Open Schooling with Open Educational Resources: Opening doors, creating opportunities

Frances Ferreira and Cindy Gauthier, Editors

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Commonwealth *of* Learning

The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to encourage the development and sharing of open learning and distance education knowledge, resources and technologies.

Published by:

With support from:

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Foreword

With its development in 2000 of the STAMP 2000+ teacher training materials, the Commonwealth of Learning (COL) was active in the field of open educational resources (OER) even before the term was formally coined at a UNESCO meeting in 2002. Ever since then, COL has been in the vanguard of promoting the development and use of OER at all levels: primary, secondary and tertiary.

This book is based on COL's experience of developing OER for secondary schools. Facilitated by COL, the Open Educational Resources for Open Schools (OER4OS) Project gave six countries — Botswana, Lesotho, Namibia, Seychelles, Trinidad and Tobago and Zambia — the opportunity to develop OER in 20 subjects based on their secondary school curricula. The content was developed in print, audio, video, CD-ROM and online formats to cater to a diversity of users with access to different technologies. The entire project was made possible through the generous support of the William and Flora Hewlett Foundation.

OER4OS exemplifies COL's approach to OER. The OER initiative requires a learner-focused and decentralised approach. There is a need to include various stakeholders in the development, renewal and use of content so that passive consumers can become active producers of knowledge. What incentives can be provided to convince faculty to participate in this movement? The fundamental players are the teachers and the students. How can we reach them in remote and marginalised communities? COL mobilised the teachers from the very outset and facilitated their participation in the content development process. This resulted in intensive capacity development in various aspects of course design and delivery. It also meant introducing the teachers to various technologies and their effective use.

OER require open licensing and extended copyrights for wider use without compromising the moral and intellectual rights of the creators. This is a sensitive task that has to be kept relevant to specific contexts, and COL had to tread carefully. A lack of understanding about copyright and open licensing at senior levels in academic institutions as well as ministries is a roadblock for OER development. Therefore, it was important for COL to hold parallel policy advocacy programmes to include these constituencies.

Over three years, COL has created a cadre of experts who can develop, adapt, reuse and deliver OER, as is evident in some of the chapters in this book. This exercise has also changed the mindsets of the stakeholders, leading them to share content freely and under open licences. There has also been a positive impact on policy makers in the ministries and institutions, resulting in more enabling environments for the deployment of OER. As you will see from the chapters that follow, many important lessons have been learned. COL is committed to learning

from these lessons and to sharing them with other partners and stakeholders. This publication is one way of doing so.

It is important for institutions, just as much as governments, to buy into the OER movement. What incentives and other institutional mechanisms and processes need to be put in place to facilitate the growth and mainstreaming of OER in educational institutions? Some of the initiatives need to include:

- developing an ICT policy within institutions,

- elaborating on copyright policy,

- providing incentives for faculty members, such as increments in salary and recognition of OER towards promotions, and

- developing a strategy for involving stakeholders.

Since OER is a people's movement based on collaboration and sharing, COL will continue its partnership with UNESCO and other like-minded organisations to focus on four areas: advocacy and awareness generation regarding the benefits and availability of OER; policy development on OER at the national and institutional levels; capacity-building so that more governments, institutions and individuals are able to harness the potential of OER effectively; promotion of research through its publications on OER and its Chairs programme.

This book is an important landmark in how OER can be developed and embedded in local contexts, using indigenous capacities and available technologies. Most discussions have focused on OER in higher education, whereas this book provides us with valuable insights into how OER can be harnessed for the rapidly expanding secondary education sector. I congratulate the editors, the contributors and the many stakeholders in the field for being part of this historic initiative, which I'm sure, will open doors and create opportunities for unleashing the potential of the many who we are yet to reach.

Professor Asha S. Kanwar,
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Frances Ferreira

Frances Ferreira joined the Commonwealth of Learning (COL) as Education Specialist, Open Schooling, on 22 January 2007. Before joining COL, she had a long and successful career in the Namibian education sector. She began as a teacher, then became head of department, school principal and director of the state-owned Namibian College of Open Learning (NAMCOL). As the institution's first chief executive, she facilitated the strategic positioning of NAMCOL, both nationally and internationally. During her ten-year tenure as NAMCOL's director, she held various leadership positions, including Chair of the Namibian Open Learning Network Trust, Chair of the Adult Learning Policy Committee and Chair of the Distance Education Association of Southern Africa.

Mrs Ferreira capitalises on the power of partnerships and collaboration, and therefore initiated the establishment of the Commonwealth Open Schooling Association (COMOSA), which provides a powerful platform to accelerate her work in open schooling across the Commonwealth. Her contributions to open and distance learning in Namibia were rewarded in 2002, when she received the Distance Learning Experience Award from COL. One of her most significant achievements at COL to date has been her leadership of the multicountry OER4OS initiative — the first project of its kind in the world.

Outside the education sector, Mrs Ferreira has followed the political aspirations that emerged during her student years, when she was a student leader in the "1976 student generation." In 1993, she was elected as the first female mayor of Grootfontein, and in 1995, she was elected as vice president of the Association of Local Authorities in Namibia. Also in 1995, in Beijing, she joined the Namibian delegation who attended the Fourth World Conference on Women.

Cindy Gauthier

Cindy Gauthier is an e-learning consultant and a writer. She is the former principal of the Vancouver Learning Network, one of British Columbia's largest urban distributed learning secondary school programmes. She held this position for 12 years, until the spring of 2013. For the decade prior to this, she worked as a programme co-ordinator, counsellor and teacher for online learning and correspondence delivery in distance education.

She has over 30 years of experience in secondary education with the Vancouver Board of Education and 20 years of experience in open and distance learning. She has a keen interest in global education and in how collaboration and technology can provide new learning opportunities for students of all ages and origins.

Cindy became involved in the OER4OS Project in early 2012, when the courses were nearing completion. Along with a small team of teachers from the Vancouver Learning Network, she assisted COL with final editing and with quality reviews of the developed courses. The OER4OS Project succeeded in bringing six countries together for course development and resource sharing. All the participants deserve recognition for their important contribution to open learning. Their unwavering commitment and tireless work are truly inspirational.

Authors

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Masego Bagopi is Head of Department for Open Schooling, BOCODOL. She has represented both BOCODOL and the Ministry of Education on several occasions, including the COL/SADC Project on Increasing Access to Secondary Level Education through the Production of High Quality Materials, and the SADC Technical Committee on Distance Education to implement the Protocol on Education and Training. She was a member of the planning committee that established BOCODOL and was the chairperson of the Country Management Committee in the OER4OS Project.

Formerly, she taught at secondary-school level for several years then joined Botswana's Department of Non-Formal Education as a Senior Course Development Officer (SCDO). As an SCDO she wrote materials for distance learning, and co-ordinated part-time staff and organised training for them.

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Margaret Dailey is Head of the Business and Modern Studies Department of St Stephen's College, Trinidad. She graduated from the University of the West Indies with a Bachelor of Science in Economics and began her teaching career in 1978 at her alma mater, St Stephen's College. Her love for teaching led her to pursue a Diploma in Education with a specialisation in Teaching of Principles of Business. She is a firm believer in providing opportunities and resources for all persons to learn at their own pace according to their own schedule. With over 30 years of teaching experience in the classroom, she welcomed the opportunity to work with other educators and to team up with COL and the Ministry of Education to contribute to the development of OER for open schools, helping to bring her belief closer to reality.

Enid Habweza

Enid Habweza is a lecturer at the Zambia College of Distance Education, Directorate of Open and Distance Education. She graduated from Nkrumah College of Education in 1996 and served as lecturer at Kabwe School for Continuing Education, in the Directorate of Open and Distance Education (DODE). In 2003, she moved to the Zambia College of Distance Education to take up her current position. From 2004 to 2006, she trained in distance education material development, and participated in the OER4OS Project from October 2009 to July 2012.

Rosianna P.C. Jules

Rosianna P.C. Jules is a Seychellois and has been a lecturer at the School of Education and Language Studies in the University of Seychelles (UniSey) since January 2010. She is also Head of Programmes for Primary Programmes and Administrative Coordinator for the Edith Cowan University's Bachelor of Education Articulation Programmes for Primary and Early Childhood Studies (offered in partnership with UniSey). She became involved in teacher education and training in 2002 when she joined the former National Institute of Education (NIE) as, variously, a lecturer, research supervisor and course leader for the Diploma in Education (Primary). Her research interests are in science education, and in teacher education and training, especially science teacher education.

She has a special interest in open schooling and distance education (DE), which began in 2006 when she was made co-ordinator for the development and implementation of a Diploma (Part II) in Education (Primary) offered through distance mode by NIE to over 100 in-service primary teachers holding a Diploma (Part I) Certificate. Recently, she served as the team leader of the Coordinated Science Course team for the OER4OS Project.

Edwig Karipi

Edwig Karipi is the manager of Open Schooling at the Namibian College of Open Learning (NAMCOL). She worked as a secondary school teacher for over 12 years, and has contributed significantly to the Namibian curriculum development and evaluation as a curriculum panel member, chief examiner and chief marker of the Namibia Senior Secondary Certificate (NSSCO) Agriculture. She joined the Namibian College of Open Learning in 2006 as a programme developer and has since been involved in the development of both print-based and multimedia courseware.

Edwig is currently studying for a master's degree in Distance Education with the Indira Gandhi National Open University (IGNOU). She holds a number of academic qualifications in the fields of Agriculture and Education, including a postgraduate diploma in Distance Education (IGNOU), a master's degree in Sustainable Agriculture (MSA) – University of Free State, a Bachelor of Education Management (Hons) (University of Port Elizabeth) and a Bachelor of Technology in Post-School Education (Technikon, Pretoria).

Edwig was the Namibian Life Science team leader for the OER4OS Project, and since then has been involved in various other OER projects.

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Evelyn Nonyongo has had a long career in open and distance learning (ODL) programme development, management and evaluation. She spent over 20 years working as a co-ordinator and/or programme manager of secondary- and tertiary-level distance education programmes at the South African Committee for Higher Education (SACHED) Trust, a non-governmental organisation that pioneered various innovative ODL programmes in South Africa from the 1960s onwards. She joined the University of South Africa in 1995 after it took over the student support programme she was managing at SACHED. By the time she retired from UNISA in 2007, she had introduced a youth development diploma, a certificate for training distance education practitioners and a BA in Open and Distance Learning, and had laid the foundation for the establishment of a UNESCO Chair in ODL at UNISA. These programmes have trained practitioners in the SADC region and beyond. Between 2009 and 2011, under the auspices of the William and Flora Hewlett Foundation/Commonwealth of Learning OER4OS Project, she helped teachers in Botswana and Zambia to develop open educational resources (OER) for open schools. She is currently assisting Ghana with technical and vocational education and training teachers to develop OER.

Lekopanye Tladi

Lekopanye Tladi was a secondary-level science teacher from 1988 until 1994 then worked for the Department of Curriculum Development and Evaluation in the Ministry of Education as a Principal Education Officer II – Media and Evaluation, responsible for instructional material design and layout, printing and distribution, until 2003. He became a Ministry of Education Quality Assurance and Assessment Unit External Verifier for IT & Multimedia and Key Skills Vocational Courses in 2003, and joined BOCODOL in January 2004 as Media Coordinator, becoming a manager in the Department of Multimedia and Production in 2004.

He has worked on a number of COL e-learning projects such as the COMOSA Research Project on Success Factors in Online Learning in 2011 and the Open Educational Resources Project, and is a co-ordinator of the BOCODOL Learning Centre for the Pan-African eNetwork Partnership Tele-education Project.

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Mcebisi Tyhali is a deputy director in the Continuing Education Unit of the Lesotho Distance Teaching Centre. He holds an honours degree in Distance Education from the Indira Ghandi National Open University and a BEd from the National University of Lesotho, and postgraduate degrees in Educational Leadership/Management, and in Policy Studies and Education Governance from the University of the Orange Free State, Republic of South Africa. He has also taken a certificate course in Designing and Facilitating E-Learning with the Open Polytechnic of New Zealand, and is currently studying for a certificate in Practitioner Research and Evaluation Skills Training (PREST) with BOCODOL in Botswana where his interest is in Quality Assurance issues in ODL.

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Introduction: Opening Access to Open Schooling

Cindy Gauthier (E-learning Consultant)

Background

Over the past decade, open educational resources (OER) have gained considerable traction as a means to overcome many serious educational barriers worldwide. The OER movement began in the technology sector, where open source software was designed by and circulated among like-minded individuals and shared in ways that encouraged others to add to and improve on the applications. Shifting resource development and access to education away from corporations and into the hands of the practitioners was not a new concept. Educators have always produced resources for teaching and learning, but the resources used were typically informal, not shared and primarily used in face-to-face environments. With an array of technology increasingly available to educators, a rivalry between proprietary and open source camps emerged in the arena of educational content at the tertiary level. When a highly respected, established institution such as the Massachusetts Institute of Technology (MIT) made the bold move to share tertiary course content openly on the Internet, disruption of the dominant proprietary distribution model of educational resources began in earnest. Within a decade, 250 tertiary institutions would follow their lead (Brown, 2012).

The timing of content sharing was more than fortuitous. The Internet was changing everything, and higher learning was no exception. Educators began to realise that content was no longer a valuable commodity, because it was becoming abundant on the Internet. "Ownership" began to take on an alternative definition, reflecting owning by participation and contribution rather than possession and control of a commodity. Global economics and the ever-increasing costs of traditional educational models made resource purchase, delivery and maintenance increasingly expensive and difficult to access. Open and distance learning models provided a means to continue with expansion and scalability when traditional models and related funding reached breaking point.

The rapid, unprecedented expansion of technology and global communications were significant factors in the development of the OER movement. The need for OER in education became apparent as the Internet and global connectivity provided ready access to information at a speed that traditional educational models could not match. Traditional textbooks, for example, were often too costly, out of reach or irrelevant for the majority of the world's populations. The information contained in them was often out of date before it left the publisher's warehouse. In addition, technology was providing numerous cost-effective means of creating access to and flexibility in education.

The OER movement began as a tertiary education solution, but it has since been embraced as a promising solution to the problem of how to provide multiple levels of education to all citizens of the world. However, it is not the sole answer to all the shortfalls in educational access. Many other economic, social and political factors come into play with respect to educating citizenry. Nonetheless, the OER movement that has now spread to the secondary level of education can greatly help to address gaps in educational delivery and to provide flexible and adaptable means of continuing education beyond the primary or elementary years. It also offers tremendous potential to those who have left mainstream education but wish to have access as adult or lifelong learners.

Open Educational Resources (OER) and the Creative Commons

Many definitions of open educational resources, or OER as they are commonly called, have emerged in educational writings over the past decade. Furthermore, a Web search of the term yields numerous results and an array of components. Whatever the source, the majority of definitions contain similar elements and the descriptions vary only in terms of detail. In recent years, some definitions of OER have been strategically worded to place greater emphasis on the process than on the objects themselves, which is indicative of a shift in understanding around where openness lies. Perhaps the best — and arguably, one of the most thoughtful in its pragmatic simplicity — definition that emphasises openness in the process comes from Stephen Downes:

> Open educational resources are materials used to support education that may be freely accessed, reused, modified and shared by anyone. (Downes, 2011)

In his explanatory notes on how his definition was crafted, Downes asserts that it is not the resources but rather their accessibility and variety of uses that determine the degree of openness. It is notable that his definition includes four carefully chosen action words: "accessed, reused, modified and shared" (Downes, 2011). In the early days of OER, definitions focused on the objects or resources. At the time, how OER were created often determined whether or not they could be used openly. Now, through technology, almost anything can be used. However, critical stumbling blocks to generating access and resolving ownership remain. Later in this chapter, these stumbling blocks will be discussed in the context of existing educational resources, and why moving them from closed to open entails much more than simply handing over content.

To address the need to credit contributions, the Creative Commons released several copyright licences (known as the Creative Commons Licenses). These

provide the means through which OER can be developed and shared along a spectrum of openness. Traditional copyright ensures that materials may not be used in any way without permission. These materials are typically owned and bartered as a commodity in the marketplace. Conversely, a Creative Commons licence allows materials to be used in a variety of ways, but the fundamental philosophy is one of free access with attribution. The licence used for the OER created in this project is known specifically as CC-BY and allows others to freely use material as long as credit is given (Creative Commons, 2013).

The relationship between OER and Creative Commons licensing is important. When OER are developed, the Creative Commons facilitates the fair use of materials and provides a means for sharing the OER. The use of a Creative Commons licence is a condition for content to be classified as OER. Beyond the technical terms of use, it sets the stage for collaborating and building a community of interest. It also encourages continued growth in the resources shared so that the investment of time and effort by an individual or group may benefit others. The greatest waste of a resource in a knowledge-based society is that which is made and never used beyond that person or group.

Materials shared as OER stimulate a non-profit, grassroots expertise in education. Together, they build a broad and diverse community of educators sharing resources worldwide. This book tells the stories of how local expertise was developed through international collaboration, and how a diverse group of people contributed to the pool of OER that is emerging for secondary-level education.

The Project: Open Educational Resources for Open Schools (OER4OS)

The need to provide educational resources to increase access to education was at the heart of the partnership forged between the Commonwealth of Learning (COL) and the William and Flora Hewlett Foundation. The Hewlett Foundation had already expressed support for and invested in the OER movement at the tertiary level. Through its associations with international organisations such as UNESCO, COL was aware of global education initiatives and areas of concern that had become a priority. COL recognised that the next big step in the quest for equity and quality education for all was to expand OER development into secondary-level open schooling.

In 2008, COL developed a project proposal for the development of open educational resources for open schools — OER4OS — and presented it to the Hewlett Foundation for funding support. The proposal was enthusiastically accepted by the foundation, and detailed project planning began. The project leader, Frances Ferreira of COL, provides an in-depth account of the tremendous co-ordination and collaboration that was undertaken on the OER4OS Project in Chapter 1.

While the project was expected to take approximately 12 to 16 months to complete, the final work was not launched until March 2012, almost four years after the project approval in July 2008. Why did the project not stay on schedule? The answers to this singular question reveal a great deal about the nature of OER development. It is important to understand that timelines are almost impossible to estimate when unlimited variables come into play. Such is the nature of

international collaboration in education. This is not to say that timelines are futile for such projects. On the contrary, timelines keep the project moving forward and provide structure. Nonetheless, it would be an error to base the success or failure of an OER project on the timeline of deliverables.

To this end, it is also important to recognise that the desired standards of quality may not be reached upon completion of OER. Quality is fluid in OER development. It is also highly contextual. For example, two subject specialist educators could look at a sample unit of OER. One would find the unit to be of exceptional quality; another might find the unit to be exceptionally weak. This is a paradox of OER development. Quality is highly subjective. But like the pursuit of timelines, it is still a framework that needs to be established at the outset. Without examples of what quality looks like — even when only one example is used, or one pedagogical approach is shown or one highly contextual curricular treatment is adopted — OER cannot be developed collaboratively or subsequently modelled for capacity-building within education. Quality is not found in superficial, rigid presentation. It is found in deep understanding, with tolerance for a wide range of effective elements. Chapter 2 presents the perspective of the project consultant. The author provides a very candid account of what it was like to guide teams through the complex process of developing OER while working largely at a distance.

Throughout this project, a tremendous amount of energy was expended, but a tremendous amount of benefit was also achieved. The completion of 20 secondary-level OER courses is a huge accomplishment and the participating countries can be justly proud of their efforts. Of course, many challenges also arose along the way.

It is not surprising to hear that the benefits and obstacles experienced by one participant country were also reported by several of the other countries. Chapters 3 to 8 are the stories of the six participating countries. Country chapter highlights are provided at the end of this chapter to draw attention to some of the unique perspectives that will be described in detail. The first-hand accounts of participants provide examples for many of the ideas put forward in this introduction.

Issues in OER Development

A number of common issues in OER development emerged during the project, even where participants were working on different teams, on different courses and in different countries. In the beginning, tremendous enthusiasm was evident in the participants at all levels. The partnership between the William and Flora Hewlett Foundation and COL established a commitment to creating broad, accessible educational resources for secondary-level learners. Through COL, the participation of six countries was secured by establishing working agreements with governments who were seeking a means to expand secondary education in their countries. Ultimately, the teacher participants from each of the countries embraced the opportunity — and the challenge — to build and share OER for secondary-level learners.

At the outset, the goal was to produce 20 secondary-level courses. This was a very ambitious undertaking, particularly since the work would generally be in addition to the regular work of the teachers and the institutions involved. However, this is often the nature of OER development, as will be seen in the account that follows.

Vancouver Learning Network: A Related OER Development Story

During the first decade of the 21st century, the Vancouver Learning Network (VLN)[1] was one of the largest "distributed learning" (open) schools in British Columbia, Canada. Having started as a print-based correspondence school in 1990, where course materials were prepared and provided by a government division, the school moved into the realm of online learning in the mid- to late 1990s thanks to developments in technology. It was a realm with very few resources to draw upon for meeting the curricular requirements set out by the Ministry of Education. The resources that had been developed for print-based delivery were both unsuitable for use online and mired in copyright restrictions and cumbersome file types. In British Columbia, all the online schools had to come up with their own content in order to move forward with changing practices. As is typically the case, a good amount of content was available for purchase, but many of the schools and the districts supporting the open schools could not afford to pay.

It was in this climate that the VLN teachers started developing secondary online courses. Students were seeking learning experiences where they could use the technology that was becoming available in the marketplace and in daily life. However, not only was that technology cost-prohibitive but online course development was also wildly uncharted territory.

