondence, use of the Web for exchanging assignments and accessing the Internet for information-gathering. These applications have all been helpful – although not always cost-efficient! The point, however, is that most of these applications have been to enhance access to the traditional educational products of higher education – namely courses and associated materials. In other words, what we are currently calling virtual education is mostly the delivery of what already exists: the programmes and courses offered by institutions of higher education. However, this is changing as educators are beginning to use the technologies for purposes other than the delivery of courses only. There are two major examples of such use: applications for the development and use of learning objects databases and applications that enable the search, retrieval and packaging of information according to user specifications.

Learning objects

Educational institutions worldwide spend large amounts of money each year developing, adapting or acquiring learning resources and course materials. The development of electronic learning resources is particularly expensive and is carried on by institutions in all parts of the world. The Internet and the World Wide Web have become vehicles for making instructional resources very accessible, and thereby providing opportunities for educators and learners to find, evaluate, reuse, or repurpose instructional resources that have been developed by colleagues or peers around the world. At the core of this new way of thinking about learning resources and course materials is the notion of *learning objects*, defined as finely grained modular units of instruction that can be stored in network databases and aggregated, recombined or re-engineered to suit the purposes of multiple institutions, faculty members or instructional developers.

The following principles provide a summary of the benefits to be derived from learning objects. A more detailed description of learning objects, the principles involved and the systems for development and use is provided in Appendix D .

- *Flexibility*: Content designed for use in multiple contexts can be reused, repurposed or re-engineered easily to meet situational opportunities. It is much harder to retrofit content for a new opportunity when it was not initially designed to facilitate reuse.
- *Customisation*: Modular learning objects maximise the potential for personalising content or delivering content in multiple formats (e.g., CD-ROM, Web, print or other formats).
- *Interoperability*: Using an object approach allows an organisation to base its design, development and delivery model on international standards that will ensure interoperability across computer hardware and software platforms.
- *Ease of update, search and content management*: Metadata tagging standards facilitate rapid retrieval, updating and management of large volumes of content.
- *Facilitation of competency-based learning*: The creation of competency-tagged modular learning materials in an object format facilitates an adaptive learning approach by matching modular materials to specific individual competency gaps in learners' knowledge.
- *Increased value of content through reuse*: The value of content is increased every time it is reused, reducing the requirement for new design and development.

Information search, organisation and packaging

With the development of new interactive sites and the number of Web pages escalating, the flood of information available on the Internet has led to search engines becoming overloaded, increasing the difficulty of locating usable, educational information. An example of how technologies can be used to alleviate the problem can be found at The Commonwealth of Learning. COL has embarked on a project to provide services for ministries of education, institutions, their staff and learners that enables them to have more focused access to information on open and distance learning, and that is available at Internet locations known to be of value. The “COL knowledge finder” service, available through COL’s Web site, automatically indexes open and distance learning-related information from over 150 selected Internet domains and organises the results for user retrieval. Users are then provided virtual access to these results with advanced facilities to search using concept, pattern and Boolean methodologies.

Once users find information using these tools, they are able to reorganise and create personalised and consolidated “packs” of information. During a search, a taxonomy is automatically generated and provided for customisation by the users. Once an information pack has been generated and customised by a user it may then be transferred and easily presented to other users, such as colleagues, researchers and learners. These packs may be tagged with XML data, so they become standards-compliant (SCORM, IMS, CANGOR) shareable content objects. Through linking, packs can be aggregated into learning modules or other organised content that can be served from a learning object repository.

4. IMPLICATIONS FOR VIRTUAL EDUCATION

The emerging applications of ICT provide an important backdrop against which a possible vision for the virtual university needs to be defined and which give rise to a wide variety of models and applications. While it may not be feasible for the virtual university to apply many of these applications in the short term, they are all potentially applicable as the small state institutions move to adopt ICT applications. Following are some of the scenarios that can be anticipated:

- Future models of virtual education will be more “Web-centric” in that they will be ICT-enabled and will make increasing use of the Web. However, these systems will neither be exclusively online nor used only to serve learners at a distance. They will be as much concerned with enhancing classroom-based learning, at all levels of education, as they are with learning that occurs in “off-campus” venues.
- Systems will be more “learner centred” or “customer-aware,” in the sense that they will:
 - Enable learners to interact with content, teachers, administration and service resources in ways that fit their circumstances.
 - Provide learners and teachers with access to online resources such as text, video and audio learning resources, lesson plans and assessment strategies that are qualitatively equivalent or superior to those available in the traditional learning environment. This will enable models of “resource-based learning” to become more prevalent.
 - Give learners increased choice in the mode of delivery of their learning experience, enabling them to tailor the learning experience to their needs.
- Learners will be able to access educational programmes from anywhere, thus saving substantially on relocation costs.
- Learners can have existing skills and knowledge assessed and credited towards future programme credentials and, if required competency standards are demonstrated, they will be able to obtain

credentials from a variety of accredited institutions that have developed specialised assessment and credit-banking services.

- Indigenous expertise and knowledge can be incorporated to add value to learning resources acquired from elsewhere.
- Learners will be able to choose to meet their educational needs from a quality-assured list of providing institutions.
- Greater “dis-intermediation” of the teaching/learning process will be possible in the sense that:
 - Individual learners will be able to go directly to learning object databases and interact with the content as they wish.
 - Peer-to-peer interactions will enable learners to establish their own learning groups focused on content they have created.
- Programme planners and instructional designers can aggregate and sequence content according to the needs of particular groups of learners by selecting learning objects from large content databases and selecting the appropriate mode of delivery.
- Applying ICT to core institutional functions such as administration, materials development and distribution, course delivery and tuition, and the provision of learner services such as advising, prior learning assessment and programme planning will provide institutions with more options for managing these functions.
- Organisations can be created through alliances and partnerships to facilitate teaching and learning without being involved as a direct provider of instruction.

IV. ANALYSIS

1. THE BASIC OBJECTIVES

The Technical Advisory Committee (TAC) believes that the reaction of policy-makers and institutional leaders to a proposed virtual university for small states will largely be determined by the degree to which they perceive that it will help them to achieve three objectives:

1. To increase access to learning opportunities by enhancing the flexibility of delivery modes or by eliminating geographic barriers to participation.
2. To enhance the quality of the learning experience in terms of the currency and relevance of the content that is taught as well as the effectiveness of the pedagogy and the adequacy of support for the learners.
3. To reduce and control costs by increasing efficiency, increasing productivity or generating greater revenue by increasing market share.

These objectives therefore, together with the Ministers' of Education caveat that recommendations need to be based on the principle of "adding value" to the capacities and structures that currently exist, provided the framework for the Committee's deliberations regarding the development of a vision for the virtual university.

2. THE ASSUMPTIONS

The TAC members also reflected on their earlier analysis of higher education in the small states and agreed on a set of assumptions about the context in which a future virtual university is likely to operate. These were:

- Collaborative action is essential.
- The initiation and management of change requires strong, committed leadership.
- The application of ICT in the higher education systems of most small states will continue to lag behind developments in other parts of the Commonwealth unless there are interventions that increase the capacity to participate more actively.
- Access to ICT infrastructure in small states will continue to improve.
- Emerging information database standards will enable small state institutions to create unique resources and to access global resources.
- The potential for convergence between distance and on-campus teaching models is directly related to the speed at which information and communication technologies are converging.
- Both faculty and learners will require reorientation and training with regard to the development of curricula and instructional materials as well as to their role in the teaching/learning process.
- The institutions will be able to reduce costs to the extent that they are prepared to rethink the way they currently operate and allocate resources.
- The application of ICT in higher education will likely increase institutional costs unless there is a clear understanding and analysis of the objectives to be achieved.

3. THE “ADDED-VALUE” OPPORTUNITIES

The TAC then turned to the task of identifying ways that a virtual university might “add value” to higher education in some or all of the small state regions. The following statements were agreed upon as illustrative of the types of contributions that could be realised through the creation of a virtual university:

- First and foremost is the importance of undertaking activities that will enable the small states to be “players” in the evolution of ICT applications in education. TAC members believe that without some interventions, institutions in small states will be unable to participate in the global development of virtual education in any other way than as consumers of educational products produced elsewhere.
- A virtual university could play an important role as a facilitator in helping the institutions of small states form consortia and partnerships to share existing course materials, develop new ones, plan new programmes for joint delivery and market existing programmes in content areas where a member institution has unique resources.
- Accessibility to knowledge that would provide a competitive edge for small states was deemed to be an important role for a virtual university. For example, professional development courses for public and private sector staff could be available on a continuing basis from professional organisations.
- A virtual university would also provide services that enable students to plan programmes and take courses from a variety of quality-assured providers and have the credits earned accumulated towards an appropriate credential.
- Provision of accreditation systems to develop quality standards, and ensure they are met, was thought to be useful in an environment of increasing diversity of provider institutions and organisations.
- A virtual university would enable small states to have access to research and development capacity through which they would be able to assess various innovations involving ICT applications.

V. A PROPOSAL FOR A VIRTUAL UNIVERSITY FOR SMALL STATES

The directive from the Ministers, that “a virtual university for small states be developed using existing structures and capacity,” was interpreted to mean that it must not only build on existing capacity, but also add value to the operations of the regional and national institutions of the small states. The Committee concluded, on the basis of the foregoing analysis, that there is an opportunity to do that and therefore recommends that an organisation be established to implement and carry out the following vision and functions:

1. THE VISION

The directive from the Ministers challenged the TAC members to think beyond traditional ideas as to what constitutes a university. They recognised that one of the most important consequences of ICT applications is that it offers the opportunity to “unbundle” the basket of functions usually performed within each individual institution, creating options for new organisations to emerge. Some may take the form of specialised providers of a specific function, such as the development of materials, while a consortium of institutions may decide to carry out certain functions on a shared basis.

The vision that emerged for a virtual university serving small states was one of a consortium of institutions, enabled by appropriate ICT applications, working together in practical ways to plan programmes, develop the required content and ensure the delivery of those programmes and support services to learners. Three features of this vision need to be underscored:

1. The virtual university is not being proposed as a university in the conventional single institutional sense. It will, in fact, be a “virtual organisation.”
2. The virtual university will carry out its functions by optimising ICT applications, particularly those that enable the creation and deployment of content databases based on learning objects. It is therefore a bold and challenging vision that has the promise of enabling the consortium of member institutions to become leaders in the development of virtual education models that can be tailored to the realities of the learners they serve.
3. The virtual university is as much concerned with “adding value” to conventional on-campus instruction as it is with serving learners at a distance.