VLN developed approximately 90 secondary courses over a ten-year period using a supplementary approach that was very similar to that taken in the OER4OS Project. By the end of the decade, most of those courses had gone through multiple revisions and improvements, as part of a series of changes that had not been possible with courses that were centrally written and distributed.

In the case of the teachers at VLN, course writing was done "off the corner of their desks," as there was no means to pay teachers for this work or provide them with compensatory time. They used every available moment to work on the new courses, all while continuing to teach full-time. Sometimes they opted to work on the material while on holiday or at weekends. No dedicated time was set aside for it and no resources were in place beyond two initial pilot years where key staff were hired to support curriculum development and instructional design. To their credit, educators were willing to take on these complex tasks in addition to full-time teaching work. They did so, and continue to do so, to create the materials that are wanted and needed by learners.

The teachers were greatly motivated by a transitioning sense of ownership. To be directly involved in the content provided to learners is engaging for teachers. To create a quality resource with great instructional value is professional development at its finest. It was not uncommon for a teacher to be developing or revising a course and learning how to do the work of course development while active learners were already enrolled in earlier parts of the course. Certainly, this is not a recommended way of achieving timeline goals for development, as the pressures can be immense and the consequences of not meeting completion goals will directly affect the learners and the institution. However, the immediate needs of learners were a considerable driving force in the production of course materials.

[1] http://vlns.ca/

Unfortunately, the coursework created by the VLN teachers has never been fully shared. By definition, the resources created at VLN cannot be called OER despite the intention and commitment to share in recent years. The competitive environment that was established in the jurisdiction during the early years of development led to proprietary attitudes and infrastructures. By the time the OER movement reached VLN, the sheer volume of work that had been created within a proprietary environment was simply too immense to unbundle. Many good materials are limited for use at the VLN because the unravelling of content and learning objects can be complex, time-consuming and cost-prohibitive. Copyright issues also arise in a context where ownership is still debated and unresolved. The inability to share, despite a willingness to do so, is the most disappointing outcome of so much good work. It sounds a cautionary note for those undertaking OER projects: the environment in which courses are developed, along with the instructional design approach taken, can make or break their usefulness and openness. Educational resources are extremely difficult to retrofit as OER. The policy established at the outset of a project, such as the adoption of Creative Commons licensing, is critical in achieving outcomes that enable OER development.

A positive footnote may be added to the VLN story, however. In recent years, content has been broadly shared with other teachers in the local school district. These teachers are using the materials to generate blended learning resources and courses by using, modifying and repurposing existing content and contributing new content. This is nowhere near the potential that could have been realised had the course development been done with the intention to share beyond the boundaries of the jurisdiction, but it is a very good step towards a measure of openness within the school district itself.

The OER4OS Project: Similar Themes in OER Development

Unlike the VLN experience, the OER4OS Project established clear goals and objectives that expressed a clear intention to develop and share resources. Professional development and training was provided to the participants during the project, including training in the use of information and communications technology (ICT), pedagogical approaches and instructional design. All these elements were structured in the context of building both OER and capacity.

As can be seen in the VLN account, the loss of these structured elements does not mean that course development ends; however, it is important to note that the quality of courses becomes entirely contingent on the teacher-developers and their ability to translate subject content into effective OER. An add-on developing model, particularly when left without the expertise and leadership of an instructional designer, can lead to scattered results. Some brilliant material is produced; some very weak material is also produced. When setting out to write a course, it follows that being a content specialist is a necessity. However, being a master of course content does not mean that one will be able to master the skills needed for creating OER. The attrition rate among the teachers engaged from the outset of the OER4OS Project speaks volumes. One hundred teachers were engaged to work on the 20 courses. Over the course of the project, the overall attrition

rate, as shared by the OER4OS project consultant in Chapter 2, was approximately 20 per cent. A number of factors may have contributed to participants' leaving the project. Some of these factors are touched on in the country accounts:

- **Time:** OER production can be extremely time-consuming. It is not uncommon for a single task to run well over the time it is expected to take, due to the number of variables that must be juggled using technology. Where time cannot be set aside within a work day, the demands can lead to long hours, weekend and evening work and ultimately burnout. In addition, the nature of OER development is collaborative. Collaboration, while it reaps greater rewards and user buy-in, requires considerably more time than solitary work.

- **Knowledge gap:** A recruited course specialist may not find the development of OER using technology to be a natural or desirable undertaking. Similarly, the most proficient technical teacher may not be able to organise content into appropriate or sequential curricular segments. Developing OER is complex work, combining different kinds of expertise, and almost always includes very steep technological learning curves. The process might be compared to building an aeroplane and learning to fly it at the same time.

- **Technological barriers:** Not all project participants had the same technological access or skill set. In learning new skills, participants need time to absorb and practise tasks. They also need consistent, free access to the technology used in the project. Participants can be easily lost on a project when a technological barrier cannot be overcome or when delays in technological support take too long to resolve.

- **Training and support:** In development projects such as OER4OS, training and support are typically given at the outset of a project. The hope is that the participants will acquire and retain new skills, and be able to build capacity by sharing what has been learned with others who follow. Unfortunately, support at one or more levels typically fades due to unsustainable costs and other priorities. This loss can lead to setbacks, delays and some participants abandoning the project.

- **Unrealistic expectations:** Developing OER is detailed, technological work requiring unique skills, endless persistence and tight organisation. A common pitfall in planning is to imagine that an expert subject specialist can easily convert a course previously taught in a face-to-face environment into OER or open courseware. In open and distance learning, everything must be presented to the learner — from lesson directions, teacher voice and embedded feedback to instructional visuals and supplementary resources. Consequently, the time it takes to create OER may greatly exceed what may be hoped for or planned.

- **Life intrusions:** When a project has participants who are working in addition to, or outside of, their usual working role, a great deal of timeline creep must be expected. While people can immerse themselves and sustain great effort on additional projects over the short term, the longer a project runs, the less sustainable that extra effort becomes. Family commitments, health issues, unexpected events and priorities relating to other work commitments increasingly arise and become obstacles to completion.

The loss of participants during a project cannot be anticipated in advance, but an early loss is considerably less disruptive than the loss of a participant midway through. Bringing in replacements or new additions does not help sustain and increase the workflow. In fact, new participants require considerable attention and may cause frequent project delays. Without intensive support to help them catch up with the others, they create gaps in the team training and knowledge base, slow down the collaborative process and potentially leave the original participants with the burden of assuming most of the higher-order tasks and responsibilities.

In early 2012, during the final stages of the OER4OS Project, a small team of VLN teachers were involved in the final course editing process. Through our involvement in the process, several things struck our team:

- A tremendous amount of work and effort had gone into the development of the 20 OER courses. The VLN team was extremely impressed by the amount of coursework created. We understood how much effort it takes to develop even one full secondary-level course.

- Time and demands — both personal demands and the demands of the project — had taken a toll on the participants and also on many courses. In some cases, early units were masterfully crafted, but as the course progressed, the quality began to deteriorate as team members left the project or development fatigue set in. In other cases, decisions had to be made to reduce the number of unit requirements. Most courses required considerable final editing to bring them up to a level where they were ready for sharing.

- Some courses were exquisitely written but lacked instructional design; other courses were weak in content but extremely well designed. Nonetheless, it is important to accept all the work contributed and use it as a foundation for continued development (McGreal, Kinuthia & Marshall, 2013). As with art, one can never find complete satisfaction in the final product. But perfection is not the goal. Sharing and collaborating is the goal. To this end, all the OER courses that were created add value. And they will continue to add value as material that can be freely accessed, reused, modified and shared.

- The example set by the OER4OS Project influenced me as a school leader and gave me great insights into the OER development process. The members of the VLN team also benefited as open and distance learning professionals from their involvement in reviewing OER. Perhaps the most glaring point of recognition for all of us was the waste of energy in "reinventing of the wheel" that comes from proprietary attitudes towards course development and the maintenance of resource silos. The work on this project led VLN to strive for greater openness, even if the steps we could take were small.

Country Chapter Highlights

Chapters 3 to 8 are the six participating countries' accounts: Botswana, Trinidad and Tobago, Lesotho, Namibia, Seychelles and Zambia. Each of the chapter authors was a key participant in the project. We asked the authors to provide some educational context for their country and then gather the perspectives of their team with respect to common topics such as professional development, use of ICT, instructional design, etc. Although we suggested a content framework for the

chapters, we also encouraged the authors to take liberties with the outline and to write about their journey participating in the OER4OS Project. In particular, we asked them to include reflections from their participating team members wherever possible. We hope this open approach to the chapters models OER philosophy and demonstrates the range and diversity of outcomes that occur when multiple individuals approach the same task within a common framework.

As a result, the country chapters are more stories than project reports. The first part of each chapter provides the reader with pertinent background information so that the country context is clear. The second part of each chapter shares the perspectives of the participants on topics that the authors felt were important in describing the OER journey. For each of the country chapters, one important point that the author has shared is highlighted below.

Chapter 3: Botswana

Botswana had an established distance education institution, but the creation of OER was new and additional work for project participants. Lekopanye Tladi and Masego Bagopi convey the difficult circumstances that project participants had to overcome by working in a supplementary, volunteer structure with inconsistent access to technology and support away from BOCODOL.

Chapter 4: Trinidad and Tobago

Trinidad and Tobago achieved great benefits from its participation in the OER4OS Project. However, losing momentum and gains once a project ends is an important concern raised by Margaret Dailey in this chapter. Sustaining new initiatives in education can be challenging once other pressing matters come to the fore.

Chapter 5: Lesotho

Mcebisi Tyhali describes some of the common pitfalls concerning technology and access. Of particular interest in Lesotho were the conflicts and disagreements that arose in the collaborative process. This highlights the importance of recruitment and selection criteria when finding participants, and of the effort required to make collaboration successful.

Chapter 6: Namibia

Edwig Karipi highlights the benefit of networking that the Namibian teachers experienced during the project. The synergy that is created when collaboration is also face-to-face cannot be underestimated. While not always possible, teams that can work together gain from what might be described as a collaborative immersion.

Chapter 7: Seychelles

A latecomer to the OER4OS Project, Seychelles was experiencing a teacher shortage, particularly at the secondary level. This was creating a crisis in education. Rosianna Jules relays the commitment made at all levels of the project in her country so that young people would not be denied education despite the lack of teachers.

Chapter 8: Zambia

Enid Habweza describes the steep learning curve experienced by many teachers entering the OER4OS Project in Zambia. For many entering into the development of OER, the use of even simple technological tools had to be mastered. Training and support for teachers with entry-level skills is essential in order to retain participation and sustain effort.

By telling the stories of their OER journeys, the country participants give critical insights into the work behind creating OER. The personal experiences of the team members will help to inform OER projects going forward, and will lead to a greater understanding of the process by those seeking to follow in similar footsteps. In the Conclusion, we summarise the project and the information shared by participants in the context of global education development and the promising future of OER.

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Project Management

Frances Ferreira (Commonwealth of Learning)

Abstract

The Commonwealth of Learning (COL) is doing everything possible to introduce new models of education that can address the most burning challenges in and speed up the provision of education at all levels. Access to quality resources remains a problem for conventional schools, but we can address this by developing quality open and distance education content of the type used in open schools. With the increasing use of information and communications technology (ICT), and its potential to increase access to education as well as to enhance the quality of educational resources, one could easily assume that open schools will simply tap into this resource to address issues of content development. Unfortunately, the faculty who are responsible for developing open and distance education content often lack both the capacity to identify the value of ICT and the skills to use it to enhance the quality of the content. The focus of the multicountry OER4OS Project was on developing capacity in instructional design, integrating technology and developing open educational resources.

A project of this nature requires a workable project management structure, detailed planning and monitoring. This chapter focuses on the different aspects of project management and institutional support for this open schooling initiative at COL.

Introduction to Project Management for OER4OS

The Commonwealth of Learning (COL) is visionary, and endeavours to help Commonwealth governments meet their educational priorities. As such, COL is doing everything possible to introduce new models of education that can address the most burning challenges in and speed up the provision of education at all levels. The open schooling model is one such model. I joined COL in 2007. Before that, I worked in one of Africa's leading open schools for ten years, and so I have a

strong grasp of how the model works and of the benefits it brings (Ferreira, 2013). Human resources are the most valuable assets of our open schools, and for open schools to prosper, their faculty should have the capacity to contribute to their growth and development.

Access to quality resources remains a problem for conventional schools, but we can address this by developing quality open and distance education content of the type used in open schools. In fact, this is one of the most important functions of faculty in an open school. However, the majority of existing open schools started their operations with faculty who were not necessarily qualified in the development of open and distance education content, so one of our biggest challenges is to train faculty in open schools in instructional design. This training will ensure that they have the capacity to sustain the design and development of quality learning resources.

With the increasing use of information and communications technology (ICT), and its potential to increase access to education as well as to enhance the quality of educational resources, one could easily assume that open schools will simply tap into this resource to address issues of content development. Unfortunately, often the faculty who are responsible for developing open and distance education content lack both the capacity to identify the value of ICT and the skills to use it to enhance the quality of the content. The strategy developed for the open schooling initiative at COL had a strong focus on developing capacity in instructional design and the integration of technology.

During my second year in office, I had the opportunity to write a proposal for additional funding from the William and Flora Hewlett Foundation (WFHF) to develop open educational resources (OER) for open schools. This was a golden opportunity to address the lack of capacity in developing both instructional design and quality open and distance education learning resources. I developed a proposal that included a focus on the professional development of teachers in instructional design, the integration of ICT and the use of an online platform that would lead to the development of 20 full secondary courses. I had tremendous support from COL's management, as everyone firmly believed that while OER are not a panacea for the lack of educational learning resources, they could make a huge difference in increasing access to quality secondary education.

Project management

A project of this nature requires a workable project management structure. I was responsible for the project, but with all the other COL projects I was supervising I could not focus only on this one. It was evident from the start that we needed a team to drive the process. In my opinion, it is important to have as many partners as possible buy in as early as possible to ensure ownership in the execution of a project. Consultation is therefore essential to ensure that all the different aspects of the project are addressed. Another important aspect of project management, and especially for a multicountry project such as this one, is that it demands detailed planning and monitoring. The next section gives an overview of the project management at the various stages of its planning.

During my first year, I was made aware of needs, as identified in my proposal, in Namibia, Lesotho, India, Trinidad and Tobago and Botswana. It is therefore safe

to say that the proposal was developed with the specific needs of those countries in mind. While the process was underway, the President of COL was approached by the Minister of Education in Seychelles with a request to assist with content development in school subjects to counteract teacher shortages. As a result, Seychelles was also included.

The first step was to ensure that COL had buy-in from all the countries, as I had suggested in my proposal. Prior to finalising the project proposal, I contacted each country to ensure that they all agreed to what I had proposed for the project. While this project's scope was bigger than what they had requested, it presented an excellent opportunity for them to expand their own scope, while building the capacity of the subject teams and enlarging their content base. One challenge that presented itself at the very beginning was the fact that the learning content had to be licensed using a Creative Commons (CC) licence. Because all the countries used their learning resources as an additional source of income, it was important to discuss the implications of the licensing and to make sure that each country understood and agreed to the terms of this type of licence. Furthermore, the use of OER was very new, and not many countries had given proper consideration to the implications of using OER. It was therefore crucial to discuss the licensing aspect of the project with the selected countries before a final decision was made to include them. At a meeting held in London during the 2008 Pan Commonwealth Forum 5 (PCF5), all the countries were represented. The heads of open schools and permanent secretaries (or their representatives) were presented with the proposal and subsequently agreed to be part of this project.

Planning

Once I had confirmation that the proposal had been approved for funding, I invited a team of experts in open and distance learning (ODL) to brainstorm the project and its management with me. This took place in August 2008 during a two-day meeting in Vancouver, British Columbia. The team of experts discussed and advised COL on different points such as:

- the professional development of teachers (instructional design/computer literacy, use of search engines, presentation software, uploading of digital content, Creative Commons licensing awareness);
- the governance structure and its different roles (steering committee/country management committee, country co-ordinator, subject teams);
- timelines;
- the role of country consultants;
- in-country and technical support for teachers (institutions and ministries of Education); and
- monitoring and evaluation.

Soon after this meeting, I requested support for managing the project. Dr Dominique A.M.X. Abrioux, President Emeritus, Athabasca University, was appointed project manager; Carol Walker, programme assistant, provided administrative support as did Sharmila Gracieuse; later, Hema Iyer was brought in as project assistant. I was the project leader. It was decided that the best way to manage this project was by division of labour.

Governance Structure Ensuring Institutional Support

Following the meeting of experts in Vancouver, COL organised a meeting with representatives from both the ministries of Education (MoE) and the open schools involved. The purpose of the meeting, held in October 2008 in South Africa, was to discuss and finalise the governance structure, timelines and other project-related issues. Our focus was on making this exciting project a success, so we needed to be sure that we had all aspects covered, including a proper management structure. At this juncture it is important to highlight the fact that ministerial involvement was crucial in making this project work because the curriculum in each country is approved by structures in the Ministry of Education. Therefore, developing content and then licensing it under a CC licence may or may not have implications for these ministries. Most important, we wanted to ensure that the content would be used in each country.

The meeting participants agreed to the following governance structure: COL Project Team (COL HQ); a Project Steering Committee (representing the Ministry of Education, the open school in the specific country, and COL through the Project Manager and the Project Leader); and a Country Management Committee (CMC) (comprising the country's steering committee members, the team leaders of the different subjects, the country co-ordinator and the country consultant). The country co-ordinator played a crucial role in managing the project at a local level, and the project manager had a crucial role in managing the project internationally.

Participant buy-in is essential to the success of a project, but it does not guarantee institutional support. During the meeting in South Africa, we teased out the support expected from institutions, and it was agreed that commitment from the relevant institutions and the ministries of Education would be gained by entering into formal agreements. It was agreed in summary that:

- The open school and the Ministry of Education should commit to maximising the use of the OER in both the open school and the conventional schools.

- The institutions, in collaboration with their MoE, should identify and approve the participants, and where appropriate support them with additional incentives, while ensuring that they have access to computer facilities. (As this project would be undertaken in addition to the normal work of participants, it was important that they be released for capacity-building workshops, and the agreement stipulated this as well.)

- Institutions and participants were expected to participate in the evaluation of the project.

During the meeting in South Africa, the steering committee agreed on the criteria for recruiting participants. Included in the agreements between COL and the ministries of Education, and between COL and the open schools was that they would identify and approve participants (referred to as master teachers) who:

- were employees of the Ministry of Education or teaching institution;

- had expertise in the subject they were assigned to work on;

- had teaching experience in the subject they were assigned to work on;

- had been previously involved in distance education material development (not production);
- were committed to seeing the project through to its completion; and
- were prepared to share in project activities during holidays and after regular work hours over the next 14 to 16 months.

We knew that our timeline was ambitious when we agreed with the funding agency to complete it in three years. However, all things being equal, and with everybody ensuring that their end of the agreement was kept, I saw that it was certainly possible. Teachers were given 16 months to complete their part of the project on the assumption that (1) they would meet the criteria above and (2) they would repurpose existing content where possible when developing OER. This would allow them to complete their initial work, to have it evaluated and to implement the recommendations arising from the evaluation.

Management of the participants

In each country, the subject team consisted of five people who would collaborate and develop a project plan for their subject. COL used Basecamp — a project management tool and a platform that supports collaborative work[1] — for each subject team to help them stay in contact and collaborate online. This not only gave them the advantage of working together, but also provided an excellent mechanism through which COL and the country management committee could monitor team work and project progress. It was also used as a platform where evaluators could verify information about the project submitted in participants' reports. In total, 38 Basecamps were activated to manage the project. Over the life of the project, we recorded 12,511 forms of communication in the various Basecamps.

In each country, steering committee members nominated a country co-ordinator to be responsible for managing their country's participants. The country co-ordinator had access to the project manager online, by telephone or through Skype, and also had access to the local steering committee members in each country, should the teams experience challenges and need extra help.

The co-ordinator reported monthly to the project manager, who wrote a monthly comprehensive report to the steering committee. The steering committee met quarterly: one of the meetings was face-to-face and three were held via teleconference. Dr Abrioux must be congratulated on his outstanding project management. Not only did he manage the project skilfully and effectively, he also strongly motivated everyone who was involved. Leadership is critical to the success of any project. We were greatly honoured and most fortunate to have had a project manager of the calibre of Dr Abrioux.

Capacity-building

Experience has taught me that a one-off session is not always the best training model. Given the potential of technology, I developed a training model built around face-to-face training, online training, online support from a dedicated country consultant and regular face-to-face meetings in each country to review the content with the teams. The projected outcomes of the project were:

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[1] https://basecamp.com

- Teachers emerge confident, knowledgeable and able to develop high-quality OER without support.
- Each participant country has a collection of high-quality subjects, suitable for both online and paper-based learning.
- Each participant country has a collection of high-quality multimedia content in at least five subjects that can be distributed to students and teachers.