2. THE PROPOSED FUNCTIONS

Committee members spent much of their time during the Vancouver meeting debating the functions that the virtual university will need to carry out in order to implement the vision. Three basic functions were agreed upon:

1. The most critical function is to provide a vehicle for collaboration in the development and use of emerging technologies that are needed to develop virtual education models. Subject matter databases and learning management systems were suggested. For example, the development of content databases and the use of learning management systems are emerging as the hallmark of virtual education in the future. Yet the Committee noted that small state institutions are absent from membership in the various consortia that are involved in the development of these initiatives. Without assistance, the small states

will continue to be non-participants in this development and will find themselves increasingly in the position of being consumers of educational products created elsewhere.

2. A second potential function is providing leadership in the planning and design of programmes, curricula and courses that are pertinent to the human resource development needs of the states involved and ensuring their delivery to learners. While these programmes may be more urgent in the context of continuing professional education, award-bearing programmes at certificate, diploma, degree and advanced degree levels must also be contemplated. The Committee also felt that should the virtual university be established, it would need to consider out-sourcing virtual courses and programmes from a growing number of institutions worldwide. However, it must also be able to design and develop programmes of its own if it is to ensure that the needs of the small states are met.
3. The third proposed function involves providing support services to students, which would include assessment of current skills and knowledge, advice regarding academic plans, quality-assured access to courses, record of learning and the provision of awards where these are not available from other organisations. The TAC members believe that these services will be essential for learners who will likely be taking courses from a variety of national, regional and foreign institutions.

3. THE CORE ACTIVITIES

It will be necessary for the virtual university to be engaged in a number of core business activities in order to carry out the functions described above. These activities will need to be prioritised during the implementation period; however, they are the ongoing activities that are needed to guide the structuring, staffing and budget planning for the virtual university when it is fully operational.

Needs assessment:

The virtual university will have to ensure that it maintains ongoing needs assessment in order to keep focused on those actions, which add value to the activities of the existing institutions. Areas of potential needs are those related to programme requirements, technology infrastructure, virtual education orientation and training, policy development and partnership opportunities.

Programme development and delivery:

The development and delivery of programmes can be broken down into general principles and generic processes:

General principles

- Programme activities will need to encompass all levels – from non-award programmes designed to enhance the skills of professional staff in the civil service to credential-bearing programmes at the levels of certificate, diploma, degree and advanced degree.
- All programmes will need to be modular in format and credit-bearing so that those who wish to can have them recognised towards an appropriate credential.
- Template delivery models will need to be designed to accommodate the realities of different learner circumstances regarding available ICT infrastructure and differing course content.
- Template curricula may be required that specify the learning outcomes for a given programme.

- Global sources of quality-assured programmes and courses required by the constituents of the virtual university will need to be identified, as well as sources of expertise that can be utilised to develop programmes specifically for the virtual university.
- Quality assurance and accreditation procedures will need to be developed to ensure the credibility of the programs and learner support provided by the Virtual University.

Generic processes

- Establish academic development teams to agree on curricula and programme levels for priority programme areas that are identified.
- Search for relevant knowledge products.
- Review available resources and identify gaps.
- Decide what curricula materials can be acquired/adapted and what will need to be developed by the virtual university. (Note: the development team will need to be supported with instructional design, content and media expertise by the virtual university).
- Decide if delivery can or should be managed by members of the consortia, the virtual university or some other institution.
- Decide how learner assessments will be managed (i.e., by provider institutions, by the virtual university, by building a database of assessment items.)
- Determine how certification will be managed (i.e., by consortium members, other institutions or by the virtual university).

Development and maintenance of virtual systems:

There are several dimensions of this activity which will be critical to the success of the virtual university. These dimensions may involve the virtual university working with groups of small state institutions on an inter-regional, regional or sub-regional basis in order to assist them with such activities as:

- Development of content databases.
- Design and implementation of learning management systems.
- Creation of digital libraries.
- Establishment of licensing agreements for database and library access on behalf of the collective.
- Creation of purchasing consortia for hardware, software and licensing.

Learner support systems:

The virtual university will need to anticipate that it will be facilitating learners in the context of a process that is lifelong, and that they will potentially be taking parts of programmes from a variety of providers. It will therefore need to ensure that learners have access to a broad range of services to include the following:

- Educational counselling for career opportunities.
- Assessment of current skills and knowledge.
- Education programme planning/advising on the requirements and appropriate sources of course work providers.
- Maintenance of individual learner records.

- Issuance of appropriate awards through other institutions, in conjunction with other institutions or in its own right as may be required.

Leadership on policy development and strategic planning:

The application of ICT in education at all levels is dynamic. Policy-makers and educational leaders require support to ensure that any virtual education initiatives have the appropriate policy environment within which to function and that plans are realistic in terms of available resources. The following activities illustrate the issues that will require attention:

- Orientation for the emerging components of virtual education.
- System needs assessment and implementation options.
- Cost/benefit analysis and implementation options.
- Faculty and staff orientation and training.
- Learner orientation to virtual delivery models.
- Private sector liaison and partnership opportunities.
- Identification of funding sources.

Research on virtual education:

One aspect of the research will need to be specific to the processes of the virtual university. It must ensure that it can objectively assess its performance and change as the model develops. Another aspect will be to monitor the efficiency and effectiveness of different ICT applications to ensure that technology does not drive decision-making. There will be a growing need, in order to ensure quality, to “bench-test” a variety of online learner services such as knowledge assessment, programme planning and peer-to-peer teaching. The development of template learner profiles (e.g., that describe a variety of learner characteristics and learning environments) will enable an appropriate “mix” of delivery technologies to be selected according to the requirements of specific profiled groups.

Internal staff development:

The virtual university will need to begin with a firm commitment for ensuring that the personnel it engages to implement these core business activities are up-to-date with instructional design models, current software and hardware platforms, and cost structures. It will also need to ensure that training is provided for staff in the partner organisations and institutions that are involved.

4. THE COST

The cost of implementing and operating the proposed virtual university is, of course, dependent on a number of assumptions about the technical infrastructure and human resource capacity that will be needed as well as the economies of scale that can be achieved. That said, however, the following analysis provides an overview of the order of the initial capitalisation required and the recurring costs necessary to provide a basic core staff. The hope would be that this basic infrastructure and human resource capacity could be scaleable to meet the demand for services.

Table 1.0 below shows an estimate of costs for the first five years of operation of the virtual university. A more detailed analysis of cost estimates is provided in Appendix E. Several assumptions have been made for the purpose of developing the estimates.

The critical ones are:

- A developmental period of five years has been selected.
- There will be 10 institutions as members of the virtual university.
- Estimates are in US dollars and are based on North American data.

Table 1.0: Framework and estimate of costs for the first five years of operation of the virtual university

CONTENT CREATION AND MANAGEMENT		
Acquisition of learning content management systems (LCMS) for each site (assume open source system)	\$0	
Operating and maintenance cost	\$1,250,000	
Content development team staffing costs	\$7,500,000	
Servers for each member site	\$ 50,000	
	Subtotal	\$8,800,000
CONTENT DEPLOYMENT AND PROGRAMME DELIVERY		
Learning management system (LMS) for hub (open source)	\$0	
Administrative and Student Information Systems	\$2,500,000	
Staff	\$2,800,000	
Operating	\$1,500,000	
Regional call centres to support members and learners	\$435,000	
	Subtotal	\$ 7,235,000
VIRTUAL UNIVERSITY LEADERSHIP AND DEVELOPMENT		
Member orientation	\$200,000	
Core leadership team	\$2,000,000	
Travel	\$500,000	
Training	\$2,500,000	
		\$5,200,000
TOTAL COST ESTIMATE		\$21,235,000

VI. THE BENEFITS

The analysis of the Proposal undertaken by the Ministers attending the Seychelles Consultation identified a number of benefits for small states that would result from the establishment of the proposed Virtual University. The following list is illustrative of the perceived benefits that led the Ministers to endorse the proposal and to encourage their Ministerial colleagues to approve its implementation at the 15th CCEM in Edinburgh.

A Virtual University would:

1. Enable small states to be contributors, as well as consumers, in the evolution of ICT applications in education.
2. Provide a cadre of people with the skills and knowledge necessary to plan and implement virtual education systems.
3. Create a vehicle for participation in global partnerships to develop re-useable content databases.
4. Provide a capacity for collaboration in the development of shared programs.
5. Enable existing providers of higher education to supplement and enhance current courses and programs, and to develop new ones, using knowledge content databases.
6. Permit the delivery of courses in a variety of formats according to need and context.
7. Enable small states to deal with issues of quality assurance and accreditation in a coordinated manner that is consistent with global standards.
8. Provide enhanced services for learners.
9. Complement the activities of existing organisations and institutions and enhance services to those states that currently do not have institutions of higher education.

VII. GOVERNANCE

The Ministers gave careful consideration to the question of governance of the proposed Virtual University during their deliberations in the Seychelles. While the TAC did not make specific recommendations in this regard, their report did emphasise that there are three dimensions to decisions regarding governance of the virtual university. The first relates to the relationship it will need to have with COL, the second relates to the nature and powers of the “linking mechanisms” between the virtual university and its members, and, the third, relates to its internal structures and decision-making processes. The TAC was unanimous in the view that the vision proposed for the virtual university would overlap with some aspects of the current mandate of COL. Therefore, if the Virtual University were to be established as a separate entity, roles would need to be clearly defined and strong linking mechanisms established in order for the two organisations to compliment one another. The TAC pointed out that the linkages would be more easily accomplished if the virtual university was nested within COL, either as an operating unit or as subsidiary body analogous to the Commonwealth Educational Media Centre for Asia (CEMCA), which is a COL subsidiary located in New Delhi.

The development of the linking mechanisms between the virtual university and its members, and the evolution of the virtual university’s structures and decision-making processes will be defined as part of the implementation plan. However, these developments will need to be guided by the principle that the ability of the virtual university to act must not be compromised by a burdensome array of committees.

The Ministers considered the advice of the TAC and concluded that, at least at this stage of development, it will be important for COL to take a leadership role. More specifically, they recommend that, if the continuing development of a Virtual University for small states is endorsed by their colleagues at the CCEM in Edinburgh, COL should be invited to incorporate its implementation as a project within its next Three-Year Plan.

The Ministers further recommend that COL establish a Strategic Planning Committee for the Project comprising, inter alia, representatives of Ministries of Education of small states of the Commonwealth for the purposes of advising COL as the implementation of the Project proceeds, and, providing a mechanism through which to involve states and institutions in the work to be done.

VIII. ACTION PLAN

If the Ministers attending the 15th CCEM support the development of a virtual university to serve the small states of the Commonwealth as defined in this proposal, the process of implementation will need to begin immediately. The following list of actions is illustrative of the various matters that will need to be addressed. However, it must be noted that issues will arise during the implementation process that will require changes and adaptations that cannot be anticipated at this point.