The assumption was that the teachers selected would have some experience in the development of open and distance learning resources as per the selection criteria mentioned earlier. We had to ensure that the training of the teachers covered all aspects of OER and ODL resource development to achieve our outcome of "Teachers emerge confident, knowledgeable and able to develop high-quality OER without support." Given that we had planned for the content to be licensed under a Creative Commons licence, this was one of the most important aspects on which we focused during the first workshop. In the project brief, COL also committed to the integration of technology. It was important to ensure a process whereby participants could be supported through various tools developed by COL. Over the course of the project, we had three face-to-face workshops and one online workshop in each country. Each of the first two face-to-face workshops took place over a period of ten days, and participants were trained in the different aspects of instructional design: using the COL instructional design template, using Basecamp, copyright and Creative Commons licensing, and using the course blueprint. Participants were also introduced to Skype and Facebook since it was expected that collaboration would take place across country borders. During the online workshop for each country, participants were trained to use the Moodle platform. The third face-to-face workshop was not part of the original plan; it took place as a way to address the recommendations that arose from the midterm evaluations by SAIDE.[2]

Description of the Instructional Design Work

The project manager, in consultation with the project leader, developed a course blueprint (CBP), or a course proposal. The course blueprint served three purposes:

1. It was a planning document for the subject team's development of a print-based course consisting of print-based OER that may or may not be enhanced by multimedia OER.

2. It would enable reviewers from other participating countries to provide feedback prior to full and final course development.

3. It would identify and benchmark milestones to facilitate the monitoring of progress as the course neared completion.

It is important to note that an essential component of the course blueprint was a sample course unit. When the course blueprint had been approved, teams could work towards developing the full course. It was expected not only that all the courses in this project would use consistent terminology but also, because they would use the COL instructional design template, that the terminology would be that of the COL instructional design template. Once the subject team was satisfied with

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[2] SAIDE won a bid to act as evaluators and assessors of the materials.

their course blueprint, it was posted on their Country Management Committee (CMC) Basecamp by the Country Co-ordinator (CC). There was also a Basecamp where all six CMCs communicated with each other. The CC was also expected to post the blueprint on that Basecamp. The other countries had two weeks in which to provide feedback to the posted blueprint, and once feedback was received, the CMC of the country from where the blueprint originated was supposed to sign off on it. The CMC could incorporate the changes suggested by other countries or sign off the blueprint without making changes. Once the CMC had approved the CBP, the project leader and project manager were supposed to be informed. The project manager developed a milestone schedule for each subject in each country and posted them on the subject Basecamp. This was to ensure uniformity across countries as it was envisaged that each country would, in turn, repurpose the other countries' content (Abrioux, 2009).

The following iterative process summarises the expectations leading to the culmination of each print-based course and its transfer to COL:

- Individual team members prepare their draft course units using the COL instructional design template and save them as Word documents.

- Individual team members post their draft units to the subject Basecamp to get feedback from the other team members and the consultant.

- Individual team members revise their drafts based on the feedback (consultant feedback is essential) — still using the COL instructional design template — save them as Word documents and repost them to the subject Basecamp so that the consultant can review the changes.

- Once fully satisfied with the quality of the unit, the consultant signs off the final draft on a unit-by-unit basis.

- The subject team manager, with the assistance of the country co-ordinator, collates the introductory material (about this course manual, course overview) and the final signed-off units into one document (in the COL instructional design template format). This can be saved both on hard drive and on CD-ROM, thereby allowing distribution (see next points) in either medium.

- The country co-ordinator submits the final (unedited) draft of the signed-off course to the CMC for approval, and gives a copy to the consultant.

- Once CMC approval has been given, the country manager forwards the course to the editor for editing.

- Once the course has been edited, the country co-ordinator (on behalf of the CMC) transfers the course file as a Word document to COL (either by email or on CD-ROM).

Monitoring and Evaluation

Monitoring and evaluation were integral to this project. Monitoring allows you to make a transparent and objective evaluation of whether a project has been a success or not. In the case of this project, it gave COL the information required to demonstrate the successes and shortcomings to stakeholders. Good project management requires clear indicators to provide the project manager with

pertinent information on how well the project is meeting its objectives. In other words, the information gained from an evaluation allows the project manager to assess whether the project is going according to plan, and if it is not, where it is not going to plan and if action is required. Communication of project outcomes and successes is a fundamental requirement of all projects.

The project leader had ultimate responsibility for monitoring progress. However, the project manager had direct responsibility for the management, and by implication monitoring, of the project. Various forms of monitoring were used, including communication through Basecamp, face-to-face meetings, teleconferences (70, excluding the communication between the project leader and project manager) and monthly written reports. Monitoring a project from a distance can be challenging and therefore the monthly reports from the CMCs played important roles in monitoring the progress of country indicators. All the files regarding the various reports are archived by COL and are available for research purposes.

The South African Institute for Distance Education (SAIDE) won a bid to evaluate the project. In managing projects, one has to ensure that all parties take ownership, and therefore it is important to constantly consult at all levels. The evaluation was no exception, and the evaluation plan was developed in consultation with COL and the steering committee.

The evaluation plan had a clear strategy to evaluate the different stages of the project using the input, process and output indicators. The first phase focused on the input indicators and was a combination of assessments that took place at two levels: COL was responsible for assessing the attitudes and expectations of participants prior to the first workshop using an online tool (SurveyMonkey) and SAIDE used an assessment instrument for skills and capacity in materials development and technology. The SAIDE assessment took place at the beginning of each workshop and was administered by a SAIDE consultant who attended the workshop for that purpose. The second phase was the evaluation of the process indicators, also referred to as the midterm evaluation. The evaluation of the process focused on training workshops, collaborative materials development and platform development, implementation of the country action plans and the materials already developed. The output evaluation's focus was on the materials, the platform and the skills and capacity of the teachers.

Challenges and Lessons Learned

When you have planned everything down to the finest detail and consulted as widely as we did in this project, you expect nothing less than success. And in my opinion, the project was a huge success overall. I have to congratulate all the parties involved not only for completing this project but for completing it so successfully. During the launch of the OER, COL's former President said, "I congratulate and commend you all for your determination and the skills that you have brought to this project. Thanks to your commitment to fulfil your promises and to deliver products of quality, the Hewlett Foundation now has a high opinion of COL just as COL has steadily increased its commitment to OER" (Daniel, 2012). However, had we not addressed many challenges, we may have failed. The next section highlights the most important challenges and how we dealt with them.

Effective and timely communication is critical to the success of any project. Unfortunately, one aspect that the project had not properly planned for was the different cultures of communication in the different countries. This had a major impact on the project plan. The country co-ordinators were engaged as the most critical point of contact in each country; however, the project management was often hampered by the lack of timely responses from country co-ordinators to requests for information about project progress.

Several country co-ordinators also had difficulty in following instructions concerning key activities, for example: how and when course blueprints should be posted, or how country action plans were to be finalised and then posted. Notwithstanding this, the project management team acknowledged that the co-ordinators were performing this work in addition to their regular responsibilities, and carrying out the work in politically complicated organisational settings. The same challenge was true for participants, and it demanded a high level of monitoring and motivation from the project management team to all team members on a regular basis to ensure the timely and successful completion of the project (Abrioux, 2009).

Agreements with institutions

The biggest obstacle that emerged during the input indicator reporting was that, without exception, the countries did not follow the agreed criteria for selecting teachers for the project. The input indicator report revealed that "while the teachers have a lot of teaching experience, their material development experience is considerably less. Across the six countries 30 per cent of the teachers have between 0–2 years' experience only" (SAIDE, 2009a). While this may seem like a minor challenge, it had a major effect on the project at different levels. For example, teachers worked in teams, and when two teachers in the team of five did not have the requisite experience, it delayed all the work or placed more pressure on the three more experienced teachers to do more work. This was not communicated to my office, and it was disappointing to know that it happened despite our agreements. Institutions agreed that they would support the teachers with regard to access to computer facilities for the duration of the project. This was a critical component in ensuring the project's success, as not only did they need it for developing the content on their own, they also needed it to communicate and collaborate within the team and across teams and countries. It was so important to provide this support that the project budget made provision for it. Namibia alone honoured this part of the agreement from the beginning. In most of the other countries this problem continued for almost six months into the project's life.

> "The major issue has been a lack of computers. This was resolved as of mid-July. Approximately 4½ months of development time was lost." (Fenrich, 2009)

This issue affected the work at various levels and delayed some teachers' skill development in the use of technology.

Furthermore, even in countries where teachers had access to computer facilities, they did not always have Internet connectivity. It was either unstable or, in most cases, unaffordable. It was agreed with the institutions that access cards for teachers would be purchased from project funds so that they could work

independently. While some countries honoured this agreement, others did not, which meant that their teachers had to work at the school or at an office where there was Internet connectivity. This created another challenge, as teachers who used the school facilities could not do so after work hours or during weekends when they had more time. Access issues did not only affect the timely completion of course content, they also had a demoralising effect on most of the teachers.

Access issues and delays also affected the consultants' time and timelines. They were engaged for a specific contracted period, and when teams did not submit their units for revision on time the consultants' timelines were affected. The following comments illustrate how severe the situation was at one point:

> "I have urged the teachers to send me their work for comments, even if it's not complete units, in order to try and prevent a situation where the units come to me all at once, and possibly creating a bottleneck, but to no avail. It's almost mid-September, and there are still 14 units in total outstanding." (Lewin, 2009)

> "This time loss has severely affected my [the external consultant's] time. I had time available from March through May. I do not have the same amount of time available from now through to November. It is likely that I will occasionally have a backlog of units needing review." (Fenrich, 2009)

Licensing challenges

Without exception, it was clear that all the countries were struggling with the Creative Commons licensing, and most found it difficult to embrace. The most significant effect of this was the withdrawal of India slightly more than six months into the project. This meant that we would not meet our objective of 20 subjects unless we brought in another country.

To compound the problems, the midterm evaluation reported that, in most instances, the content developed so far did not meet the required standards for open and distance education content.

> From the evaluation of the seven selected sample units, the overall finding is that writing teams were able to use the main features of the COL template well, that most teams formulated outcomes and objectives, that content [was] fairly well sequenced and that most units contained exercises for the learners to do. Five of the seven units made good use of illustrations, diagrams and tables. In summary many of the basics are in place. However, across all countries, a key finding is that these materials all still reflect a range of design and pedagogic weaknesses which need to be remedied before they will be suitable for self-directed study purposes in an open schooling context. (SAIDE, 2009)

It was also evident that some teachers were of the opinion — despite the training workshops and course blueprints — that OER did not have to meet the existing and accepted standards for good ODL content. There was a flagrant disregard for the principles of quality distance education content. Consequently, the teachers were greatly demoralised when the evaluators noted shortcomings in the content.

Another challenge was the completion of the online training in Moodle. Teachers were supposed to participate in this training so that, when they had completed the print-based content, they could easily translate it into Moodle. For the first time in their lives, the majority of teachers were exposed to a new mode of training: online training. Despite my assumptions in the project proposal, and perhaps despite the teachers' eagerness to build their skills, this was one of the biggest challenges for the teachers. One reason was the limited bandwidth in countries. It slowed the downloading of files, and in some regions, the bandwidth could not support connections to the Internet. The Moodle training did not unfold as expected, and the evaluation report confirmed this.

> Another pre-condition for successful on-line materials development is access to robust and speedy connectivity. All writers need access to computers at home and more Moodle training is required. (SAIDE, 2009)

How did we address these obstacles?

The Project Management Committee was determined to honour its commitment and to make the project a success. For this reason, we made a determined effort to correct the shortcomings identified during the monitoring and evaluation process. The first step was to inform the William and Flora Hewlett Foundation (WFHF) about the delays as well as the withdrawal of the open school in India, and to request an extension of at least one year. The WFHF was very accommodating and supportive. We received both an extension and permission to include a new country.

As the project leader, I personally engaged the teams in the different countries — by telephone, Skype or field visits — to ensure that they stayed motivated and would not lose their momentum. This was not always easy, but when one is focused on achieving objectives, you can find ways to realise them.

The President of COL wrote letters to the ministers of Education to update them on progress and to remind them, in a subtle way, of their commitment to this project. The project management team revised the schedules of each country and had them approved by the steering committee who in turn increased the frequency of meetings. During the launch of the OER in Seychelles, Sir John Daniel said, "Here in Seychelles I think of Alex Souffe, who often joined me and the other members of the project steering committee for many teleconferences at ungodly hours" (Daniel, 2012).

Countries that did not provide the support promised in the agreements were encouraged to do so, and eventually we confirmed that all the teachers had reasonable access to computers. However, the issue of Internet connectivity remained a problem and had not been resolved in all countries by the end of the project.

COL invested additional funds to rectify the shortcomings in the content following the midterm evaluation. It was heartening to note that most of the institutions had also made investments themselves to prevent the ship from sinking. As a result, the teachers realised that the project was not going to fail and, sufficiently motivated, they gave it their all. The country consultants' agreements

had to be adjusted, and they all attended a third workshop to focus on addressing the shortcomings in the content as identified in the midterm evaluation.

Reassigning the five subjects originally intended for India was a challenge. The participating countries were already struggling to meet the timelines and did not want to increase their workload. Trinidad and Tobago agreed to take two subjects and the steering committee agreed that I could approach Zambia about the others. I entered into discussions with the director of the Distance Education Directorate in the Ministry of Education in Zambia, the late Mr Victor Muyatwa, who did not hesitate to join us. This involved additional travel, more teleconferences and an array of additional communications to bring the new group of teachers up to date with the project. We were fortunate to retain the services of the Botswana consultant for the Zambia team. This made things easier and brought some continuity and consistency as we did not have to introduce a new consultant to the project.

The OER were supposed to be shared globally to allow any interested party to repurpose and use them. COL therefore had to ensure that the content was of an acceptable standard. We asked experienced content editors in Vancouver to edit the content according to the standards provided by the evaluators during the midterm report. These editors, like the teachers, worked beyond the call of duty to support this venture.

The only outstanding issue was that of the Moodle content. We invested additional funds and organised various face-to-face training events to ensure that we had a pool of trainers in each country who could support the training of their peers in Moodle. To counteract the issue of Internet connectivity, we introduced Poodle (Portable Moodle) to teachers during the second set of Moodle training. Poodle, unlike Moodle, was not dependent on Internet connectivity, and allowed teachers to work offline on their content. As in the case of the print-based content, we had to ensure that we had quality content on the Moodle platform. Again, we had to engage Moodle consultants locally to edit the Moodle pages and to help the teachers to make the content more user-friendly, interactive and able to meet the standards for quality online content.

Some key lessons learned during the OER4OS Project

- Constant communication is crucial. By keeping everyone in the loop we managed to maintain the momentum and ensured that everyone honoured their commitments.

- Institutional support is very important. If staff are not given the support that they expect, it can be detrimental to the success of the project. Note, for example, the challenges arising from limited computer and Internet access, as well as the fact that incentives to some teachers were either not paid or payment was delayed.

- To ensure that one has the right participants in the project, a baseline study should be done on participants before the project is launched. This would allow the project steering committee to either request replacements or to develop a strategy to deal with any shortcomings and weaknesses that are identified and that may have a negative effect on the project.

- Identification of risks is a critical part of project management. Unfortunately, the risks at the level of the participants were overlooked, with the focus being placed more at the institutional level. Having the wrong people executing the project is, in my opinion, the biggest risk to any project.

- Agreements are made by human beings and are therefore not guaranteed to go to plan. Having two parties sign an agreement does not guarantee that both parties will honour the conditions of that agreement.

- Project plans should be flexible. We had to go back to the drawing board and change the timelines due to unforeseen obstacles. If we had not been flexible, we may not have succeeded.

- Transparency and accountability create a trust relationship among partners. In a project of this nature one has to ensure that there are mechanisms through which you can keep the funding agency and policymakers in different countries informed regularly.

- Monitoring and evaluation are critical. The budget should include provision for addressing recommendations from the evaluation; otherwise the evaluation does not serve any purpose.

- Teachers who are involved in work outside their regular working hours need to be compensated.

- Developing OER is not a simple task. If we want to encourage the use of OER to address the challenge of access, we have to ensure that developers adhere to standards for quality open and distance learning resources.

- Networks of friends and colleagues who can comment objectively are important in a collaborative venture. When collaborating, we have to accept that our work will be critiqued. If we are not prepared to learn from the opinions of invested friends and colleagues, we will not succeed in collaborating and sharing.

- Leadership is an important dimension in collaboration. The leadership skills of the team leaders and co-ordinators affected the progress of the project. Sometimes people think leadership can come only from the people at the top, but leadership can come from different places in the hierarchy and should be nurtured wherever it is found, so that those who step forward or emerge as leaders are acknowledged and so will continue to lead once the project is over.

Conclusion

The project ended well. We finished with 88 teachers, 20 subjects in print-based format and 10 subjects online in Moodle. I believe that "we make the road by walking" it (Horton & Freire, 1990), and this project is definitely an example of a road that was made by walking it. Having said that, we did rely on detailed levels of project planning as we made progress; we had to make assessments and decide how to address the weaknesses in the plan. We certainly relied on collaboration and communication to make the project a success, but we also relied on using the right tools to do so. Finally, we needed people who could carry out the plan and ensure its success. The participants' commitment — based on both vision

and the tenacity to pursue an ambitious goal — was possibly the project's greatest strength. I am indebted to the teachers who participated in this project, and I hope they will always remember this experience as one that will make a difference in the lives of literally millions of children.

This project also showed that access to quality resources, which is a huge challenge for conventional schools, can be addressed by developing OER. Take the example of Seychelles:

> It is also very apt that we are launching the OER for Open Schooling in Seychelles, which does not have an open school. That is not a paradox! All secondary schools are short of learning resources and we hope that the example of Seychelles, in adopting them to support teaching and learning in the classroom, will be widely copied. (Daniel, 2012)

This was an ambitious project, but if you do not have ambition you will never be able to make a difference. I am grateful that we had the opportunity to contribute to the pool of OER through this project and that open schools and conventional schools could work together to make it happen.

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2

Training the Course Team Members and Supporting OER Development: The Instructional Designer's Perspective

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Abstract

This chapter offers personal perspectives on the training and support provided to course team members in Botswana and Zambia as they developed print-based open educational resources (OER). The teams produced OER in Commerce, Human and Social Biology, Geography, Mathematics and Physical Science for Grades 11 and 12. The chapter reviews the nature of the assigned tasks, the target audience, the implementation of the tasks and the challenges and lessons learned. The lessons learned about time frames, the importance of in-country support structures like the country management committees (CMCs) and team leaders, the availability of resources from the outset and the crucial role played by committed team members will, it is hoped, guide the implementation of similar or future projects. The central conclusion is that, despite the challenges, the training contributed to the teams' understanding and application of crucial components of open and distance learning and the development of print-based OER. This can be seen in the progressive improvement in the quality of the draft units, including the final completion of all the prescribed units, and the positive comments from team members about their competence. The project also enhanced this consultant's knowledge of and skills in print-based OER development and the use of technological platforms like Basecamp to support and communicate with participants in a project.

Overview of the Instructional Designer's Responsibilities

The instructional design consultancies were carried out in Botswana and Zambia between July 2009 and December 2012. The tasks involved assisting and supporting teams of teachers from the two countries as they developed open educational resources (OER) in the subjects assigned to them. The training and

support involved face-to-face residential workshops supplemented by support at a distance through Basecamp, email and teleconferencing. In this section I briefly describe the purpose of the project, institutions involved, target audience teams and my responsibilities.

The purpose of the Botswana and Zambia consultancies was to train and support course team members in the development of OER for secondary schooling. The focus of both consultancies was on the development of high-quality course materials and the related professional development of teachers in the use of technology in classrooms.

The two institutions involved in this project were the Botswana College of Open and Distance Learning (BOCODOL) and the Zambia College of Distance Education (ZACODE). Both offer secondary-education-level courses and were assigned the task of developing OER in five subjects. BOCODOL developed OER in two Grade 12 subjects: Geography and Human and Social Biology. ZACODE developed OER in three Grade 11 subjects: Commerce, Mathematics and Physical Science. (See Chapter 3, Botswana, and Chapter 8, Zambia, for more information.)

The target audience of the consultancies was teachers, not learners. The five-member project teams were composed of teachers recruited from full-time staff members of the two institutions and teachers employed in local secondary schools, and, in the case of Botswana, staff from the Curriculum Development Department. The participants came from the country they represented, and each team was country-specific. Changes in the team composition are discussed below. (See Annexure 1 for a team composition list.)

My responsibilities as a consultant varied slightly because of the assignments' time frames. I was assigned to help the Botswana team complete work started by someone else. The focus was, therefore, on helping the team to revise and complete 16 Geography units and 14 Human and Social Biology units. In contrast, I was assigned to help the Zambia team with the initial development and completion of OER in all three subjects and with the development of course blueprints and national action plans.

During both consultancies, there was close collaboration with the Commonwealth of Learning (COL) to design workshop programmes and to help the teams to complete the course blueprint guidelines, ensuring that they used the COL Instructional Design Template to develop the OER. I reported regularly to COL and the CMCs on both countries' progress and motivated the teams through Basecamp.

Overall, my responsibilities were similar for both countries, despite the differences noted above. My work in Botswana helped me streamline my approach to helping Zambia. However, working through a project from beginning to end — as I did with Zambia, where we started from scratch — nurtures a solid understanding of expectations, working relations and manner of operation. This was probably why the Zambian team members expressed such appreciation of my contribution during workshops and as they commented on drafts of this chapter.

Team Support

Teacher support

The capacity-building model used for the training of course teams in this project is a "training the trainer" model. It assumes that participants would eventually not only be able to develop quality OER, but would also pass on their knowledge and skills to others within their organisation. This would ultimately lead to the development of OER in other subjects and increase the number of OER available in a country.