1. Preparation of a “marketing plan” for the purpose of communicating and disseminating information about the Virtual University to officials and institutional leaders in small states as well as to the general public.
2. Governance matters will need to be addressed. For example, COL will need to develop a management structure for the project, the Strategic Planning Committee will need to be appointed, and, terms of reference will need to be prepared and agreed.
3. The development of a “business model” will be an early requirement in order to determine the sources of revenue and to prepare an expenditure plan accordingly. This will require a definition of the resources that will be available from the participating small states, from COL, through private sector partnerships as well as from donor agencies.
4. Small states will be need to be solicited regarding their needs and suggestions for programs that should be given priority by the Virtual University.
5. A resource inventory of the inputs available from small states, other Commonwealth states, as well as non-Commonwealth sources, will need to be developed in areas such as existing content databases, knowledge content and systems expertise, and, current program offerings that could be re-purposed and re-used.
6. Mechanisms for the accreditation and monitoring of programs, courses and content will need to be established to ensure the quality of both the offerings and the processes of the Virtual University. The review procedures, guidelines, criteria and decision structures extant in other jurisdictions will need to be reviewed as the Virtual University establishes its own framework.
7. The virtual university is not proposed as an independent institution. Rather, it will be a consortium -- an organisation that provides a core of services for institutions that elect to collaborate with one another by becoming members. Therefore, at some point in the implementation process, procedures will need to be developed to enable the membership of the consortium to be defined.
8. Technical infrastructure requirements will need to be defined along with procurement and licensing arrangements with respect to data base creation tools, authoring tools, learning management system(s) and administrative systems.

9. There will be a need for small state institutions to be able to “see” the virtual university as doing something useful in programmatic terms very soon after the concept is endorsed. The following are some of the types of programmes that could be organised and delivered through co-operation with professional associations, private organisations and higher education institutions, including those in some of the small states:
- Information technology – skills, policy and management.
 - Teacher training and in-service development – particularly in light of the internationally agreed-upon Millennium Goals.
 - Paramedical – health care assistants, primary health care workers and nurses.
 - Entrepreneurship and organisation management.
 - Accountancy and financial management.
 - Counselling.

APPENDIX A: SMALL STATES OF THE COMMONWEALTH

Africa

Botswana
The Gambia
Lesotho
Namibia
Swaziland

Indian Ocean

Maldives
Mauritius
Seychelles

Mediterranean

Cyprus
Malta

Caribbean

Antigua and Barbuda
The Bahamas
Barbados
Belize
Dominica
Grenada
Guyana
Jamaica
St. Kitts and Nevis
St. Lucia
St. Vincent and the Grenadines
Trinidad and Tobago

Pacific

Fiji Islands
Kiribati
Nauru
Samoa
Solomon Islands
Tonga
Tuvalu
Vanuatu
Papua New Guinea

South East Asia

Brunei Darussalam

APPENDIX B: MEMBERSHIP OF THE TECHNICAL ADVISORY COMMITTEE

Dr. Henry Alamango
Executive Director
Commonwealth Network of Information
Technology for Development

Mr. Vis Naidoo
Education Specialist, Education and Technology
Commonwealth of Learning

Prof. Lawrence Carrington
Pro-Vice Chancellor
Distance Education and Non-Campus Countries
University of the West Indies

Dr. David Souter
Executive Director
Commonwealth Telecommunications
Organisation

Prof. Rajesh Chandra
Deputy Vice Chancellor
The University of the South Pacific

Mr. Paul West
Education Specialist, Knowledge Management
Commonwealth of Learning

Dato' Prof. Gajaraj Dhanarajan (Chair)
President & CEO
The Commonwealth of Learning

Dr. Glen Farrell (Project Facilitator)
Senior Consultant
Commonwealth of Learning

Prof. Donald Ekong
Vice-Chancellor
University of The Gambia

Prof. Michael Gibbons
Secretary General
Association of Commonwealth Universities

Prof. Goolamhussen T.G. Mohamedbhai
Vice-Chancellor
University of Mauritius

APPENDIX C: COMMUNIQUE BY MINISTERS OF EDUCATION

Commonwealth Virtual University for Small States Meeting 12th - 14th March 2003, Seychelles

We the undersigned Ministers of Education drawn from Africa, the Indian Ocean, the Pacific and the Caribbean meeting in the Seychelles at a Commonwealth Virtual University for Small States meeting, note that:

- The 14th Commonwealth Conference of Education Ministers (CEEM) in Halifax, Canada passed a resolution requesting the Commonwealth of Learning (COL) to develop a proposal for a virtual university for small states of the Commonwealth
- A proposal for the virtual university for small states was developed by a Technical Advisory Committee (TAC) established by COL and that this proposal was distributed to all Commonwealth Ministers of Education for their comments

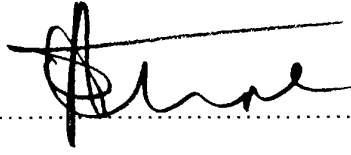
Having reviewed the proposal developed by the TAC, we wish to

- Reaffirm our commitment to the Halifax Declaration on the virtual university for small states of the Commonwealth
- Thank the COL and the TAC for their work in researching and developing the proposal
- Support the vision of the virtual university as presented in the TAC proposal and recommend its transmission to the 15th CCEM in Edinburgh

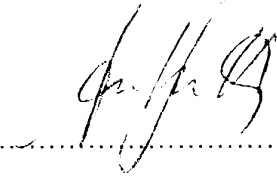
We wish to recommend that:

- The 15th CCEM endorse the proposal as presented by the TAC
- COL be invited to manage the continued development of this project as part of its next three year programme (2003 -2006)
- A strategic planning committee be established for the project comprising, inter alia, representatives of Ministries of Education of small states of the Commonwealth.
- Small states be urged to identify the areas of needs and priorities to guide and inform decision-making regarding programme development.
- COL takes note of and utilizes the professional knowledge, expertise and infrastructure available within small states for the development of learning content.