OER and their use in open schooling, as envisaged in this project, could not only expand and improve the quality of schooling through the development of learning content, use of ICTs and collaboration in the implementation of programmes, but also help to build the capacity of teachers to develop OER and increase the number of OER available to be accessed, shared, used and reused freely in Africa and internationally. It is not surprising that the two open school institutions in Botswana and Zambia are part of this initiative and that their training projects involve teachers from local secondary schools and/or curriculum development specialists. This combination of experienced open schooling and mainstream education teachers is a useful way of extending instructional design capacity to embrace a wider pool of educators within each country. It is, however, important to emphasise that the development of the capacity of teachers involved in this project was not without its challenges and should not be treated as a one-time activity. We need constant review, evaluation and revision to incorporate feedback and improve quality.

Various strategies were used to develop the teachers' capacity and to provide support during the development of print-based OER. These included face-to-face workshops, support at a distance through Basecamp, teleconferencing and ongoing reviews of draft units.

Three workshops were organised for each country at different stages of the project. These workshops:

- introduced all the project participants to one another and created a three-tiered connection between subject teams; teams and the consultant; and teams, the consultant and the project management staff (for example, COL staff, Ministry of Education officials and some of the CMC members);

- provided basic training to teams on the development of print-based OER in the assigned subjects;

- provided a good environment for drafting, reviewing and revising OER;

- provided basic training on using Basecamp (in the case of Zambia, where I introduced this training);

- kept the teams motivated to complete the assigned units; and

- allowed for the development of strategies so that the assigned tasks could be completed.

I submitted reports on these workshops to COL at the end of each workshop.

Between workshops, the teams worked together on-site and at a distance with me (from my base in South Africa) to review and revise the draft units. Some of

these reviews also took place during the face-to-face workshops on an individual or team basis as needed. However, the bulk of the drafting, review and revision of units was done at a distance. The teams and I used Basecamp to download and upload draft units and review comments. If it proved difficult to access Basecamp, as was the case in the initial stages of the Zambian project, we used email instead.

The contract with each country specified the timelines for the instructional design, including the dates for the workshops, reports and sign-off of completed units. The teams and I used the sign-off date to develop schedules for the drafting, review and revision of units, including a course blueprint and national plans in the case of Zambia. The challenges of meeting the deadlines are discussed below.

ICT support

The components of this type of support have already been mentioned above. Basecamp provided online administrative support for the creation, delivery, use and improvement of the draft units. It was a good record-keeping tool for all the documents produced and shared among the participants. In addition, it served as a useful communication tool for participants.

Where access to Basecamp was challenging, alternative ICTs were used. Email was used to exchange drafts. Short Message Services (SMS) were used to alert teams about email messages or even uploaded feedback. COL organised teleconferences at different stages of the project to review progress and address emergent challenges, which the teams greatly appreciated (see the comment about COL in the Lessons Learned section).

Quality control

Measures such as unit reviews, progress monitoring by country structures (see Chapter 1) and COL, and external evaluation were used for quality control. The unit reviews helped to progressively transform the drafts and ensured higher-quality final products. Feedback from external evaluations also contributed to improvement in the units' quality. COL's support for additional workshops focused on incorporation of the evaluation feedback (see Chapter 1). This ensured that all participants agreed with making the recommended changes to improve the quality of the units. The support from country structures in the review and improvement of the unit quality could have been better. This challenge is discussed in the relevant section later in this chapter.

Benefits to the teams

The teams and countries are the best judges of how they benefited from the project. The country chapters will, therefore, provide useful insights on these benefits. However, from my own perspective, I believe that the project as a whole benefited the teams in several ways related to the development of print-based OER. In a recent communication, one of the Zambian team leaders confirmed that the print-based OER have been adopted and are currently being used. A good sign indeed.

> "We have adopted the materials we have developed and currently I can confirm that we are using them." (Zambian Team Leader, personal communication, 17 March 2013)

This project has introduced the teams to, or consolidated their knowledge of, print-based OER. Local teachers and curriculum experts who had limited or no experience of developing such materials were able to start the process, go through the difficult stages of drafting and receiving feedback that often resulted in substantial revision, learn from their mistakes and eventually complete their units. Although slow and difficult, this process led to progressive improvement in the units. Participants who had some open and distance learning experience should also have derived some benefit from developing this project's units. They need only compare the existing units with the new ones to see their progress. However, the proof of the pudding is in the eating, and all the teams would derive the greatest benefit by using these materials in their daily teaching situations and introducing changes based on feedback from their learners.

The varied skill sets and talents of team members (including team leaders) has been one benefit worth noting. The composition of the teams as described above meant exposure to a wider variety of views than is generally offered when a single institution's staff are developing materials. The local teachers and curriculum experts brought their own knowledge and experience of working face-to-face with learners and with teachers in curricula development, as did the two institutions' staff. This resulted in the presentation of varied perspectives that were harmonised through debate. In some instances, especially in Zambia, the debates took time to play out, although the quality of the final product was improved.

Team leaders[1] played a central role in the completion of the project. They all made a vital contribution to the project with regards to team support, initiation/ orientation and follow-up of tasks. If participants dropped out, team leaders took over the writing of some of the units, with help from other team members. For example, the Botswana Geography team leader, helped by one or more members of the team, took over the writing of all the units assigned to one person who dropped out early in the project and one person who dropped out much later. In Zambia, the number of early dropouts was greater (four), and new team members were recruited. Team leaders then assumed the responsibility of training these new members before the next workshop. This process seems to have worked well, because the new recruits managed to catch up and complete their units according to schedule. As a result, the capacity of the teams was enhanced and the potential to train others has been developed, especially in the case of those team leaders who took on a new role. One team member who joined the project after the initial stages described the benefits of the project as follows:

> "This worked wonders for me. At the time I joined ZACODE, I had not received any training in print-based OER. Through the project, I am able to develop OER from [the] initial stage to completion point. The experiences during workshops were more than enough to help out. I learnt more through the interaction with the consultant during workshops than in the team [work]." (Zambia Team Member, personal communication, 19 March 2013)

Exposure to and hands-on experience with technology in the development of OER is another benefit worth mentioning. Using Basecamp was a particularly valuable experience. The Botswana participants were already using this technology when I joined the project. Some of the Zambia team members,

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[1] I was not involved with, or informed about, the selection process for team leaders.

however, had no experience of using computers and found using a mouse to be a great challenge. Despite initial challenges arising from inadequate access to computers and limited Internet connectivity, by the end of the project the team members were able to use their laptops to develop units, download and upload them on Basecamp, and send messages. They may not all have used every aspect of Basecamp, but this print-based training has provided a good foundation for the next stages of the project (online OER development), which formed part of a different consultancy. One team member explained what he learned:

> "The project has enabled me to use ICT tools efficiently in my work. My knowledge at the time was very basic. Through the project, and due to the project works, I was able to learn other skills in ICT. Today I am able to use such platforms as Moodle, eXeLearning and the like to create a lesson. Other skills such as searching for information on the web have also been improved. Online collaborations, though not as good as at the moment, were also learnt." (Zambia Team Member, personal communication, 19 March 2013)

The benefits tentatively presented above suggest that these teams should contribute to the culture of open schooling in terms of the development of print-based OER. Further benefits would be gained by adding to the pool of existing OER beyond those developed in this project, working in team contexts and using technology to facilitate these aspects of their work.

Principal Pedagogic and Organisational Challenges

Plans are useful guides for project implementation, but they are seldom implemented as specified and according to projected time frames. From personal experience, I can say that the strategies envisaged for the implementation of the project (face-to-face workshops combined with support at a distance through the use of Basecamp and teleconferencing including email and SMS) were appropriate for such a project and contributed greatly to the successful completion of the development of the print-based OER. Implementing these strategies, however, posed several pedagogic and organisational challenges.

Pedagogic challenges

Given the teams' composition (see above), it would be reasonable to assume that some of the team members — namely those from the two open schooling institutions (BOCODOL and ZACODE) — would have had some experience in developing open and distance learning materials and in the operations of such systems of education. The local school teachers, however, had limited experience in this methodology except where they were involved as part-time teachers in open schooling. This disparity in understanding and experience affected the pace of the OER development and made great demands on team leaders with regard to providing local support and nurturing team cohesion. The pace of OER development in Botswana was improved when the teams decided to adapt existing BOCODOL materials. In Zambia, there were no existing ZACODE materials, but the teams had access to other countries' OER which, although not an exact match for their country's syllabi, provided a framework of ideas they could use. In general, those teachers with limited materials development

experience took longer to complete their units and some dropped out even before completing one unit (one person in Botswana and four in Zambia). Roffey's *Creating Learning Materials for Open and Distance Learning: Document template* (2006) was a very useful tool for guiding new course developers and providing a uniform course structure for units written by different team members. This unit structure made it easy to follow what was being taught and to progressively assess understanding. One challenge that the teams mentioned was that when they were dealing with a large amount of content and/or diagrams, the template was often unstable and resulted in changes to document layout that took time to fix. However, over time all the teams managed to address this challenge and use the template consistently.

The second challenge related to the conflict between the approved course blueprint in Botswana and the feedback from the midterm evaluation of the project. The approved course blueprint did not provide for the inclusion of the learning and teaching approach that the units should adopt, though the syllabi did mention specific approaches for each subject. The midterm external evaluation by the South African Institute for Distance Education (SAIDE) flagged this as a major issue and recommended that each unit include a learning and teaching approach. Although a good requirement for materials of this nature, including these approaches meant that the teams had to first confirm that the learning and teaching approaches were appropriate to each unit, and then try them out in a real-life setting before implementing them into the units. This created some tension, because in some instances it resulted in substantial changes to the structure of a unit and there was some reluctance to make this level of change when workloads were already heavy and delays were becoming the norm. I joined this team late and so I am not sure why the course blueprints were not evaluated earlier to avoid such major changes so late in the process. However, this hurdle was eventually overcome and the OER, while not perfect, incorporated these aspects in some form or another.

The third challenge related to delays in unit drafting, revision and finalisation, including the submission of review feedback. The units were not finalised until December 2012, instead of September 2009 for Botswana and May 2010 for Zambia. One reason for the delays was the unevenness in the understanding of open and distance learning (ODL) and in materials development experience mentioned above. The external evaluation recommendations about the inclusion of teaching and learning approaches mentioned above, and also other aspects regarding specific content areas, resulted in the revision of all units in Botswana, including those that were due to be finalised. The inclusion of the recommended teaching and learning strategy was very useful as it encouraged the development of "active" learning in the OER. In some cases it was very difficult to ensure consistent application, especially in the case of writers with limited ODL experience. One difficulty was providing feedback that fully explained answers to the activity questions so that learners could easily correct any mistakes. Another was ensuring that the writer's view or voice was captured strongly in the paragraph that linked the different sections and that this voice highlighted the differences and/or similarities between sections. The face-to-face workshop that was organised to deal with the evaluation recommendations contributed greatly to getting the teams' support for the revision of the units. However, in one

instance at least, the required changes were not made even when clearly identified in the evaluation recommendations, and the team leader had to address these issues late in the process.

At the end of each face-to-face workshop, work plans with milestones for unit completion were drawn up for each subject and unit writer. These indicated when future workshops would be organised and also when the units would be revised, reviewed and finalised for sign-off. But at the end of each workshop, it was evident that the original milestones would not be achieved, and so the new work plans recommended scheduling changes. However, it transpired that these new deadlines would not be met either, and the contracts for both countries were therefore changed at least three times. The delays were largely due to participants' existing work commitments. COL expected the members of the teams to be given time to develop this project's OER during their normal working hours, but this did not happen. One team member described the time challenge as follows:

> "I note from the draft chapter, with interest, that there is a lot that has gone [into] this project. However, my experience tells me that it did not have the same enthusiasm during the process of writing. To write a unit or materials away from my normal working schedule (in my spare time) does not give me the same note of the project. It seems as if it is a by the way thing. I know that sometimes projects are not part of the operations of the organisation. However, I believe that projects of this nature are part of such organisations as BOCODOL and ZACODE from the beginning to the end. This element should be seen from the way a project is handled." (Zambian Team Member, personal communication, 19 March 2013)

The teams used their evenings and weekends to write their units. Family and other personal commitments affected progress adversely. In Botswana, another reason for the delays was the incorrect assumption that by mid-July 2009, when the first contract took effect, the Botswana teams would have completed 13 draft units (six Geography and seven Human and Social Biology) and that all units would be ready for sign-off by September 2009.

As the consultant, I found dealing with unknown content to be very challenging. Mathematics and Physics were completely new subjects to me and I had no experience in helping teams write such materials. It took time to understand the content and provide helpful feedback on how to improve the units. However, this weakness probably also had its strong points. What I did not understand and asked writers to clarify would, I hope, improve the course materials and ultimately benefit learners who might have found the original version difficult to understand. On a personal level, the whole process of developing materials in these subjects was enlightening to me and I believe that the learners will find these materials very useful.

The issue of dropouts is discussed above in the sections discussing team composition and the role of team leaders and is illustrated in Annexure 1. Of the total original participants in both countries, 20 per cent dropped out. The Botswana dropout rate was 10 per cent and Zambia's 26 per cent (four out of 15). Dropout rates of between 10 per cent and 26 per cent are generally regarded as

not very high in ODL; above 30 per cent is considered high.[2] Absenteeism from workshops was another challenge and meant that separate catch-up sessions had to be arranged. This not only slowed down progress but also meant that those who had been absent missed out on team discussions or plenary sessions. The progress of those who were present throughout was also affected as they had to allow the absentees to catch up.

Organisational challenges

The three main organisational challenges were availability of required resources, team members' geographical distribution, and communication with and support from country structures.

In order to develop OER, the team needed access to computers, or laptops, and Internet connectivity. They needed access to Basecamp to download and upload drafts and to communicate with other team members and me. There were delays in providing access to laptops, especially in Zambia, and in providing suitable antivirus software, and it often took a long time for technical problems to be sorted out. Three Zambia writers' laptops broke down during one of the workshops and they had to use other team members' laptops to draft their units. This meant that they could only work on their units late at night or during breaks.

Internet connectivity presented another challenge. In Botswana, not all team members had Internet connectivity at home. Those who worked at BOCODOL had good, reliable access during working hours, as noted by one of the team members:

> "As for what I experienced in this particular project, I think the number one enemy was time. As a full-time employee of BOCODOL, I could log in at any point in time during the day. But without connectivity at home, it made it impossible to log in outside working hours." (Personal communication, November 2009)

The teachers from local schools experienced some initial difficulties, but in the end all the teachers in Botswana had Internet connectivity. In Zambia, the situation was different. Most of the time, ZACODE had no Internet connectivity, so the teachers could not use this medium at their workplace. They had to buy high-cost airtime using their own resources. The costs were aggravated by bandwidth problems and the resultant slowness in downloading and uploading units. Those who funded their own Internet access eventually found regular contact too costly and later kept their contact minimal. Delays in repairing some of the laptops compounded the problem, making unit development and Internet access virtually impossible at certain times.

Communication between and support for some of the organisational structures and me was another challenge. COL stipulated three primary communication and support levels for the smooth running of this project. These were between the consultant and COL, between the consultant and the teams, and between the consultant, the country co-ordinator and the CMC. There were no challenges regarding the consultant and COL level of communication and support. All the

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[2] See B.I. Fozdar, L.S. Kumar and S. Kannan (2006). "A survey of a study on the reasons responsible for student dropout from the Bachelor of Science Programme at Indira Gandhi National Open University." *International Review of Research in Open and Distance Learning*, *7*(3).

COL officials involved in this project provided invaluable support to the teams and to me. This support is cited below as one of the lessons learned from this project.

Communication with and support from country co-ordinators during face-to-face workshops was generally good. Co-ordinators played a vital role in ensuring that the administration and management aspects of the three workshops were carried out effectively. Without their oversight, emergent challenges would have been difficult to resolve for someone who is not a resident of the country. Their attendance at some of the workshops was also appreciated. However, the level of support offered after the workshops could have been improved. In the critical aspect of communicating feedback on the units and other documents like work plans from the CMC, communication was inconsistent. In Zambia, in particular, there was limited communication with the country co-ordinator at a distance through emails or Basecamp. For example, there was no liaison during the development of the national action plan, and documents uploaded on Basecamp were not acknowledged, though the co-ordinators were on the email lists of those contacted via Basecamp.

Communication with and support from the CMC were the weakest of all the structures set up for this project. Except in two instances, there was no communication from the CMC throughout the project. The two exceptions were when one member reported her retirement and withdrawal from the CMC and when there were some responses to COL's invitations to future teleconferences. Feedback from the CMC on the units signed off by the consultant would have been useful prior to the final editing of the units, but as can be seen on Basecamp, only the Botswana co-ordinator commented on the progress of the uploaded units.

Lessons Learned

The lessons discussed in this section are drawn from the experiences and perspectives described above. They relate to the importance of government and in-country support, time frames, the nature of tasks, team composition and the vital role played by COL. These lessons will definitely be applied to similar future consultancies and I hope that other countries intending to implement similar projects will take note of them.

Importance of government and in-country support

The first lesson I can draw from my participation in this project is the importance of government support in projects of this nature if things are to run smoothly. For example, transport, accommodation and equipment need to be provided on schedule. In Botswana, there were no difficulties with such logistical issues and the workshops ran smoothly. However, the first workshop in Zambia encountered several logistical challenges that led to valuable workshop time being lost, and a ten-day workshop turned into an eight-day workshop. Lessons learned from this were applied to future workshops, and there was great improvement, though some of the challenges relating to laptops continued for some time.

A related lesson I learned is that government often shows its support at official opening and closing ceremonies, and these often take up most of the first and last day of a workshop. These activities are certainly useful for introducing

participants, highlighting crucial protocols, ensuring that all know the roles of the different partners in projects of this nature and reporting to government on what has been achieved during the workshop. However, when planning a workshop programme, the time taken up by these ceremonies is rarely taken into account. Experience has now taught me to expect a workshop's substantial business to begin after lunch or even afternoon tea on the first day and to end at noon on the last day to accommodate these protocol requirements.

Another related lesson is that the support structures established for the project, like the CMC and team leaders, need to be better co-ordinated and strengthened in order to fulfil their functions. The role of the CMC and the other structures should be outlined in country reports and will not be discussed here. However, in the development of print materials, a well-functioning CMC, for example, would have been a valuable monitoring structure that received reports and draft units and provided feedback on the relevance and quality of these products at various stages of the project. CMCs can learn from the COL staff's efficiency and care. Because the CMC seems not to have functioned as well as intended, it is not clear whether the units that were eventually signed off actually met the requirements of the broader members of the countries' communities and, ultimately, the needs of the learners. If, as some of the teachers have said, the products have been adopted by their institutions and are being used in the open schools, it is critical that their implementation be evaluated and feedback sought from both learners and teachers. In the case of teachers, the evaluation should look at how well skills learned from participation in this project are being applied in a real-life setting. This feedback should then be used to revise the units and address the identified weaknesses and, where possible, address emergent further training needs.

The importance of subject team leaders has already been mentioned. Team leaders play a crucial role, especially when the consultant is geographically distant and also when new members are recruited during the later stages of the project (for example, after the first workshop). The Zambian team leaders for Mathematics and Physics played a vital support role for their teams, especially for new members. It would be worth working with team leaders who have had this experience to develop a structured programme for helping team members, particularly those joining a project late. Such a programme should include suggestions on how to facilitate the various topics covered in the different workshops and also how to use a materials development checklist effectively.

Time frames, the nature of tasks and team composition

In retrospect, the time frames for the project were unrealistic in their assumption that print-based OER could be produced within three to six months. The team members all had different levels of experience in developing materials and using technology, which translated into the project requiring more time than was originally envisaged. The contract specifications mentioned earlier show that the tasks were wide-ranging and that teachers had to master all aspects of the process to be able to produce the required material. This took time as well as constant practice and sharing of ideas within the teams. Such projects need to be evaluated and adjusted to suit local conditions, taking into consideration the teams' (especially the local teachers') knowledge and experience of developing OER, the demands of the teams' regular jobs, available ICTs and Internet access.

If Internet access is a challenge, teams need to meet regularly face-to-face. Therefore, the distance between the local teachers' workplaces and the co-ordinating institutions (ZACODE and BOCODOL, in this example) also needs to be taken into consideration. Even I found the time frames very tight. The time allocated for the Zambian consultancy, for example, was 92 full-time-equivalent days. Participation in the three workshops, travel and pre-workshop preparations accounted for 38 days. The remaining 54 days were assigned for unit reviews and support at a distance for the teams. Reviewing 33 units from 15 team members in three different subjects within such a short time was not easy. I managed it mainly because I sought assistance from a colleague — but I still spent more than 92 days on this consultancy. One lesson I learned from this experience is that the time frames for such projects need to be worked out after (1) an assessment of the participants' experience in ODL and the amount of time each participant has available for this project, and (2) confirmation of the total number and length of units per subject.