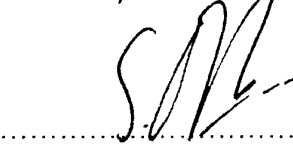
Dated the 14th day of March 2003



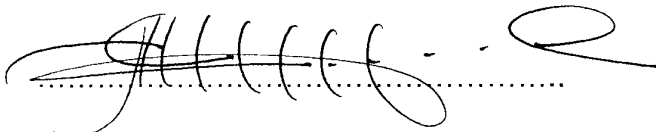
The Honourable Danny Faure
Minister of Education - Seychelles



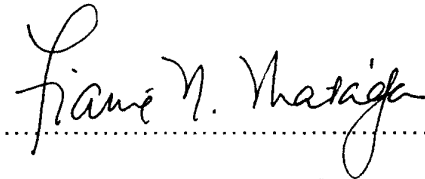
The Honourable Ann Thérèse Ndong-Jatta
Secretary of State for Education - Gambia



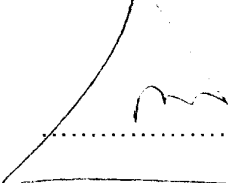
The Honourable Steven Obeegadoo
Minister of Education - Mauritius



The Honourable John Mutorwa
Minister of Basic Education - Namibia



The Honourable Fiamē Naomi Mata'afa
Minister of Education - Samoa



The Honourable Mario Michel
Minister of Education - Saint Lucia

APPENDIX D: LEARNING OBJECTS AND THEIR ATTRIBUTES

(By David Porter, David Porter And Associates)

A method for preparing learning assets for use, reuse and repurposing through electronic storage and retrieval involves associating the educational materials with a standard classification system (metadata). The IMS Global Learning Consortium, a group of computer hardware vendors, software vendors, publishing companies and educational organisations, is currently promoting a metadata standard for educational material that is gaining a following worldwide (www.imsproject.org). Educational organisations and institutions that observe metadata standards such as those of the IMS can make their databases and repositories for print, audio, image, video and computer-based materials widely accessible to educators or institutions that may wish to use those resources through licensing or consortium arrangements.

To understand the principles of learning object development, use and deployment, it is important to examine some of the key concepts underlying the approach.

GRANULARITY

The term “granularity” describes the degree of precision with which learning objects (text, image, audio, video) can be described for storage in an online database. When learning materials can be tagged with metadata describing their learning outcomes, their language level, grade level, format and other attributes, educators can begin to search, find and aggregate appropriate resources for use in lesson materials.

Granularity also provides opportunities for customisation, allowing educators or institutions the ability to repurpose educational assets for different individuals or groups. A common database of learning objects that is accessible to instructional designers and instructors for aggregation and deployment in variety of formats represents a new way of organising learning materials in an enterprise-wide fashion. For example, at the Open Learning Agency, Canada (OLA), grades 11 and 12 granular course content and resources for the Information Technology and Media Arts curricula is repurposed for use as content in a teacher education programme by applying a different instructional model to the learning objects. A subset of the learning objects that are offered as part of a course syllabus for grades 11 and 12 students are repurposed in modular chunks that satisfy ICT learning outcomes that teachers wish to pursue as part of a self-directed professional development programme called The Learning Lab (www.ola.bc.ca/tll). In this case, through reuse and repurposing of the learning objects used in both courses, development costs have been lowered.

INTEROPERABILITY

Interoperability is a requirement for systems that manage granular learning objects. Retrieving and transferring of the media assets from within the database systems for use in new or different delivery environments and to other learners and instructors adds value to them. Instructors and learners are in a better position to use content and resources when they observe interoperability standards and they can be confident that the learning materials acquired will work with their own instructional development and delivery systems. Learning object-based content and resources can be transformed to work with almost any instructional delivery system available commercially through observing common interoperability standards.

COMMON OBJECT STANDARDS

The current rate of technology change requires that education providers use or have access to learning systems that meet standards and specifications commonly agreed upon by a range of institutions, publishers and technology vendors worldwide. Currently the IMS Global Learning Consortium's metadata specification is the set of standards that has captured the attention of the education and training community because of its adherence to the principles of openness and interoperability. Within such a standards-based environment, institutions can follow the lines of development that best meet their faculty or learner needs without compromising their ability to participate in the exchange of learning objects with other educational institutions or vendors.

INSTRUCTIONAL DESIGN OPTIONS

Learning objects provide instructional designers with enhanced opportunities to reuse or repurpose granular components to suit the different pedagogical needs of individual learners or programme offerings. Consider the following:

- An instructional designer developing a focused upgrading course in Mathematics might assemble learning objects for a particular set of outcomes in a systematic way that forms a coherent unit of study. These materials might be assembled for a computer-managed instructional system that works on the principle of mastery. Students must master developmental materials at a predetermined threshold (e.g., 80% mastery) before being allowed to move on to new materials.
- A student studying for a Mathematics challenge exam might use the same store of math learning objects to fine tune areas of special need without having to deal with the whole course syllabus. For example, an adaptive testing system might present the student with a short test and then assemble a programme of study based upon areas of weakness. Such a system could become a new business opportunity for an institution, or become a part of a normal challenge exam process that features flexible study opportunities prior to the exam.
- Students learning about a particular concept in Mathematics for the first time might be presented with the same learning objects configured in a different manner. The teacher may wish to have the students use the learning objects to “explore” specific concepts and begin to build and test their own constructs and theories about mathematical principles. Such an approach would be in tune with the kinds of learning experiences that many mathematics educators would provide for students in a progressive K-12 setting.