Vital role played by COL

The last lesson from this experience emerged from the role played by COL officials. Successful completion of projects depends on commitment and the efficiency of the processes that are in place for a project and the co-ordinating structure. COL officials involved in this project provided invaluable support to the countries, the teams and me. They discharged all the responsibilities assigned to them in the contracts efficiently and caringly. Communication was regular and speedy throughout. Frances Ferreira, the main liaison person, deserves special mention for her role in ensuring the relatively smooth functioning and completion of this project despite the many challenges faced by all involved. Her assistant, Carol Walker, also played an important role in providing support to her and all the participants and ensuring that things ran smoothly, even during Ms Ferreira's travels. Ng'ambi, one of the team leaders, endorsed this vital contribution as follows:

> "I wish to acknowledge the encouragement we received from Frances Ferreira. Her visits to Zambia and her interaction with the writers was a very good initiative. We appreciated every effort she put into the project in order to keep the project going. She gave us hope both through several emails she dropped into our inboxes and talking to us face-to-face when she visited the college [ZACODE] and during the last workshop we had in Lusaka at Andrews Motel. I also thank her for the initiative she made to arrange teleconferences, the platform on which we were able to share our challenges." (Ng'ambi, 2012)

Conclusion

Training teams composed of members with varying levels of knowledge and experience of developing OER and using ICTs is not easy, especially where the bulk of the work is conducted at a distance. It requires dedication, commitment and preparedness to continue despite challenges and resultant delays. It also requires strong support from project structures. This project had several challenges, as discussed above, but the participants' commitment to completing the project,

as well as COL's support and readiness to address ongoing challenges, provided the requisite motivation for ensuring successful completion of the project despite delays. One can thus conclude that, despite the challenges, the assigned units were completed, the products are likely to benefit the countries concerned and the teams have acquired skills that they can use and share with others within their institutions and countries. The teams' and countries' next challenge is to ensure that the products of this project are used and that the "training the trainer" model to develop additional OER to meet their needs is implemented. Some of the Zambian participants have indicated that this is already taking place. On a personal level, these consultancies have expanded and consolidated my OER knowledge and skills, and I will eternally treasure the experience of working in different southern African countries. We all learned a great deal from one another. In the words of one Zambian team member,

> "It was always such wonderful times to meet and be with you during the meetings and during the email communication. There were always lessons in your communication. Today, I write OER with minimal help and supervision because of your work. Thank you very much." (Zambia Team Member, 2012)

Annexure 1: Botswana and Zambia OER Team Composition List

| Country | Subject | Numbers | | Total | Dropouts | |
		Female	Male		Female	Male
Botswana	Geography	1	4	5	-	1
	Human & Social Biology	1	4	5	-	-
Sub-total	2 Subjects	2	8	10	0	1
Zambia	Commerce	3	2	5	-	-
	Mathematics	-	5	5	-	3
	Physical Science	-	5	5	-	1
Sub-total	3 Subjects	3	12	15	0	4
Total	5 Subjects	5	20	25	0	5

Note: Those who dropped out in Zambia were replaced. Botswana did not replace the one member who dropped out. Two members of the team took over that member's responsibilities and also finalised the units of another member who dropped out later.

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Developing OER: The Perspective of the Teachers from Botswana

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Abstract

Open educational resources (OER) are being increasingly promoted by enthusiasts such as the Commonwealth for Learning (COL) as one solution to the challenges of access to, quality of and cost of higher education all over the world. The OER4OS Project in Botswana started in 2009 and was expected to be concluded in 2011, but due to unforeseen challenges, it was not completed until 2012.

This chapter reports on and discusses the experiences and perspectives of the Botswana College of Distance and Open Learning (BOCODOL) and the individuals who participated in the COL project to develop OER material for open schooling. A survey, based on a short questionnaire, was conducted to gather information from the teachers who were involved in the project. The results indicate that the respondents felt positively about the use of OER and that their participation in the project provided them with an opportunity to learn more about OER and to acquire new Information and Communication Technology (ICT) skills. The chapter also discusses challenges facing the development and use of OER in Botswana.

Overview of the OER4OS Project in Botswana

Background of Botswana

Botswana has transformed itself from being one of the poorest countries in the world (dating back to independence in 1966) to now being a middle-income country. According to the International Monetary Fund, economic growth averaged over 9 per cent per year from 1966 to 1999.[1] Mining, particularly

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[1] Wikipedia, retrieved 7 March 2013

diamond mining, has been the dominant contributor to the country's economic growth. The 2010 census put the population of Botswana at just over 2 million.

Educational context

Developments in the Botswana education system have been guided by two main policies, both of which are based on the findings of presidential commissions set up in 1976 and 1993. The first national policy on education, adopted in 1977, was called Education for Kagisano. As the first such policy after independence, its main focus was on building peace and harmony in the new nation, which is what *kagisano* means. Following the adoption of this policy, educational opportunities were substantially expanded and school enrolment increased between 1979 and 1991. The emphasis of the policy was mainly on increasing access to education for the majority of school-age Batswana children. During this time the number of primary schools increased to 745 from about 500, and the number of secondary schools increased to 230 from 23. Teacher training colleges increased from two to six, and vocational institutions were introduced in most of the major population centres (Maroba, 2009).

The second policy, commonly referred to as the Revised National Policy on Education (RNPE), was adopted in 1994, following the recommendations of a national commission on education appointed by the president in 1993. It is intended to help prepare Botswana to move from being a traditional agro-based economy to being an industrialised economy (Ministry of Education, 1994).

There has been tremendous progress in terms of providing access to education, especially at the primary level where enrolments are now almost 100 per cent. Some students still drop out, though, and it is estimated that approximately 10 per cent — although probably less — of the potential student population never enrolled. The country's main challenge lies in ensuring students make the transition from junior secondary to senior secondary — around 70 per cent of students make this transition — and then from senior secondary to tertiary education — less than 20 per cent make this transition. Some students at the secondary level had previously dropped out of the system and would now like to continue their education to increase their chances of promotion. To meet these students' needs, the Distance Education Division, which was under the Department of Non-Formal Education before the Botswana College of Distance and Open Learning (BOCODOL) was created, has to be upgraded.

Establishment of BOCODOL

> The Botswana College of Distance and Open Learning (BOCODOL) is a semi-autonomous, publicly funded distance education institution established in December 1998. It was created to extend education and training opportunities to out-of-school young people and adults by using open and distance learning methods. Its mission is to provide quality, innovative open and distance learning programmes and services to empower clients with knowledge and skills for global competitiveness. The College's headquarters are in Gaborone, with five strategically located regional centres countrywide. (Amey & Bagopi, 2011)

About 5,000 learners are enrolled annually for open schooling in 20 courses at the junior and senior secondary levels.

BOCODOL's portfolio of programmes has been expanded over the years to include vocational and tertiary programmes. The college is now in the process of becoming an open university, but will still be offering open schooling. In order to safeguard its open schooling options, the college has adopted a "ring fence" model[2] to protect against underfunding and neglect. The Department of Open Schooling will form a Centre of Open Schooling as a protected entity operating within the university.

BOCODOL has established strategic partnerships with institutions and organisations, nationally and internationally, to enhance its capacity to deliver on its mandate as explained above. At the national level, the college has partnerships with local institutions, some of which act as hosts for its many learning centres while others are feeder institutions, a source of trainees or learners. At a regional level, the college has an arrangement with the Namibian College of Open Learning (NAMCOL) whereby they conduct quality audits on each other to ensure development and delivery of quality programmes and services to learners. In addition, South African Development Community (SADC) countries have become significant feeders for the Certificate in Distance Education Practitioner (CDEP) course since BOCODOL won a capacity-building bid in 2010. Through these partnerships, the college has diversified its programmes and now offers certificate programmes, diplomas and undergraduate degree-level programmes. It also offers masters-level programmes in partnership with other universities such as Leeds Metropolitan University (United Kingdom), Amity University (India) and Indira Gandhi Open University (India) under the Pan African e-Network Project.[3]

In 2006, the college received an international award for Institutional Excellence in Distance Education from the Commonwealth of Learning (COL). The OER4OS Project is just one of the major projects in which the college has been engaged in collaboration with reputable organisations such as COL. Through these partnerships, the college continues to develop and grow its capacity and the quality of its products and services.

Scope of the OER4OS Project in Botswana

Botswana was one of five countries that took part in the development of OER for secondary-level education through the William and Flora Hewlett Foundation/COL Partnership Project.

BOCODOL and the Botswana Ministry of Education and Skills Development worked in partnership with COL to produce open education materials for Human and Social Biology (HSB) and Geography. The materials were to be used to support secondary-level education in institutions across the country that offer secondary-level education. A total of 12 officers were involved in the project (six BOCODOL staff members, three curriculum development officers and three secondary school teachers). The initial time frame for this project was 14 to 16 months, divided into two phases. The first phase focused on developing the print-based materials and

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[2] The term "ring fence" model originated during an organisational review of BOCODOL in preparation for its transition to an open university. The "ring fence" is the sum of the structures that will protect the open schooling aspect and prevent it from being lost in the structure of the new organisation.

[3] See www.bocodol.ac.bw/index.php/services/tele-education

the second phase focused on developing online materials. At the highest level, this project was co-ordinated by a steering committee made up of the heads of the institutions from all the participating countries and COL (see Chapter 1). Botswana was represented on this committee by the Executive Director of BOCODOL, assisted by the Director for Curriculum Development and Evaluation (CD&E) in the Ministry of Education and Skills Development.

Role of BOCODOL as a project co-ordinator

In Botswana, BOCODOL was given the mandate and responsibility to co-ordinate the project on behalf of the ministry. The Department of Curriculum Development and Evaluation (CD&E) was responsible for the curriculum and the Department of Secondary Education (DSE) was responsible for the schools from which the teachers came. A Country Management Committee (CMC), headed by the Head of Department (HoD) for Open Schooling and assisted by the manager in the Department of Multimedia and Production, both from BOCODOL, was responsible for co-ordinating all the activities of the project team.

BOCODOL also had to engage the services of the college's graphic designer, from the Department of Multimedia and Production, to assist with layout of the material and the production of illustrations. The department played a major role in the project as it also helped with identifying free open resource illustrations and multimedia components as well as guiding the team on the development of online materials.

Objectives of the OER4OS Project

The aim of the project was to increase access to education and to contribute to improved learner achievement through the:

- development of high-quality OER,
- professional development of teachers (to increase their effective use of technology in classrooms), and
- development of learner-support materials for teachers.

Perspectives and Key Lessons Learned

Professional development

A major objective of the project from the beginning was to develop the capacity of the staff involved in the OER4OS Project. Following the identification of subject experts as team members, five workshops were offered, three by COL and two by the CMC. These two-week-long workshops were held between February and September 2009 and taught the teachers new skills and new ways of developing material. The first COL workshop taught how to develop the course blueprint, introduced participants to communication tools such as Basecamp and familiarised the participants with different types of media used in distance and open learning. The second COL workshop was conducted online to train participants in using Moodle. The third COL workshop trained the Botswana team in developing online materials. The CMC then organised two writing

workshops to give impetus to the writing process and to encourage participants to support one another.

Most of the OER4OS project team members agreed that they had gained knowledge and skills in the following areas:

- **Developing open educational resources using print.** Some of the team members had very little experience in ODL, but they still noticed some of the differences between teaching a learner face-to-face and teaching a learner who is not in front of them. Even those who did have experience in developing print materials learned a lot from the project. Some of those who were experienced material developers also pointed out that the feedback they received from SAIDE's review of the materials was helpful. It drew their attention to some of the areas that they had been overlooking, such as the importance of the teaching voice, scaffolding and proper integration of illustrations and audio into the text. One of the teachers who had very little experience in writing ODL materials at the beginning of the project shared the following remarks:

  > "Some of the things we learned in the development of print OER are that as a writer, you have to bring the teaching voice into the materials. The project has also introduced us to new technologies and resources on the Internet. For online resources, we learned how to download video clips or create web links to some educational videos ."

- **Gaining a full understanding of OER.** OER is a relatively new concept worldwide, and some participants had not heard about it. Others had heard of OER but did not know much about it. The training helped the participants to fully understand the concept of OER and the different licences under which OER materials are issued. Some people had thought that OER meant poor quality materials — they could not understand how something of good quality could be free. At the same time, there was some excitement about the potential of OER, especially in improving access to quality course material. People were even more amazed at hearing that such material could be modified and possibly sold without the written permission of the originator (unless its licence is CC-NC[4]). They were used to the more stringent restrictions of traditional copyright rules. In the end, the participants understood that the quality of OER material increases when the writer works with other subject matter experts to create the materials.

- **Developing the online materials.** The participants learned to use the COL template when developing print-based OER material and also how to use different online tools to support learners. The training helped the team to understand the difference between print and online requirements. Members of the project team explained that before the OER4OS Project there was a programme that was converted from print to online delivery, but after their training they realised that they had simply cut and pasted the material without necessarily exploiting the features that online delivery offers. According to some of those interviewed, "before, online delivery meant taking the print as it is and burning it on CD." Unfortunately, there was not much time to develop the online version as the OER team members

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[4] http://creativecommons.org/licenses/by-nc/2.0

only had the opportunity to develop one version each. Most of the OER team members talked about this with excitement and admitted that they had learned a lot of new things but did not have adequate time to practise. This is an area that BOCODOL would like to concentrate on in future should there be another opportunity. It presents a whole new opportunity of technological advancement for BOCODOL as it gears itself to becoming a 21st-century university of open learning. It is therefore important that even though the team did not get a lot of practice in the area, they continue to use the many useful skills they learned so they will not forget them.

- **Assessing and supporting the online learner.** When it comes to online learning, we learned that it is important to:

  - build online discussion forums into our courses to support the learner,

  - develop different forms of assessment that give the learner prompt feedback, and

  - simplify evaluation by printing and mailing assignments submitted by learners for marking.

  After their training, some team members put their new skills to good use by participating in new programmes being piloted by BOCODOL (PREST and CDEP).

- **Using different communication platforms.** During the project, the teachers used different communication platforms to keep in touch with other team members as well as with the COL consultants so they could seek help whenever they needed it. Some of the communication platforms they used included Basecamp, Skype and Facebook. In sharing her experiences in this area, the country co-ordinator explained:

  > "I heard and learnt about Basecamp for the first time during the Project and was able to master its usage as it was my daily bread. I had never used Skype but during the Project my meetings with Frances and the consultant were via Skype. I had heard of Facebook but had not opened an account, now I am on Facebook and linked to Open Schooling Practitioners worldwide."

Some of the communication tools mentioned above were provided to allow collaboration both within and between countries but this was not possible because of work pressures. None of the countries had time to go through the modules produced by another country and give feedback. The OER team pointed out that they only had enough time to focus on the work that they were allocated and admitted that even though they were supposed to work as a team and assist one other, it was just not possible. So, even though the tools for this part of the project were provided, they were not used very much. Nevertheless, the team feels that they have ideas about how the tools can be used for collaboration and will continue to explore how they can be used for other projects.

The other component of the professional development was the training provided for the BOCODOL Multimedia Department staff to enable them to provide guidance on the development of online training. This is one of the areas from which the college benefited immensely. All participants were offered training in

Moodle, but only two participants were fully trained. They can now train other teachers, which will facilitate future online development of the materials. For example, they facilitated a workshop for the development of online materials for the master teachers where they were able to produce at least one unit each. They have also facilitated workshops for tertiary programmes and induction workshops for tutors and learners. The manager of the Multimedia Department, who was one of the master teachers and was trained to provide guidance on the development of online materials, said:

> "I am very grateful for this training because it has helped us acquire some very valuable skills working with Moodle to develop online material. We have even managed to use the skills gained to train and assist colleagues in the schools on developing online material. To date, we have been able to work with colleagues in the School of Education to develop and deliver at least one online programme, called Certificate for Distance Education Practitioners (CDEP)."

Impact on open school culture

The OER available in Botswana will support the work of teachers and are likely to improve the quality of education. They will promote self-directed study among learners, and help both ODL and mainstream learners. All the teachers who participated in the project agreed that the development of OER will add value to the educational system in Botswana. OER present learners with an advantage: access to more educational resources, especially since conventional learning resources are not available in great enough variety and quantities in Botswana. There is a lot of diversity in the OER as well. The infusion of multimedia resources as well as reference to online resources makes OER more appealing to the learners.

BOCODOL organised a handover ceremony of all the completed materials to the Ministry of Education and Skills Development. In turn, the Ministry made the materials available to all Botswana schools. To ensure access to the materials, participants were provided with COL's website address and shown where and how the OER could be accessed. In addition, copies of CDs containing all the materials were produced for all the schools. This was meant to help schools in situations where Internet connectivity is a challenge so that they can use the CDs as an alternative. For ODL, the college is planning to copy the materials and make them available for learners and tutors in the learning centres. Induction workshops will be organised for the users.

For BOCODOL, the project has had a positive impact on the way the college develops new programmes. The project has contributed to increased awareness of the benefits of OER material, and the college has started taking advantage of available OER material when developing new programmes. It has been able to introduce two degree programmes using Virtual University of the Small States of the Commonwealth (VUSSC) OER material and is planning to continue exploring opportunities for using more OER material for more programmes, especially at the tertiary level. The Department of Open Schooling is also taking advantage of OER course material developed by the other countries that participated in this project as it develops its Junior Certificate Science course.

Instructional design

The project focused on promoting the use of ICT for the development of the OER materials. Throughout the project, the training workshops mentioned above gave the teachers/writers the chance to learn the ICT skills they would need to effectively deliver on the project. The instructional design template introduced the use of icons to identify and differentiate instructional elements within the modules as a way of guiding learners and making it easier for them to readily understand and interact well with the material. This was a very good and welcome innovation for both the team and BOCODOL. However, using the template was not without its challenges. One major challenge was that the overall module/unit organisation in the template was different from the way BOCODOL organised its material. This created a situation of incompatibility of design that took some time to sort out, but was eventually managed, albeit with some loss of valuable project time. The other challenge was that of content misalignment due to the table structure in the template. This problem was very difficult to deal with and had to be referred back to the designer. Other than these few challenges, though, the template was useful for packaging content in a more universal format for all the participating countries.

Use of ICTs

The project introduced the writing team to a lot of new technologies, all of which were open source. For communication and information- and document-sharing as well as project management, Basecamp was used. In fact, most communication and information-sharing during the project was Internet-based, using Basecamp and Skype. Another communication technology introduced to the team during the project was Elluminate, which was mostly used to facilitate conferencing activities between COL and the CMC. We were also introduced to social networking tools such as Facebook and Twitter, and other Internet-based technologies such as WikiEducator, and YouTube for video resources. At the beginning of the project, Internet access was a very serious challenge, especially for the teachers from the schools because of the low bandwidth. One of the teachers explained that he sometimes spent an entire free period — more than an hour — trying to connect to the Internet only to run out of time when he finally connected. The rest of the team had no problem with Internet access as the bandwidth in the government offices is reasonably adequate. To facilitate Internet access, all ten writers were provided with access to the Internet through a local mobile phone provider called Orange Botswana. The college entered into contracts with Orange Botswana to provide this service using 3G mobile Internet connectivity gadgets called Internet Everywhere, which allowed them Internet access any time, anywhere, even outside working hours and at weekends. Even though Internet Everywhere was a good solution, it posed occasional challenges because users needed to be in a place where they could receive strong signals. The writers said that sometimes they had to keep moving to get connected. The major challenge was that the bills for the service were very high — usually more than double the amount budgeted — and the teachers had to be cautioned about this to prevent overuse.

Many useful content creation tools and technologies were introduced during the writing phase. Picasa, Photo Filter and Gimp were used for manipulating graphics,

while Audacity was used for recording and editing audio content and Windows Movie Maker was used for recording and editing video content. Other software used included HotPotatoes and EXE for creating tests (multiple-choice tests, short answers, matching, etc.). An emphasis was always placed on scaffolding and use of the teaching voice in material development.

Quality control

Stringent quality assurance measures were put in place for the development of the OER materials. With the guidance of the COL consultant, the writing team developed blueprints for two subjects, Geography and Human and Social Biology (HSB). These blueprints were crafted in a manner that would make it easy for the writers to be able to identify and put together the correct content at the right level for the intended target audience. The blueprints were a crucial tool for controlling quality and defining the scope of content coverage. In addition, COL brought in a rigorous system of quality checks and balances that involved the writers, the subject team leaders and the COL consultant. Modules were written by the writers and then checked and edited by the subject leaders before being submitted to the consultant, who checked the content, structure and pedagogical aspect. Comments were forwarded to the writing team so that they could make changes. During the writing process, the materials were also given to SAIDE, which acted as an independent reviewer, and they gave very useful feedback that helped to improve the quality of the materials. Afterwards, the final document was submitted to the consultant again for final editing before being submitted for approval and sign-off by the country co-ordinator. As a final quality check, COL edited the documents again after the CMC uploaded them on Basecamp. At this stage, there was still some back and forth of the modules for corrections and approval. It was a very effective quality control mechanism and produced good quality material. However, some of the writers feel that even though good quality structures were put in place, the work pressure was too much and, as a result, things did not work out quite how they wanted. They suggested that the subject team leaders should not have been allocated work so that they could instead check the work coming from the team members. Others also suggested that quality assurance checklists for teachers to use before they submitted the materials to the consultant would have reduced the back and forth between the teachers and the consultant.

How the tools are being put to use going forward

BOCODOL and all who participated derived many benefits from being involved in the OER4OS Project. Even before the project ended, the college had adopted the use of icons in BOCODOL material, following the COL template style. This has improved the look and feel of the study material and greatly benefits the learners. The college has also increased its use of communication tools such as Skype and Facebook in day-to-day operations, and there has been an increased use of OER material in BOCODOL material development, especially at the tertiary level.

As BOCODOL continues its own course development processes, it is continually exploring how it can use some of the tools that participants were exposed to. Most writers see Basecamp as a good tool. One of the writers said,

> "It is a good tool for project management because it is organised in that it is controlled and the College should explore whether it can use it for course development projects."

Some of its features that the team likes are that you can use it to allocate responsibilities and set targets, and it will track who logs in and uploads and downloads documents, edits and sends messages. On the participants' recommendation, this is one of the tools that the college is exploring for use in some of the current course development projects. The college is also planning to experiment with using Facebook for offering academic support, facilitating learner-to-learner discussions and enabling access to resources on the Internet.

Managing the Process

The entire process of material writing was a huge task. Managing it was a great challenge and also a great experience. The critical components are discussed below.

Timelines

At the beginning of the project, a delivery schedule based on the COL project timeline was produced with assistance and guidance from the consultant. The schedule and the expected deliverables were posted on Basecamp for reference and monitoring. As the project progressed, meeting deadlines became a challenge due to many unforeseen circumstances. One of the main obstacles seemed to have occurred at the planning stage: the CMC had underestimated the magnitude of the job, which resulted in a shifting of the goalposts as deadlines were missed.

Another challenge was that of work overload for the teachers, as they were not released from their normal duties as had been expected. As the project dragged on due to missed deadlines, the team lost steam and morale waned, and it became even more difficult to motivate them to complete the work. As a result of these delays, the print version timeline encroached into the online version timeline. This resulted in the team's not being able to complete the online version of the project.

Costs, efficiencies and financing of the project

The project was financed by COL through a William and Flora Hewlett Foundation/COL partnership. As a result, most of the required resources were supplied. Thanks to the project funds, the college was able to obtain laptops and pay for Internet access for the master teachers through a mobile operator. During the course of the project, BOCODOL also made some financial and "in-kind" contributions. Some in-country writing workshops were organised and financed by BOCODOL to bring the writers together to facilitate the development of the modules. Some writing was also paid for by BOCODOL — it brought in outside writers and redeployed some of its own staff — in order to speed up the process after some of the writers had dropped out.

Copyright issues

During the development of the OER study materials, the college ensured that copyright principles were observed. In addition, Creative Commons licensing was included in the current BOCODOL draft copyright policy in recognition of the need to move towards OER. BOCODOL staff attended a workshop on copyright and Creative Commons licensing which taught them about rights and obligations in the context of OER copyright expectations.

Collaboration

Expectations were high about collaborative relations being formed/realised. This was likely based on the fact that, although the material writing covered different subject areas, it was still one project with a shared goal — that is, to produce OER materials by experts or people with some expertise. Thus, the workshops, training sessions and tools, when correctly used, should have meant that all should have fallen into place. To some degree this was a reasonable assumption. However, some factors that interfered with this great opportunity were outside of our control and needed intervention from a higher level.

BOCODOL joined the project a little late and was under pressure to catch up with the other countries, but participants had the opportunity to find out how the others were handling time pressures. They were also able to share and ask for advice to address some of the factors that were within our control. For example, we had to reorganise and schedule our day-to-day work to incorporate the new work and then negotiate new timelines with the management. The project also required participants to get out of their comfort zones, use the tools consistently and conscientiously, and put more effort into project assignments. Though there was not a lot of collaboration, the Botswana team did manage to collaborate with the Namibian College of Open Learning (NAMCOL) in some areas where they had made advances. During the development of the country schedule we made some use of the NAMCOL template. NAMCOL also showed us the contract they used when lending equipment to their writers, and we used that as the basis from which to develop ours. This was an indication that collaborations are very useful in projects of this nature and magnitude, and with more time, it would have been a very enriching aspect of the project as different country teams would have had the opportunity to learn a lot from each other.

Evaluation of the Project and Lessons Learned

The Botswana country project team evaluated the project once it was over. The college also conducted an evaluation exercise with the team on their experiences, perspectives and lessons learned. A qualitative approach was used to collect data. An interview-based questionnaire with open-ended questions was used to obtain feedback from the participants. Eleven of the participants provided the required feedback on their experiences in the project. In addition, two support staff, who were not team members but were critical to the success of the project, the Information Technology Manager and the Network Administrator who supplied infrastructure and offered technical support, were interviewed orally. SAIDE also conducted external evaluations before and after the project.

Sustainability

To ensure the sustainability of OER in Botswana, respondents suggested a number of measures:

- Address the actual and potential challenges faced by this project to lay the foundation for sustainability.
- Cascade the knowledge acquired in the development of OER to other teachers/educators.
- Have the Ministry of Education ensure that the ideals behind using OER are internalised by all stakeholders.
- Build communities of people who are interested in the development of OER.
- Ensure regular training of both writers and facilitators on new approaches to developing ODL materials.
- Provide more training for resource personnel, coupled with constant monitoring and evaluation.

Readiness of BOCODOL to continue with the initiative

The oral interview with the IT Manager and Network Administrator revealed that the college has adequate infrastructure to be able to support future initiatives. There are computers for all staff members as well as the appropriate software such as Microsoft Office Suite, Adobe Creative Studio Suite and Moodle for the development of content for both print and e-learning. Other open source software available in the college includes Skype and Joomla. The college intranet runs on the latter. There is reliable Internet connectivity for all regions, with well-trained personnel to provide technical support. Ensuring that trained personnel are available in addition to providing the infrastructure is an indication of a commitment and desire to engage in sustainable OER. The IT department further indicated that there are plans to purchase dedicated servers for e-learning development and delivery support, including OER resources. In addition to the ICT developments, the college is also working on developing an OER and Copyright Policy, which will mainstream OER into the institution's operations. All these initiatives are an indication that the college is committed to the use of OER.

Challenges Experienced

There were a number of challenges throughout the project, but fortunately most of them were resolved with support from COL and BOCODOL's executive management. Some of the challenges experienced and the ensuing mitigation strategies are discussed below.

Contracts/agreements with non-BOCODOL staff

All the master teachers' agreements were signed without incident. However, the full implications of the project in terms of the time and commitment required may not have been very clear to some of the supervisors at the schools. Consequently, when the teachers had to be released or given time to write,

some school administrators refused to let them go. BOCODOL had to visit the supervisors for a face-to-face briefing and update on progress to obtain their co-operation.

Access to computers by teachers

Participants maintained their normal workloads and were expected to do most of their writing outside working hours, so timely and regular access to computers was critical. BOCODOL loaned laptops to all the participants to enable them to have 24-hour access to a computer.

Access to the Internet by teachers

Internet access was a bit of a challenge to all the writers as most Internet access was only available during working hours, even though the project work was expected to continue out of working hours. The three teachers were the hardest hit because of the low bandwidth in the schools, affecting online research for content development as well as submission of work and participation in Basecamp activities. In order to address this situation, all the teachers were provided with mobile Internet access — called Internet Everywhere — through a mobile communication service provider. This proved to be a potentially costly solution unless closely monitored. However, despite being welcomed by the writers, it was not without its operational challenges and some expressed some dissatisfaction with its limitations. The team leader for Geography indicated that

> "Though the College provided Internet Everywhere, the challenge we experienced was that the connectivity was not always reliable as at times connectivity became available in situations where it would not be conducive to work."

Adequate release time for teachers

The teachers were not completely relieved from their regular work commitments as they continued to do their normal teaching in the schools. Their release was generally good, though it was only for specific project activities such as training workshops. The major challenges occurred when there was a genuine clash of activities as happened in the last workshop, when the scheduling conflicted with final national examinations. In such cases, the writers would give priority to their core work and put aside the project, which resulted in delays.

Financial support

None of the writers were happy with the project rates, and BOCODOL eventually increased the rates for the non-BOCODOL staff participants. BOCODOL participants could not be rewarded financially due to internal regulations governing projects of this nature. This did not go down well with team members.

> "We are not happy with the College for not allowing us to be given the financial incentive COL was providing for the writers. This really negatively affected our morale and greatly demotivated us. We really feel that it was not fair for us to be denied the financial incentive while our counterparts from the same Ministry were given the 'dollar.'"

Workload

Participants were not relieved of any of their normal responsibilities in order to concentrate on the project. The team leaders' workload was only reduced so they could help those lagging behind. This did not completely solve the problem of work overload, though, as they were still expected to undertake work responsibilities on the project. As they said,

> "Partial release was not enough as the demands of the project required a lot of time and energy to be able to meet the project timelines. That is why we ended up being always behind schedule and ended up not being able to do the online version."

Conclusion

This conclusion draws together the lessons learned on the OER journey and how the project can be expanded to include those who were not part of it.

Future of OER in education delivery within the country

The capacity for developing OER within BOCODOL has increased since the completion of the project. The college has undertaken various initiatives to ensure the sustainable use of OER, such as the in-country launch by BOCODOL and the Ministry of Education and Skills Development (MoESD) discussed above. The college has plans to adopt the OER policy crafted by COL. As a symbol of its commitment to the OER movement, the college has also submitted one of its short courses to COL as an OER. The current status of OER in Botswana is very low as it is a relatively new area that not many people are aware of, but the project has done a lot to educate participants on OER and their potential to improve the quality of education in the country. A positive outcome of the project is that the material created will be available for use by all in the education system. All that is needed now is the means to cascade the knowledge and skills acquired for the benefit of others in the education sector of the country.

Challenges and how they were addressed

The primary challenge during the project was that of reliable Internet connectivity for teachers to access online resources outside their working hours. The Internet Everywhere service was made available to participants to address this. Another challenge was the refusal by schools' senior management to release teachers from work to participate in training workshops and writing workshops. In an effort to address this challenge, the CMC visited the schools to explain the nature and requirements of the project, which improved the situation somewhat. A third challenge was some team members' lack of motivation. Institutional policy would not allow BOCODOL staff to benefit from the allowances given to the external writers. This was a very difficult situation to deal with as it was beyond the control of those managing the overall project to change the policy of the organisation to allow all team members to benefit as intended.

Benefits of the project to the country

Through its involvement in the project, BOCODOL has produced useful teaching and learning resources for open schooling. The materials can be used by teachers as supplementary resources while teaching or by individual learners as self-directed study resources.

Opportunities for future collaboration

The college now participates in a number of collaborative projects to produce OER course material. One such project is the development of a degree in Environmental Science. Another initiative is the development of a Bachelor of Business and Entrepreneurship degree with the VUSSC. There are also plans to participate in an international project to create Notesmaster Botswana through a partnership with Notesmaster International.

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Developing OER: Perspectives of the Teachers from Trinidad and Tobago

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Abstract

Technological advancements in contemporary society have enhanced the way teaching and learning can be done. Trinidad and Tobago enthusiastically welcomed the invitation to participate in a project involving the development of open educational resources (OER), sponsored by the William and Flora Hewlett Foundation and the Commonwealth of Learning (COL). This opportunity to train teachers to create print, multimedia and online resources was in sync with our country's drive to incorporate the use of computers in schools and to provide quality online education.

This chapter shares the perspectives of the teachers in Trinidad and Tobago who embarked on the OER journey, initially in the subject areas of Technical Drawing, Principles of Business and Agricultural Science, to prepare students for secondary-level final examinations. It presents the scope and objectives of the OER4OS Project within our country's educational context, highlights the approaches made available for the professional development of teachers, recounts key lessons learned and describes challenges encountered and how they were addressed. Recognition of the value of the development of OER spurred on expansion of the project to include Spanish and Food and Nutrition for secondary-level final examinations and Science, Technology Education, Mathematics and English for students at the lower levels of secondary school.

The future of OER in education delivery will be revealed as positive and beneficial, not only locally in Trinidad and Tobago but also regionally and internationally. The materials developed so far have been readily incorporated for use in our local secondary and open schools and have been posted on the Caribbean Examinations Council's (CXC) Notesmaster and COL websites.

Overview of the OER4OS Project in Trinidad and Tobago

Country background, context and scope

Trinidad and Tobago (T&T) is a developing country in the Caribbean region, poised to achieve an estimated 1.2 per cent economic growth rate despite challenging global economic conditions. A high priority in the national budget is the education and development of human capital to accelerate economic growth and to promote social responsibility.[1]

The education system is governed by the Ministry of Education (MoE), which stresses a continuing focus on curriculum reform, teacher training, new teaching methodologies and the incorporation of information and communication technology (ICT) in preparing learners for the global market.[2] Citizens have free access to education through public early childhood centres, primary schools, secondary schools, skills training centres and tertiary institutions. There are also opportunities for distance learning through online courses and open schools such as the National Open School of Trinidad and Tobago (NOSTT).

In July 2008, the President of COL invited the T&T MoE to participate with India, Lesotho, Namibia, Botswana and Seychelles in the development of high-quality open educational resources (OER) for secondary education. The materials would be based on Forms 4 to 5 subject syllabi[3] and would be made available in both print and electronic form for use in open and conventional schools. This offer was readily accepted as it fitted in well with our MoE's strategic plan for education.

The management structure to oversee the implementation of this project consisted of a COL-appointed project manager and a country management committee. The latter comprised the head of NOSTT, a senior official from the MoE with experience in curriculum development, two representatives each from the Open School and Division of Curriculum Development and a secondary school principal. (See Chapter 1.)

The course writers were teachers who were experienced subject matter experts. They were selected from the University of Trinidad and Tobago (UTT), the College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT) and secondary schools throughout the country. A terms of engagement contract was agreed between the content developers and the Distance Education Unit of the MoE; the contract confirmed remunerations for completion of units and set the target completion date as November 2010. This signalled the start of a novel and exciting journey of professional training in developing OER in five subject areas: Principles of Business, Agricultural Science and Technical Drawing initially, with Spanish and Food Preparation introduced later.

Objectives of the OER4OS Project

The primary objectives for the project in Trinidad and Tobago were:

   i.   to develop print, multimedia and online open educational resources for use in secondary schools, distance education schools and independent study;

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[1] 2012 National Budget of Trinidad and Tobago
[2] Ministry of Education Strategic Plan for 2011–2015
[3] See http://cxc.org/CSEC_syllabuses

ii. to train teachers in the development of high-quality, self-instructional learning materials;

iii. to make the materials developed available electronically as OER to all the participating countries and, with some contextual adaptation, suitable for use across the six countries to maximise their usage; and

iv. to have trained teachers cascade their training to train other teachers in their respective countries in this type of materials development.[4]

Objective (i) was successful to a satisfactory extent. However, as will be explained later, the initial target of 30 units per subject was reduced to 15 units. The print-based versions were produced after some delay; the challenges encountered in adapting these to online versions are explored in "Use of ICTs."

The training of teachers (objective (ii)), described under "Professional development," was successful to a large extent as shown by the skills acquired by the participating teachers. However, the cascading of this training to train other teachers (objective (iv)) had not materialised at time of writing.

Objective (iii) was perhaps the most successful as all the developed materials have been circulated both electronically and in print to the target audience.

The learners and the curriculum

Generally, the target audience was students pursuing high school certification (Grades 11 to 12) or preparing for the CXC Caribbean Secondary Examination Certificate (CSEC). This included the "in-school" population at secondary schools, students who had failed exams and were resitting them, students who develop at a different pace, people at NOSTT and anyone showing an interest in independent study and distance learning or who has a physical or other condition that makes attending school difficult. The course blueprint specifically outlined the prerequisite skills and learner profile desired for the target audience.

The course writers were encouraged to match course materials to the characteristics of the target audience. The target audience consisted of people with varying degrees of cognitive abilities, and so we often faced the dilemma of how to achieve the "right" balance between providing extra learner support for weaker learners and offering challenging materials for faster learners.

With respect to curriculum choice, the assignment was for course writers to develop open and distance learning (ODL) materials first in a print-based format and later in an electronic format. These materials would be based primarily on the CXC CSEC syllabi, but we were aware that we had to consider the syllabi of the other participating countries to increase curriculum adaptability. We had autonomy over setting boundaries for the course content and in determining the order of topics. The aim was to ensure a well-integrated and holistic course that was suitable for the target audience. Initially this was quite a daunting task for teachers with little or no experience in designing electronic versions of materials, especially for online users. Our background was face-to-face classroom settings, and we eagerly anticipated the training and support promised for instructional design and the pedagogy underpinning ODL materials development.

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[4] L. Sampson-Ovid, Programme Director, Distance Education Unit/Country Management Committee

Degree of openness

The course writers agreed that the materials developed would be licensed under a Creative Commons with Attributions licence, which gave access to a wide range of users who could modify the materials for their unique uses. The 15 lessons developed in each of the five subjects have been posted on CXC Notesmaster, Educator Wikis, and the COL and NOSTT websites. Thus, learners are free to use these resources at their own pace and in their own time, and teachers can modify them to meet specific needs.

Most of the course writers piloted the lessons at their secondary schools. Generally, students welcomed the electronic-based lessons in the classroom as it was quite novel for some of them. However, faster learners needed the in-depth lessons intended for online users modified into shorter PowerPoint presentations, due to time constraints and limited opportunities for face-to-face discussions in the classroom. We were interested to learn that although these students did not particularly enjoy lessons in this format in the classroom, they enjoyed using them at home for self-directed study because of their detailed nature.

To extend the "openness" to learners, both hard and soft copies of the materials developed were distributed to the out-of-school population at NOSTT centres and to curriculum officers to pass on to all secondary schools in Trinidad and Tobago.

Use of ICTs

The course writers invited to participate in this project had to be computer literate. The majority of the teachers had basic computer skills and were familiar with word processing and Internet usage; some, especially the course writers for Technical Drawing, were competent in other programs such as AutoCAD, and this proved to be an asset in their course writing. All the teachers had to attain a certain level of ICT proficiency to meet the demands of ODL materials development. Training workshops were planned to equip course writers with the necessary ICT skills and instructional design knowledge needed to carry out their task effectively.

COL used an online project management space called Basecamp to facilitate communication among stakeholders. However, the course writers were rather hesitant to use this platform for any discussion of preliminary work as many people had access to it. It was consequently underused as a communication tool, and was used mainly to upload draft lessons to the consultant and receive feedback on work submitted.

The MoE of T&T supplied laptops for course writers and paid for Internet connectivity at their homes while they wrote material. Additionally, the course writers were allocated office space equipped with computers and Internet access for team meetings.

Quality control

Adequate measures were in place to guarantee that standards for the ODL materials and goals were being met. The course writers were experienced teachers

with a thorough knowledge of both subject content and syllabi, and capacity-building workshops in ODL materials development were provided. COL carried out assessments at various stages to track the teachers' materials development skills.

The course blueprint developed for each subject was intended to help with quality control as reviewers from other project countries could provide feedback prior to full course development. The country consultant and the materials development team from COL monitored the process and provided valuable feedback to course writers as they worked on the material.

To ensure adherence with copyright laws, course writers were provided with a copy of *Introducing Copyright: A plain language guide to copyrights in the 21st century* by Julien Hofman (2009) and given guidelines to avoid copyright infringement.

Formative and summative assessments in lessons were used to determine if learning outcomes matched the objectives of each lesson. However, an evaluation of OER user success is still needed to assess whether the goals of each course were met.

Instructional design

The course writers developed a course blueprint for each subject area that laid out in detail the course demographics, course outcomes and course overview. Each unit of the course contained a title, an introduction, unit objectives, unit content, a recommended learner schedule and learner/instructor support information. The unit content was subdivided into at least three lessons. The print-based lessons were designed to be compatible with the document template provided by COL, while the online lessons had to be adaptable to Moodle.

Professional development

An orientation meeting for subject teams in Technical Drawing, Agricultural Science and Principles of Business was held in April 2009. The course writers were briefed on the OER4OS Project, deliverables, timelines and responsibilities.

The first capacity-building workshop focused on computer literacy, guidelines for creating materials for ODL, familiarisation with the COL template guide, copyright issues and preliminary work on the course blueprint. Timelines were established, and team members decided among themselves which units they would write. The course writers had more training sessions over the following months to give them the required standard of materials development skills and competencies.

The course writers participated in a Moodle online training workshop to learn how to transfer print-based materials to online. However, because they had not acquired the desired level of competency by the end of the training, a face-to-face Moodle training workshop was held in January 2011. This successfully reinforced the online training.

The training for the second team of course writers, for the Spanish and Food Preparation units, followed the same pattern and began in December 2010.

Perspectives and Key Lessons Learned

Professional development

Building capacity of teachers

Investing in the professional development of teachers was necessary if the objectives of the OER programme were to be achieved. We were provided with appropriate ongoing training to equip us with the necessary skills to ensure the success and implementation of the project. Teachers felt that a lot was shared via the training sessions and one teacher observed that this "opened my eyes to the world of online course development and how to structure work for online learners." For teachers who were mainly accustomed to using the transmission style of teaching for learners with assumed interest in the traditional classroom setting, a whole reorientation was needed to move towards a more learner-centred approach. Teachers needed to learn how to arouse interest in a much more varied target audience, and how to use strategies other than face-to-face instruction. The quality of the materials that were eventually developed is a measure of how successfully they made this transition. Capacity might be further measured by the quality of materials that will be developed in the future.

The facilitators identified what was needed immediately for the teachers to begin preparing the curriculum. The professional development training sessions focused mainly on the following areas:

- The instructional design process
- Criteria for quality ODL materials
- The "teaching voice" in ODL
- Teaching for understanding: ongoing assessment of students
- Assessment strategies
- Assessment feedback to students
- Making decisions about media/images selection

All the teachers found these sessions to be quite informative and interesting. The topics were relevant and to the point. Unfortunately, we had limited opportunity to practise what we learned before we began writing the lessons. Additionally, the capacity-building and professional development workshops were held on school days and most of those involved felt that training should have been scheduled only when teachers were free.

How did participants benefit?

Teachers are familiar with creating lesson plans and teaching notes, and with having textbooks to complement their face-to-face teaching. The concept of actually writing a lesson using "the teaching voice" was relatively new to us, so that was a valuable lesson. We saw the need for establishing ODL dialogue with learners as we were encouraged to put ourselves in their shoes, to anticipate questions and problems, and to present answers and explanations as clearly as possible, because online learners cannot ask for clarification. This was an important lesson that also positively affected how teaching and learning occur in our traditional classrooms.