When institutions or instructional designers assemble a large number of granular learning objects and make them accessible from an object database, instructors or students can choose to use them in ways that suit their needs for particular courses or programmes. Of course, appropriate metadata descriptors must be attached to the learning objects to make them accessible for use through search and retrieval systems.

SYSTEMS OVERVIEW

The common systems that are deployed in a modern approach to instructional development, delivery and management include learning management systems (LMS), learning content management systems (LCMS), collaboration systems and testing systems.

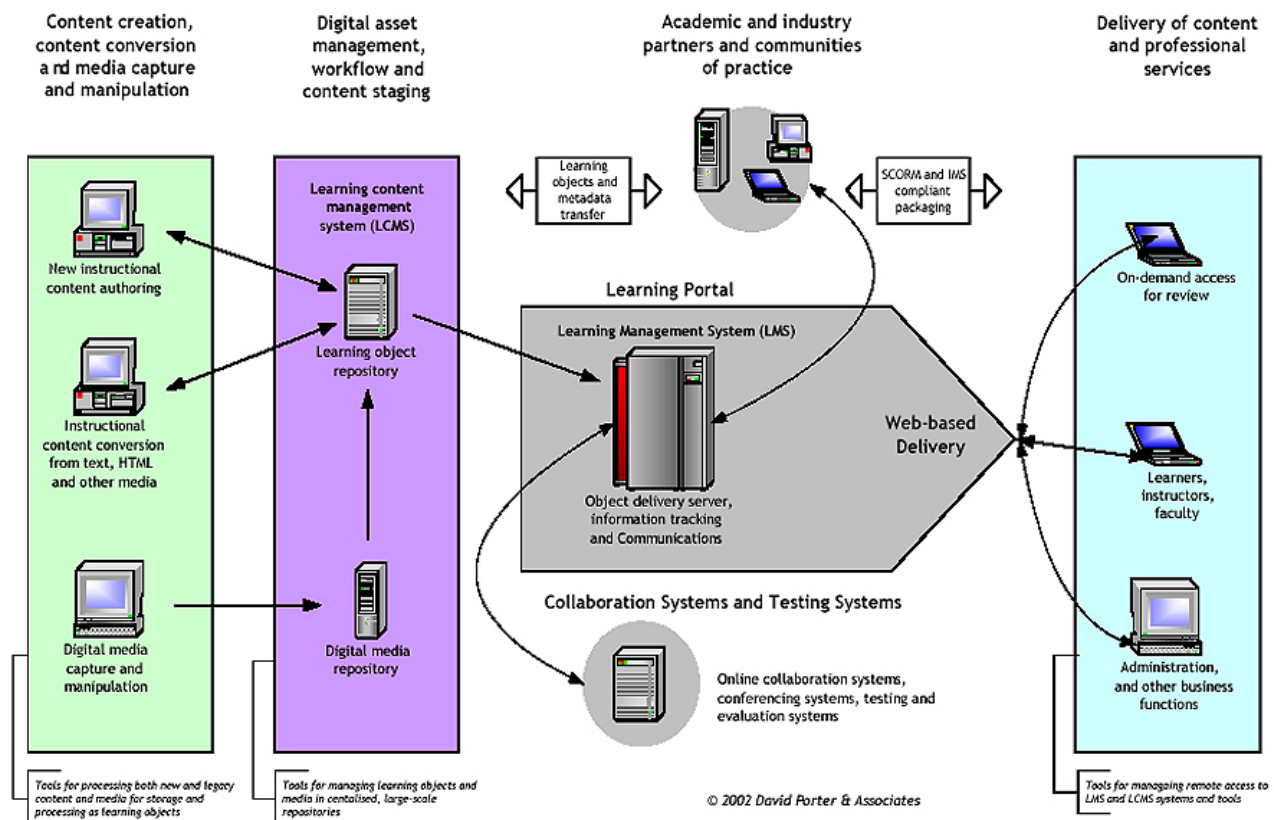
Typically, a learning management system is used in an organisation to bring cost-efficient administration to its learning, training and professional development programmes. An LMS brings a centralised, organisational approach to learning by scheduling and registering learners for both online and traditional offline courses, launching e-learning courseware, and tracking learner progress through the courses. An

LMS also provides administrators with mechanisms to track classroom-based resources and schedules, and provides authorisations and messaging related to resource availability and approvals.

Learning content management systems (LCMS) are a recent innovation. An LCMS allows an organisation to manage more extensive tracking of learners' interactions with content than an LMS. The focus of an LCMS is to develop, manage, and deliver content that a learner needs when it is needed. The LCMS tracks individual access to all learning objects and courses in its database, allowing organisations to monitor how people are learning, and helping them to refine or discard content that either is not being used or is not instructionally reliable.

An LCMS and an LMS are seen as complementary. One builds, monitors and tracks content usage, while the other monitors learner registration, performance and reporting. An LCMS records and bookmarks individual learner progress and test scores and passes them back to the LMS for reporting. In the best of all cases the LMS and LCMS will be interoperable and will manage reusable learning objects, using metadata schemes such as IMS and SCORM 1.1, defined by instructional standards bodies such as the IMS Global Learning Consortium Inc. (www.imspj.org) or the Advanced Distributed Learning Initiative (www.adlnet.org).