We benefited greatly from finally understanding the criteria for ODL materials development. Our first evaluation was disappointing. The sample unit done by one of the subject teams did not meet the criteria for ODL materials. This was very disheartening for the course writer as well as the members of the other teams, but we saw value in the comments and decided to persevere with renewed efforts. Some teams decided that members would collaborate more and work together on developing units. The focused writing sessions facilitated by the Ministry of Education helped make this possible. The comments and feedback provided by the country consultant on lessons that were written were very useful in guiding us to improve our materials development skills. After a lot of to and fro between course writers and the consultant, every approved unit was a time for celebration! We were finally meeting the criteria for ODL materials development. However, we were careful not to become complacent as we knew that our task was not yet completed and learning is an ongoing process.

Impact on open school culture

Change is a process, and it will take some time for teachers to become used to the idea of open schooling. In Trinidad and Tobago, many people have only a vague knowledge of open schools and our team of course writers was not generally involved in open schooling. We hope that our training from this project will enable us to contribute to charting a new course in education in Trinidad and Tobago, and that the skills we acquired, and will eventually share, will also positively affect face-to-face school culture. As mentioned previously, the materials developed so far are available to a wide audience both nationally and internationally. However, the benefits of open schooling should be publicised more so that more people can use it to advance their learning.

Instructional design

The course blueprint developed by the teams for each subject guided the development of instructional content. Each course needed 30 units of instruction in both print and online modes. For the duration of the OER programme, a great deal of emphasis was placed on the use of ICT. As we developed the framework of the course outline and planned teaching strategies and assessments for each unit, we were encouraged to be creative and to use different types of media and visual teaching aids. The idea was to "bring the lesson to life," to spark and sustain interest in the lessons without having a teacher physically present in most cases. The teachers' computer literacy skills were varied, although initially most had relatively limited skills in this area, but through the valuable training sessions in which we had participated, we all gained insight into how to use several computer programs and multimedia applications.

One course writer stated,

> "I learnt the importance of relating material in a way that makes the student interested in learning via varied mechanisms and the use of Moodle."

Another confidently said,

> "My skills in utilising PowerPoint and other presentation software to create lesson aids were also enhanced."

There was still a lot to learn, but we were now equipped with the ICT tools and our mission was to actually get down to the job of writing the lessons to meet our deadlines.

It took some time for all the course writers to become comfortable with the template for print-based lessons provided by COL. However, once we mastered it, we appreciated its value as it proved to be an excellent guide to help us structure the units and lessons. At each stage of lesson development we had to select appropriate materials. Even though we had access to information readily available in books and online, we had to be careful about avoiding copyright infringement. Our focus was on creating original materials. Being able to implement what we learned in creating the units was a plus, but deciding what type of media could be used was not always easy. Additionally, we had to explore how and where to capture certain photographs or videos that could be used to bring the lesson to life. Facilitators at the Ministry of Education were willing to assist by ensuring that lesson aids such as drawings, photos and videos were of the best quality and appropriate for their intended purpose.

How are tools being put to use going forward?

The old adage says that practice makes perfect. Course writers have continued the process of compiling photographs and videos that can be used when the need arises and are also enhancing existing materials. As the team leader for Agricultural Science noted,

> "Agriculture is dynamic and what you see today may be difficult to capture tomorrow or what you will easily locate in one area would not be readily available in another area."

Similarly, in our contemporary society, changes and developments affect the business environment and so course writers and users of the Principles of Business lessons will need to make adjustments to ensure that the information stays up to date.

Another key factor in moving forward is networking among subject teachers to share, develop and enhance course materials. As mentioned previously, the developed materials were circulated to and are being used by a few teachers in both the traditional and open schools. However, NOSTT is currently in crisis as many centres have been virtually closed down due to restructuring. There are plans to establish a new open school, though, and this offers a glimmer of hope for the future of OER in our country.

One of the objectives identified at the start of the OER4OS Project was for the cascading of training received by the initial course writers to other teachers. Unfortunately, this has not been done to date (see above), thus limiting the spread of these valuable skills we have acquired.

Managing the Process

Timelines and challenges

Initially, we agreed to complete 30 units in the three subject areas of Agricultural Science, Principles of Business and Technical Drawing with a September 2010 deadline for the first phase of the OER materials development. The contract

stipulated that the course writers would work in their own time, outside of school hours. However, juggling writing outside of school hours with working full-time at school and meeting personal commitments was very challenging and we were unable to meet the deadline. We were given an extension until December 2010 and asked to complete 15 units, instead of 30, of print-format material. The latter adjustment was to ensure consistency with the other participating countries' quotas. It was the equivalent of one grade level, rather than two grade levels and two years' work, which is what our 30 units would have covered.

In December 2010, the second phase of OER materials development began with capacity-building workshops on writing lessons in the subject areas of Spanish and Food and Nutrition for two teams of teachers. The course writers from the first phase were relieved from classroom duty for two weeks that month in order to facilitate focused writing sessions in an attempt to meet our commitment of 15 units. By the end of the year, our current status was ten Principles of Business units submitted and signed off by the consultant, three revised Agricultural Science units submitted and five revised Technical Drawing units, with three of them signed off by the consultant. Clearly, we were way behind schedule. There are some reasons — not excuses — for this.

On reflection, there were challenges from the beginning, as there are with any new undertaking. One course writer felt that her biggest challenge was

> "the uncertainty of what really was required and the fact that when we settled on one format we had to change again."

Another felt that

> "opening days were too rushed and it was impossible to hammer out all the ground work."

As such, when the writers began their individual work on the lessons there was some confusion, and eventually frustration, when the standards were not met and we received pages of negative feedback from the consultant. We recognised that we needed to collaborate more; some teams organised meetings at each other's homes so that they could work together, sometimes late into the night.

Another major challenge was "the lack of commitment from some team members." At this point I need to point out that we participants had limited time to devote to this project and our multitasking skills were truly tested as we tried to balance our professional and personal lives. However, the team leaders struggled with lack of commitment. This became evident soon after the capacity-building workshops when some of those who had been trained dropped out from the course writing phase. This resulted in a search for new team members — who were not fully trained — to help write the material. To quote one team leader,

> "many times the work submitted was faulty and the team leader then had the responsibility to heavily edit work submitted. This was a very difficult task based on the timelines that existed."

I would also like to point out that team leaders were responsible for meeting their quota of units. In hindsight, based on the response of team leaders, we needed

> "more trained people to help in this aspect. One team leader having to inspect work developed was extremely difficult seeing that work was carried out on a part-time basis."

Long time lags and the low number of course writers meeting deadlines for submitting units was another challenge — one that severely hampered timely completion of the stipulated number of units. Sadly, this behaviour continued. I had a mere 15 per cent response rate to my repeated requests for participants to contribute ideas or thoughts for this report. Perhaps the timelines might have been achievable if we had been working on the course material development on a full-time basis. According to one response, "there was too much to be done in the limited time allotted."

Feedback from the consultant was frequently not received in a timely manner, and this also contributed to writers not being able to meet deadlines. To cope with this challenge, team leaders from phase one were assigned the task of checking content and editing before submitting units to the consultant. Even though we were subject matter experts, we had only received the same training as other course writers, so this was a heavy demand being placed on us, and we still had a target number of units to write to meet the deadlines.

In January 2011, all the course writers from phase one participated in Moodle training through online and face-to-face sessions. This was in preparation for meeting our target of having 15 units in the three subject areas completed, signed off and posted online by March 2011. The co-ordinator at the Distance Education Unit (DEU) negotiated with the MoE for the course writers to be relieved from classroom duty for two days per week until the project was completed. Even though this request was granted, some principals were reluctant to release their teachers, and the course writers did not want to miss their assigned classes at school, especially since no substitute teachers were provided. Thus, the problem of time persisted and we resorted to meeting at each other's homes and sometimes working all through the night to meet deadlines.

Costs and copyright issues

As course writers we were not privy to details about costs, but it is evident that both COL and the DEU invested a lot in this project. We were promised compensation upon completion of the first 15 units; this promise was honoured and most of us felt the amount was adequate. It must be acknowledged that the organisers spared no expense in striving to make us comfortable during workshops and at the focused writing sessions. We were provided with the necessary resources such as computers and Internet access and never had to worry about getting meals.

Our awareness of the importance of not infringing copyrights encouraged most of us to use our imaginations so that the work we produced was definitely original. In many instances, when this was not possible, some participants felt that "too much time was taken up looking online for relevant free material that could have been included as images." The DEU deserves special thanks for stepping in and providing support in the form of a helpful young man who patiently sourced online resources, assisted with design of illustrations and took original pictures to enhance our materials.

Degree of collaboration

Working as a team brings both rewards and disappointments, and we certainly experienced both during our OER journey. Different teams of course writers had different experiences. One team leader frankly said that her team was "a quite uncooperative bunch to work with" and that "great effort and little cooperation resulted in great personal sacrifice on my part which I am not sure was appreciated." Another team leader stated that "it was truly a challenge to accomplish the work when persons did not perform stipulated tasks within the required time allotted for completion." This latter sentiment was a major stumbling block for most teams, but it must be emphasised that course writers who were truly committed to the task worked "diligently and with great sacrifice, working double time to cover the tracks of the delinquent ones." Some teams enjoyed a high degree of collaboration and co-operation among a few members and some of our best work was done during focused writing sessions with these people.

Conclusion

The consensus of the participants is that being part of this dynamic process was a great experience. We hope that all the primary objectives outlined at the start of the journey will eventually be achieved. However, the following benefits have been realised and cannot be understated: our team of participants can now network with others to share knowledge and skills thanks to the professional development they received and the capacity-building workshops they attended; print and online materials in the subject areas of Agricultural Science, Principles of Business, Technical Drawing, Spanish and Food and Nutrition are now available; Trinidad and Tobago has established close links with the William and Flora Hewlett Foundation and the Commonwealth of Learning; and more people now have increased access to quality learning resources that they can use close to home, or even at home, in their own time and at their own pace.

Throughout this OER journey, most of us willingly embraced the challenges we confronted. They helped us learn to multitask as we juggled the high demands of course writing, full-time teaching and personal and family commitments. For me personally, it was a labour of love. The tangible benefit of financial compensation was relatively small, but this took second place to the value that comes from gaining new knowledge and new skills and the satisfaction of being part of something novel in education that could positively affect such a wide target audience.

Those of us from Trinidad and Tobago who participated highly recommended that all teachers be given the opportunity to participate in developing OER materials, primarily because of the potentially great outcomes for both teachers and students. One team leader made the following valuable suggestion for moving forward:

> "Maybe a pilot program can be carried out on a small scale. After proper evaluation suitable areas in the country should be identified for execution of the program. Widespread advertisements using different media especially through popular social networks should be utilised."

There is a need for us to create more opportunities locally through the use of workshops, whether online or in person, so we can share not only what we have learned but also what we are still learning.

Nationwide professional capacity-building of teachers in the development of OER materials will certainly have a positive effect on the delivery of education in Trinidad and Tobago. There is currently some uncertainty about what measures the relevant authorities will adopt and whether or not materials development will continue nationally. The ideal situation would be adequate funding and more time for additional teachers to be trained to develop ODL materials in a wider range of subjects. Meanwhile, those of us who were fortunate enough to participate in this OER journey will begin to make a difference, however small, by sharing our skills in our individual schools and encouraging teachers there to develop and use ODL materials.

In conclusion, on behalf of my colleagues, I wish to state that as teachers in traditional classroom settings we were honoured to have the opportunity to partner with the Hewlett Foundation/Commonwealth of Learning and our Ministry of Education to help shape the future of access to ODL education resources.

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5

Developing OER: The Perspective of the Teachers from Lesotho

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Abstract

This chapter looks at the perspective of the Lesotho teachers who participated in the development of open educational resources (OER) for open schooling in Lesotho. A brief overview of the OER4OS Project in Lesotho will be followed by a discussion of professional development issues, the instructional design process and the management process of the project. The chapter also addresses teachers' perspectives and the key lessons learned from the project. The chapter concludes by reflecting on the future of OER in education delivery within Lesotho, the impact of participation on building capacity for teachers and learners, the challenges and how they were addressed, the benefits of the project to Lesotho and the opportunities for future collaboration.

Background

The Open Educational Resources for Open Schooling (OER4OS) Project in Lesotho in 2009 was a collaborative initiative undertaken by the William and Flora Hewlett Foundation and the Commonwealth of Learning (COL). COL, whose mandate is to promote and develop open learning and distance education knowledge, resources and technologies, entered into an agreement with the government of Lesotho so that Lesotho could be a part of the project. By focusing on quality assurance, teacher development, new approaches to higher education and the creation of expertise in digital learning, COL helps nations increase access to quality education at all levels. Thus, it helps countries to create learning opportunities and so improve the future of their citizens.

Educational context of Lesotho as it relates to this project

Lesotho introduced free primary education in 2000 and has embraced open and distance learning (ODL) to extend access to education at all levels of education and training. The first ODL institution, the Lesotho Distance Teaching Centre (LDTC) of the Ministry of Education and Training, was established in 1974. The LDTC was set up with the main purpose of meeting the ever-growing demand for secondary education in the country. The provision of ODL is a result of successful efforts to meet the Millennium Development Goals (MDGs) for Universal Primary Education set out by the United Nations.[1] LDTC has a relatively open system of education. It has no restrictions on age or the content it offers, and it enrols learners throughout the year. Young people, young mothers and working adults who missed out on schooling as children or teenagers all have a chance to further their secondary schooling.

LDTC gives people of all ages and backgrounds in rural areas a chance to acquire new skills and knowledge in order to improve their living standards. The national curriculum that LDTC uses is aligned with the needs of our stakeholders, and this makes it accessible to all those who wish to enrol with the centre. LDTC is basically an open school. It provides training in literacy skills, numeracy skills and skills for income generation to rural youth and adults. It also provides secondary-level education to youth and adults who, for one reason or another, cannot attend formal, traditional school. Learners sit the same external examinations as students in the formal secondary schools.

Most secondary schools in Lesotho are owned and operated by churches, and offer Grades 8 to 12 (Form A to Form E). These secondary schools face the challenge of limited space and limited access — they only accommodate as few as 13.5 per cent of pupils entering secondary education.[2] The high cost of secondary schooling in Lesotho is cited as the main reason why enrolment levels in secondary education remain quite low. Many students are shut out due to the high costs of education and lack of income.

This is why the government of Lesotho established an overall policy for secondary education for the period 2005–2015. With a focus on improved access to secondary education, the policy ensures that the standard of secondary education meets local and international demands and that an efficient secondary education system is in place.

LDTC learners are mostly female, with a male to female ratio of 1:3. Their ages range from 16 to 45 years; the majority are single (that is, have never married), but others are married, divorced, separated or widowed; some are single parents. Approximately 50 per cent of the total population of learners lives in the capital city of Maseru. LDTC does not have its own curriculum and uses the national curriculum developed by the National Curriculum Development Centre (NCDC). It facilitates the development of relevant curricula that respond to the learners' and the country's needs, both of which benefit significantly from access to the national curriculum. The government of Lesotho recognises the need for a regular curricular review to ensure the relevance, flexibility and affordability of school curricula.

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[1] See www.un.org/millenniumgoals/education.shtml
[2] See www.afrimap.org/english/images/report/Lesotho%20ESD%20main%20web%20FINAL.pdf

Information and Communication Technology (ICT) policies are crucial for opening education systems and closing the educational distance in a country or region, or even globally. Lesotho's ICT policy provides a solid framework for the use of ICTs in ODL. It states, in part, that the "policy efforts shall be directed at using ICT to facilitate education and lifelong learning and to support efforts of the private sector in its delivery of on-the-job training and retraining programmes" (Ministry of Education and Training, 2005). One of the objectives of the ICT policy is therefore to broaden access to education and training opportunities by promoting distance education and virtual learning. It is in this spirit that educational institutions are encouraged to make better and more effective use of ICT to improve the quality of teaching and learning. While LDTC is still in the early stages of using ICT, computers and Internet connectivity are becoming increasingly available. In support of this development, policy efforts are being directed towards using ICT to facilitate education and lifelong learning in both the formal and the vocational sectors.

The government of Lesotho established the Examinations Council of Lesotho (ECOL) as its assessment centre. ECOL develops high-quality tests that accurately assess what candidates know and can do. It also conducts examinations for primary and secondary education, as well as assessment tests for other institutions and organisations. The aim is to improve the culture of learning and to maintain, and improve, the quality and standards of education in Lesotho in order to create opportunities for further education and work within the country — and beyond.

There are two main objectives behind educational assessment in our schooling systems: accountability, to ensure that certain learning goals are reached; and instructional improvement, to monitor student learning and the effectiveness of the teaching practice. It is to this end that ECOL provides feedback on the effectiveness of the curriculum development and other educational endeavours intended to improve the quality of teaching and learning in schools.

Against this background, ECOL marches onwards with its commitment to standards and opportunities. These things are at the heart of educational assessment because they are associated with criteria and judgement. ECOL defines the criteria of quality, specifies performance indicators and determines priorities in curriculum and examinations reform that can open up opportunities and access to further education.

OER for LDTC

Fifteen teachers from different institutions in Lesotho were trained in the development of print-based and online OER over a period of two years. These participants represented high schools, a teacher training college, a curriculum development centre and ODL centres. The developed materials are suitable for use in both open and conventional schools. The OER4OS Project represented the start of a growing international network of educational professionals in developing countries.

The launch of the OER4OS Project in Lesotho began with a two-week face-to-face workshop facilitated by a COL consultant. Participants learned about using Basecamp and about open software such as Skype and Audacity. They were also introduced to copyright issues with regard to OER. At the end of the training session, three subject teams were assembled (English 12, Mathematics 12 and Physical Science 12). Each team produced a course blueprint and a sample unit.

The second phase of the training included an online Moodle course facilitated from Kenya for the Lesotho master teachers (see Chapter 1). This online training did not go well since most of the master teachers did not have personal computers and Internet connectivity. It must be noted that the consultant did her best in facilitating the training; the challenge lay with the local system.

In light of the above, COL organised an ICT-related workshop in Namibia. Two master teachers attended this important training and shared their new skills with their colleagues when they came back. The learning materials were developed using the COL/ODL instructional design template. This template ensures that the materials developed meet international standards for quality.

The quality of the OER materials was overseen by various parties. The process started with a peer review of individual drafts. This was immediately followed by the consultant's review, based on the learning design and pedagogy relevant to OER. This was followed by a midterm review by the South African Institute for Distance Education (SAIDE). A two-day workshop was organised for all three subject teams and the country management committee (CMC) to discuss SAIDE's findings and recommendations. Individual subject teams later acted on the feedback in order to maintain consistency in and uniformity of the units.

The objectives of the OER4OS Project in Lesotho were to broaden access to educational opportunities and increase student achievement by building the capacity of teachers with regards to computer competencies; to produce three sets of applicable self-instructional materials (English, Mathematics and Physical Science for Grade 12 levels, equivalent to Lesotho Form D and Form E levels); and to increase access to secondary education by making the learning materials available both online and in print, as well as increasing the capacity of open schools in student achievement/success. Upon completion of the courses, students can sit the Cambridge Overseas School Certificate (COSC) examinations.

The subjects used in the OER4OS Project are meant for students who have completed the first three years of secondary-school level education (Forms A–C, as stipulated in the National Curriculum and Assessment Policy of Lesotho) and who wish to further their secondary education and sit final examinations to secure admissions at tertiary-level institutions. The course resources can be used by students in conventional settings as well as by those studying from a distance. For students in the conventional setting, the following benefits can be noted: the OER contain an embedded teacher's voice and clear explanations, and the materials become a great complement to face-to-face teaching because they enhance learners' understanding. They also provide a second chance for mature students who wish to upgrade their educational standard, improve their pass levels for better job prospects or meet new set standards in their respective job areas.

Perspectives and Key Lessons Learned

Professional development

Workshops were held almost around the clock to train LDTC staff, members from other institutions that help LDTC in developing learning materials and those who provide tutoring services to learners in different study centres. In 2008, more

than 20 staff members were trained in ODL issues and the instructional materials design template.

Capacity-building of teachers is necessary if they are to pass on their knowledge and help to develop the professional confidence required by the demands of global competition. In Lesotho, 15 master teachers from LDTC and nearby schools attended a series of workshops on a wide range of critical areas in ODL. They learned about emerging and old distance education technologies, about some challenges and concerns around open educational resources, and how to create a blueprint for course development. The workshops also addressed the creation of effective instructional content using the instructional design template. One master teacher shared this comment about the experience:

> "I like this workshop because one is given a writing template that will guide us in the process of writing." (Ntlaloe, English teacher)

The master teachers were provided with the knowledge and skills needed to develop learning materials that effectively teach verbal information-sharing, intellectual skills and procedural (psychomotor) skills and attitudes through the use of interactive content. The training also exposed the master teachers to instructional technologies and developed the skills of those who already knew how to use these technologies.

> "I have learned the good usage of the teacher's voice in my unit." (Mokhethi, English teacher)

The OER development journey is still fresh in the minds of these participants as they share their experiences. Their views were collected through a questionnaire disseminated electronically and in hard copy, and some observations were shared in group discussions or review meetings. The perspectives relate to professional development.

The OER4OS Project in Lesotho helped each of the master teachers to develop both professionally and personally. Some were from the conventional system, and were not aware of how distance learning occurs or how OER materials are tailored in a different way from materials intended for learners in the conventional system.