The following diagram illustrates the relationship of system components in a modern instructional development and delivery environment.



APPENDIX E: COSTING MODE

NOTES AND ASSUMPTIONS

1. The functions of the virtual university will be carried out at the following sites:
 - A management site (e.g., coordination of development projects, information provision, necessary central administrative functions.)
 - Virtual university member sites
 - Virtual university member sub-sites (e.g., regional campuses and learning centres)
2. There will be full interactivity between and among the management site and virtual university member sites. This will require agreement on standards and systems to be put in place.
3. The criteria for membership in the Virtual University will ensure the following:
 - Adequate physical infrastructure.
 - End users such as individual students and the faculty and staff of member institutions will access the virtual university using the appliances and connectivity available at member sites and sub-sites.
 - End users will have access to a computer with a Web browser and the equivalent of 28K connectivity speed (minimal).
 - A 64 Kilobit line connection capacity with other members of the Virtual University and with the central management site.
 - Staff to serve as content developers, provide system/technical support, and, serve on the various governance and planning committees. (note: training will be provided to develop expertise as required).
 - That the appropriate national and state governments are committed to support the member's participation in the consortium.
4. Costs can be grouped into the following categories:
 - Content creation and management.
 - Content deployment and programme delivery
 - Virtual university leadership and development

Costs can be allocated as occurring at either the management site or at virtual university Member sites.
5. Personnel costs for content creation assume the development of a sufficient number of knowledge “packages” each year to provide for the equivalent of three two-year diploma programmes. This cost can be scaled according to demand.
6. Open source systems will be used to the maximum extent possible.
7. North American data are used for all cost estimates. Personnel costs are therefore likely over-estimated to some degree. More precise costing will be done later during the preparation of an implementation plan.
8. All costs are in US dollars.
9. Ten member sites have been assumed for the first five years. This is obviously scalable.

CONTENT CREATION AND MANAGEMENT COSTS

Annual content development team costs	\$1,500,000
➤ Project managers	
➤ Content experts	
➤ Instructional design specialists	
➤ Media/graphics specialist	
➤ Assembler/technician information technology specialist	
Learning content management system (LCMS)	
Servers for each member site (10 sites assumed)	\$50,000
Annual operating and maintenance per member site	\$25,000

CONTENT DEPLOYMENT AND PROGRAMME DELIVERY


Learning management systems (LMS)	\$ 0
➤ Register students	
➤ Track learner progress against learning plans	
➤ Manage library of courses and present them to learners	
➤ Maintain learning records.	
<i>(Notes: Cost based on open sources systems)</i>	
Administrative and Student Information systems	
Capital cost (year 3)	\$2,500,000
Annual operating cost (years 3, 4 & 5)	\$500,000
➤ Student information systems	
➤ Accounting and all business transactions	
➤ Human resources management systems	
<i>(Note: LMS and ERP systems are separate at this point. However, the trend is combine functions into one system.)</i>	
Annual staffing costs for LMS and ERP systems (years 2-5)	\$700,000
<i>(Note: Assume 8 persons. Average of 4 persons per system.)</i>	
Regional call centres (5)	
➤ Act as help centres	
➤ Academic/programme planning advisers.	
➤ Technical trouble shooting.	
➤ Material distribution	
Annual staff and operating costs/centre (years 3-5)	\$120,000
<i>(Note: Assumes 3 or 4 staff per centre)</i>	
Capital cost per centre	\$15,000

VIRTUAL UNIVERSITY LEADERSHIP AND DEVELOPMENT

Member orientation	Per site:	\$20,000
Three-person team will include:		
➤ Institutional leader or delegate		
➤ Academic practitioner		
➤ Operating systems person		
Virtual university core leadership team (years 2-5)	Per year	\$500,000
➤ 1 CEO		
➤ 3 academic leaders		
➤ 3 support staff		
Travel	Per year	\$100,000
Training (500,000/ year)		\$2,500,000

CASH FLOW REQUIREMENT

	Y1	Y2	Y3	Y4	Y5
Content Creation and Management Costs					
Annual content development team costs	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000
<u>Learning content management system (LCMS)</u>					
Servers for each member site (\$5,000/centre)	\$ 50,000				
Annual operating and maintenance per member site (\$25,000 x 10)	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000
Content Deployment and Programme Delivery					
Learning management systems (LMS)	\$ -	\$ -	\$ -	\$ -	\$ -
<u>Administrative and Student Information systems</u>					
Capital cost			\$ 2,500,000	\$ -	\$ -
Annual operating cost			\$ 500,000	\$ 500,000	\$ 500,000
Annual staffing costs for LMS and ERP systems		\$ 700,000	\$ 700,000	\$ 700,000	\$ 700,000
<u>Regional call centres (5)</u>					
Annual staff and operating costs/centre			\$ 120,000	\$ 120,000	\$ 120,000
Capital cost per centre (\$15,000/centre)	\$ 75,000	\$ -	\$ -	\$ -	\$ -
Virtual University Leadership and Development					
Member orientation per site (\$20,000 for 10 sites)	\$ 200,000				
Virtual university core leadership team		\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Travel	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Training	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000	\$ 500,000
Annual Totals	\$ 2,675,000	\$ 3,550,000	\$ 6,670,000	\$ 4,170,000	\$ 4,170,000



© Commonwealth of Learning, 2003

1285 West Broadway, Suite 600
Vancouver, British Columbia
Canada, V6H 3X8

Tel: +1.604.775.8200
Fax: +1.604.775.8210
E-mail: info@col.org
Website: www.col.org