> "I never knew that there is a difference in the manner in which learning materials in distance education differ from the conventional setting." (Marake, Physical Science teacher)

The OER4OS Project also exposed master teachers to such aspects of course development as learner profiles and course blueprints. They appreciated the fact that it is of the utmost importance to understand the profile and background of your learners in order to develop materials that meet their needs:

> "It is my first time to know that one has to know the kind of clientele he or she is serving." (Letsoela, Mathematics teacher)

> "It is not my first time to develop instructional materials for LDTC learners, but I have just learned the importance of developing a course blueprint in this workshop." (Mofolo, English teacher)

The above views are a true testimony that the OER4OS Project in Lesotho enlightened participants in various ways about ODL issues. It also helped them to improve their teaching in the conventional setting, because they became more

knowledgeable about their respective subjects when presenting content, leading class activities and using ICT wherever and whenever possible.

The consultant commissioned by COL was excellent in his approach to the training of master teachers:

> "This guy is excellent in explaining this copyright stuff." (Mokoteli, Mathematics teacher)

> "He explained every single step of the writing process and accommodated recommendations and suggestions from me." (Makara, Physical Science teacher)

The master teachers showed a positive attitude towards the process of developing OER. The majority of them were confident about using computers, but using Basecamp and accessing the Internet could be challenging at times:

> "I also needed Internet connectivity, but it was a problem to get airtime from LDTC, and at times I had to buy it seeing that I will not complete my unit on time." (Ramakau, Physical Science teacher)

The overall comfort of the master teachers with the use of computers made for a positive training environment, and the consultant was able to interact with them more easily and stimulate additional learning through positive feedback.

The master teachers learned many things during the project, including how to create a course blueprint for the development of learning resources:

> "The training workshop has helped us to understand what a course blueprint is, and how to create it for our respective courses." (Master teacher)

They learned how to select the appropriate media for a given instructional technology, and there was an emphasis on understanding varying learning styles coupled with the creation of instructional materials that motivate learners. Master teachers can now manage online discussions thanks to the OER4OS Project. One person who managed to use Basecamp effectively had this to say:

> "I have just received [some] constructive feedback from Peter this morning." (Ramakau, Physical Science teacher)

This master teacher's view was also shared and emphasised by COL.

> "The programme inspired master teachers, and they are sharing their enthusiasm and knowledge with colleagues. The teachers are proud of what they have learned, and there is much greater awareness of the use and potential of OER." (Frances Ferreira, COL, January 2012)

The OER4OS Project helped the teachers to develop their skills in open schooling and in face-to-face settings, and helped to improve master teachers' knowledge of and skills in developing effective open and distance learning materials. Open schooling will help Lesotho be able to educate a broader range of learners; it is an important part of solving the challenge of expanding access to secondary education. The value to educators is reflected in the following remark:

> "This project will help us to teach more effectively in our daily lessons in our schools because of the depth of the content we are covering." (Ntlaloe, English teacher)

The OER4OS Project truly benefited the master teachers in many ways. They all maintained that they were able to work as a team throughout the project. It is evident that their leadership qualities and skills also improved. Team leaders were able to give direction to their respective groups, especially in organising and chairing group meetings. They pointed to their participation in teleconference meetings with the project co-ordinator in Canada as contributing significantly to their professional growth.

Instructional design

Information and Communication Technologies (ICT) used to support ODL can be classified into two main categories: hardware and software. The hardware currently in use at LDTC is typically radio, television, telephone and computers. Most households in Lesotho own a radio set, cassette player or television. Indeed, some of these technologies are very common, and very little skill is required to operate them. Their use is only limited by the cost of the hardware and the electricity needed to power it.

LDTC has a very limited number of computers available for designing and developing instructional materials for its learners. The centre also uses the ODL instructional design template provided by COL to ensure a high quality of learning materials:

> "COL's instructional design template forces us to know many ICT skills. I can now edit audio sounds in my unit." (Mokhethi, English teacher)

It is therefore apparent that the skills of some of the master teachers improved. They also discovered new abilities once they put their knowledge into practice. Others, however, found the OER4OS Project somewhat challenging because they had to keep abreast of the demands of the writing template and ICT skills.

The OER4OS Project also provided master teachers with an opportunity to learn more. Some expressed satisfaction with the new skills they acquired through transforming the print-based materials into online resources, or working with tools such as Audacity, Basecamp and Skype. For most of the master teachers, using the modern ICT was quite an interesting experience, even though it also caused some challenges and frustrations. The fact that computers and Internet connectivity were not easily available to some hindered smooth progress:

> "LDTC [loaned] me a desktop computer instead of a laptop, and I could only work when I [was] at home." (Mokoteli, Mathematics teacher)

When considering instructional design, quality control is very important. The quality of open and distance learning materials has always been contentious. Sceptics of distance education often try to compare the quality of ODL with that of physical face-to-face traditional education in the classrooms. This viewpoint, however, is like comparing apples to oranges — both are fruit, but both are very different.

The master teachers believe that the OER4OS Project in Lesotho allowed them to use the COL instructional design template consistently and effectively for the preparation of learning materials. They were able to design user-friendly

materials suited to distance learners with diverse needs; they were able to develop interactive materials; and they wrote content using the teaching voice that keeps learners engaged.

They also appreciated the team approach to materials development. The value of collaborative work was of the utmost importance because everybody's input was considered. Moreover, they liked the technology/digital media aspect. Most master teachers were exposed to the use of computers and other electronic devices that enhanced the quality of the instructional materials. Others stressed the importance of developing the course blueprint as the foundation for any course development, because it serves as a compass to guide the script-writing process.

The tools that COL introduced us to through the OER4OS Project are working well in Lesotho. We now use the COL template in developing our instructional materials, and it helps us to guard against problems in quality in open and distance learning.

LDTC, like any other ODL institution, maintains that the instructional design process is fundamental for producing learning materials that are effective and up to standard. Instructional design helps to avoid some problems that might complicate the course implementation. Rossett (2013) argues that "Instructional Design (ID) is not perfect, but it is what we have, and it does tame the chaos that surrounds us — to some extent."

Lessons learned

Lessons can be drawn from this OER project with regards to ICT and the quality-control process. A project such as this needs reliable Internet access and laptops to run smoothly. This was an issue when converting the print-based materials to online resources, particularly when coupled with limited, or even no, skills in this area.

Another crucial lesson drawn from this project is that positive and constructive criticism from the consultant and colleagues contributed to the final quality of the material.

> "The feedback he gave was informative and empowering." (Mokhethi, English teacher)

Most of the master teachers maintained that the consultant's support and feedback was truly constructive and informative, and helped in improving the individual units.

Management of the process

In any project management process, it is very important to appreciate how much time affects the management of a project. Time management helps to prioritise the work, keeps things in context, keeps things on track and helps to ensure the quality delivery of what is promised.

During the OER4OS Project, the master teachers spent most of their time on material design and some development tasks. They did not have enough time to work on the materials during working hours or during weekends. Some of them were provided with desktop computers, rather than laptops, which meant they could only work in their schools — and they had limited access to their schools

outside of regular work hours. This presented an obstacle to meeting project timelines. The master teachers also had other professional commitments in their respective institutions that took up time, and the time taken to receive feedback from the consultant affected progress. At times the feedback would be delayed because the consultant had many other commitments.

In spite of all the inevitable delays that accompanied the OER4OS Project, its value was never lost. If enough master teachers are trained, OER are often the most cost-effective means of giving wider access to educational opportunities:

> "I am going to encourage my school to use these materials, they are good." (Marake, Physical Science teacher)

For the government and educational policy makers, the system is a panacea to the perennial problem of providing equal and accessible education in an affordable and cost-effective way. The factors affecting the costs of face-to-face education include whether small tutorials, seminars, lectures or independent and resource-based learning strategies are adopted. But it is important to note that the technology adopted also plays a crucial role in determining the costs (David, Rotimi, & Kayode, 2006).

OER can bring cost benefits and efficiencies. At the same time, attention to copyright requires continual diligence. For a long time, many people used publications and distributed texts without being aware of the licensing and other legal issues associated with the use of copyrighted materials. Although many academics are willing to share their work, they are often unsure about how to do this without losing all their rights and ownership. Even though some people release work into the public domain, it is not unusual for authors to want to retain some control over their work.

LDTC's study materials are freely shared and regarded as "open content" that can be freely used by other open and distance learning institutions or organisations that offer distance learning. The materials are also used in conventional schools, as they appear to be effective instructional materials when used as a supplementary resource in the face-to-face setting. Partnerships and collaborations can reduce costs and facilitate sharing of ODL materials. Resources tend to be limited and few higher education institutions have everything they need to implement quality ODL.

Research and evaluation are also important. They help in investigating a phenomenon or issue that has occurred in the past or in predicting the outcome of a future event. As with any new initiative, the research component of ODL projects must inform the selection and subsequent use of any new technology. Projects must therefore set goals, include a means to meet those goals and include a mechanism to monitor how effectively and efficiently those goals were met.

The key finding of the evaluation of the OER4OS Project in Lesotho was that although the writing teams had used the main features of the COL template well, the developed materials reflected some design and pedagogical weaknesses as listed below:

- The following features were not sufficiently taken into consideration when the materials were developed:
  - the learners' profiles

- links to previous and future units

- an explicit systematic approach to learning.

- While some degree of a "teaching voice" was evident in all the units, it was a voice that chatted to learners socially rather than a voice that actually teaches by making connections and consolidating information.

- All the units exhibited a dominant transmission style of knowledge acquisition.

- Overall, the materials did not reflect much variation in the type of activities, assessment tasks and assignments.

- No references were listed, and there were no acknowledgements of help. (SAIDE, 2011)

In general, the OER4OS Project in Lesotho met its objectives. It also came at an opportune time. Lesotho has been grappling with an increasing demand for access to secondary education due to the introduction of free primary education in 2000. OER will definitely address the issue of educational access in the country.

> "I am told the learning materials you are going to develop can also be used by learners in the conventional system." (CEO, Curriculum and Assessment)

It is apparent that these high-quality materials will benefit distance education learners and face-to-face learners. LDTC will make the materials available to its learners and to other institutions or organisations that engage in ODL activities. This will boost the value of our institution and of COL.

LDTC also needs to encourage movement of OER between the institutions or organisations where there will be full and open sharing of the learning materials. LDTC works with other institutions in Lesotho — Lesotho College of Education, National Curriculum Development Centre, ECOL, for example — as well as with teachers from the formal schools who can freely use the materials. Individuals can also share the materials with colleagues as part of the academic culture. They will do this as representatives or employees of LDTC and the institution will benefit from this exchange. These efforts will help sustain the OER4OS Project in Lesotho since many, many people stand to benefit from it.

Conclusion

The open and distance learning scheme is potentially a good thing for various stakeholders in the education and development process. For learners, ODL means more freedom of access and a wider range of opportunities for learning and earning qualifications. It is often a cheaper means of attending school — some people may not be able to leave their place of work to go to school full-time. For employers, ODL offers the possibility of organising in-service training for staff without necessarily releasing them for long periods of work time. For the government and educational policy makers, the system is a panacea for the perennial problem of providing equal and accessible education to all.

The impact of participating in building capacity for teachers and learners in Lesotho was enormous. Master teachers were able to use the COL template consistently throughout the units, meaning there was a uniform approach to

creating all the learning materials. The material contains numerous activities designed to engage learners and support the achievement of the course's learning outcomes. The courses are structured and presented in logical sequences so that they enhance active learning. This also helps learners to manage their time well.

The project encountered several challenges that negatively affected the development of the OER in Lesotho. Some master teachers left the project before its completion and had to be replaced. On the recommendation of the country consultant, they were replaced by team members who had already received extensive training, but some delays resulted from the transition process.

Another challenge arose when the master teachers had to review and rewrite their materials in order to reflect changes suggested in a midterm evaluation report. This involved ensuring that learning outcomes and the syllabus matched for each unit, re-sequencing the learning outcomes and linking all of this to new and previous units and sub-units.

Internet connectivity proved a great challenge as the modems provided were often attacked by viruses and thus failed to operate adequately. Those who were outside LDTC could not easily access the Internet. The computer that was used by one master teacher was stolen from a school office. Some IT problems, including repairs, took longer than expected to be fixed. LDTC did not have IT specialists, so it had to rely on outside help, and master teachers did not have personal computers. This added to the challenge of meeting the deadlines. Sometimes the teachers had to pay for airtime from their own pockets in order to see the project through.

In addition, the first consultant left the project in November 2010, and was not replaced until February 2011. There were also disagreements between writers and the consultant on certain issues, and the writers would give in for the sake of progress.

All challenges aside, the project created benefits that will continue to be realised in the future:

- OER will help Lesotho nationals gain access to secondary schooling more easily, because current barriers to educational opportunities will be reduced. Nationals will have an opportunity to learn and to become educated to the desired levels, read the course of their choice and, above all, beat the odds that had been preventing them from attaining higher levels of education.

- The OER4OS Project in Lesotho will allow more learners to complete their education and will encourage the education of those who are not able to attend conventional educational institutions. It will also provide a form of education that could address young adults' employability and lifelong needs.

- The OER4OS Project in Lesotho will enhance broader and faster dissemination of information, thereby improving educational quality.

- The Basotho, the traditional group of people residing in southern Africa, will be able to share knowledge and skills, which could boost the economy of Lesotho. Sharing resources and skills is a good thing to do and is also in line with the academic traditions of other nations or institutions. Openness is the breath of life for ODL and research. Also, the quality of resources will improve much faster than if everyone repeatedly starts from scratch.

Finally, the OER4OS Project in Lesotho resulted in two main outcomes: the development of three sets of high-quality OER (English 12, Mathematics 12 and Science 12); and the professional development of 15 master teachers who acquired in-depth knowledge about the effective use of technology for their institutions, as well as powerful new skills and abilities in instructional design for the development of OER.

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Developing OER: The Perspective of the Teachers from Namibia

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Abstract

The introduction of open educational resources (OER) through the William and Flora Hewlett Foundation/Commonwealth of Learning (COL) OER4OS Project in 2009 was a milestone for the Namibian government's secondary education system. As the only open school in Namibia, the Namibian College of Open Learning (NAMCOL) accommodates on average more than 28,000 learners. The promotion of OER among such a large population heralds a considerable improvement in the delivery of open and distance learning (ODL).

The Namibian sector of the OER4OS Project aimed to engage Namibian teachers in the development of OER for the Grade 10 curriculum. It required motivation, courage and perseverance. This chapter presents the experience of the Namibian teachers who participated in the project and looks at both the challenges and the benefits of participating, including, among other things, the technological challenges that Namibia's education system is facing, the time spent on the project, the support given by the institutions involved, the skills gained through training opportunities and the incentives received by participants upon completion of the project.

This chapter aims to show how the OER4OS Project has affected the professional lives of the Namibian teachers as well as the Namibian education system in general. It also seeks to identify the lessons learned through this project, and how the teachers perceive the future of OER in Namibia.

Overview of the OER4OS Project

Country background

In 1990, the government of Namibia inherited an education system from South Africa. Steeped in apartheid, it was characterised by inequities in terms of resource distribution and access to learning, and by a lack of consideration for the quality of education offered (Ipinge, 2002). In an attempt to overcome these inequities, and to bring Namibia's education system into line with international standards, the government declared in Article 20 of the country's constitution that

> (1) All people shall have the right to education.

> (2) Primary education shall be compulsory … and free of charge.[1]

As much as the Namibian government had been committed to improving access to and quality of basic education, the education system still shows serious weaknesses in coverage and provision of education, particularly with respect to the quality of education. The Education and Training Sector Improvement Programme (ETSIP),[2] which was introduced in 2006, strives to achieve, among other things, greater cost-effectiveness in textbook provision, administration and the provision of support for teaching and learning. The National Development Plan 4 (NDP4) 2012[3] introduced strategies to solve the problems associated with lack of quality education, and lack of infrastructure and Information and Communication Technology (ICT). One of its main objectives is to improve the availability of textbooks and other learning materials (Eita et al., 2002). The Open Educational Resources for Open Schools (OER4OS) Project supported these national objectives with its aim of providing free access to learning materials for both teachers and learners.

On the issue of accessibility to schooling, it is explicitly stated in the government publication *Toward Education for All* (1993, p. 34) that to provide education for all, we must increase access to our education system. For that, we need not only more schools but also schools and other education programmes where learning is truly accessible to all Namibians, regardless of their personal circumstances. Recently, more schools have been built across the country and more opportunities for open schooling have been created through the Namibian College of Open Learning (NAMCOL), but it is still not enough to meet even current needs. Considering the challenge of providing quality, cost-effective learning resources, it makes sense that Namibia would engage in the development of open educational resources (OER) through the OER4OS Project.

NAMCOL's role in Namibia's education sector

NAMCOL is a state-supported educational institution that was established by an act of Parliament in 1997 and became fully operational in 1998. It was set up to offer open learning programmes using a range of alternative education methods to improve the educational level of Namibia's youth. NAMCOL is currently the largest educational institution in Namibia, with a combined average annual enrolment for Grades 10 and 12 (Grades 11 and 12 have one syllabus) of 33,000 learners.

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[1] www.gov.na/constitution1

[2] www.worldbank.org/projects/P086875/education-training-sector-improvement-program-etsip?lang=en&tab=overview

[3] www.npc.gov.na/npc/ndp4info.html

NAMCOL's primary objective is

> to contribute towards the social and economic development of Namibia by upgrading the educational levels of adults and out-of-school youths by providing opportunities that would enhance their personal and professional skills, as well as their general education, to attain economic self-improvement. (NAMCOL, 1997, p. 3)

In recent years, NAMCOL has made great progress in the open and distance education field. Its core mission has been to offer Alternative Secondary Education (ASE), which enables those who cannot or do not wish to attend formal schools to study for either the Junior Secondary Certificate (JSC) or Namibia Senior Secondary Certificate (NSSC). In addition, NAMCOL offers a range of professional and vocational programmes such as early childhood development, education for youth development, local government studies and vocational training for various sectors.

In line with its mission statement to provide quality educational services using a variety of open learning methods, the college develops digital educational resources to supplement print materials and enhance learning. These digital resources include multimedia such as video, radio and online lessons. The OER produced during the OER4OS Project have been a valuable addition to these resources. All the resources are available for secondary-level teachers and learners to use as supplementary resources.

Scope of the OER4OS Project in Namibia

NAMCOL and the Ministry of Education, through the National Institute for Development (NIED), participated in the OER4OS Project. NIED's role was to facilitate the quality assurance process in terms of how well the material met the needs of the curriculum. By the end of the project, the first of its kind in Namibian basic education history, the Namibian participants had produced OER in five JSC subjects, with materials in print and online formats supplemented by multimedia resources. The online content was developed through the Moodle Learning Management System. Five teams of five participants worked on the development of OER, with one team for each subject. Each team consisted of a NAMCOL programme developer (PD), an education officer from NIED and three specialist subject teachers from Namibian secondary schools. The teams worked and shared their product on a Web-based platform called Basecamp to facilitate communication among the team members. The development of online OER supports the Ministry of Education's efforts to build the capacity of teachers by making resources available in digital formats.

The NAMCOL OER were made accessible online, and were launched by the Minister of Education, the Honourable Dr David Namwandi, in March 2012. According to Dr Namwandi, the new OER would enable Namibian learners to effectively and efficiently access digital information to help them investigate issues, solve problems and make decisions.

> It also enables Namibian learners to produce creative solutions to support learning, and to develop new understanding in areas of learning, while developing new thinking and learning skills. (NAMCOL, 2012)

Namibia has no national OER policy, but the Namibian Open Learning Network Trust (NOLNeT), which fosters collaboration and sharing of resources among open and distance learning (ODL) institutions, is pursuing the development and expansion of OER following the second National ODL Conference in October 2011, where the conference theme was "OER and the opportunities for expanding ODL."

Following the development of the online courses, NAMCOL implemented a blended learning mode in 2013 whereby the OER courses act as an online supplement to the face-to-face sessions already being offered for five hours a week. The implementation has been divided into two stages. The first stage focused on the training of tutors and other relevant staff members — four part-time tutors, programme developers, area co-ordinators and distance education co-ordinators — as online facilitators. A small group of learners were selected as a pilot group to test each subject. The idea was to take these learners through the online OER courses using a face-to-face instructional mode. The college experienced many technical challenges during the piloting of the OER: connectivity problems, shortage of hardware, hosting of the online content, server administration, and development of monitoring and evaluation tools for online courses. These challenges overshadowed the 2013 pilot, and very little could be achieved as planned. In anticipation of the college overcoming many of these challenges in 2013, the pilot is planned to continue for another year. The second stage of implementation will be to open up the blended learning mode for all NAMCOL learners, starting in 2015. Learners will be encouraged to attend face-to-face classes and to register for the online courses for enrichment. However, the college still faces serious challenges in preparing for the full implementation of OER.

The OER4OS Project and its objectives

Namibia's participation in the OER4OS Project resulted in its developing OER in five Grade 10 subjects: Entrepreneurship, Life Science, English, Physical Science and Geography. The aims of the project were primarily:

- to develop and share open educational resources (OER) for secondary education,
- to develop teachers' competencies and skills in the effective use of technology in classrooms, and
- to create learner-support materials for teachers.

The project consisted of two phases: (1) to develop materials in print with multimedia supplements and (2) to convert the print materials into online materials using the Moodle platform. Basecamp software was used to facilitate a collaborative, online approach to materials development and to manage the process. The ultimate aim was to produce materials that could be made suitable (that is, adapted for context) for use across the six participating countries to maximise their use (Botes & Ferreira, 2011).

All the learning materials produced are expected to be made available in print and/or digital formats and were designed for use in both open and conventional schools. The materials for Life Science, Entrepreneurship, English and Physical Science are already available both in print and online. The online version for Geography has still to be finalised.

Degree of openness

This project was a glimpse into what the future holds for education in our country. Education is a lifelong process, and this project addressed the need for anytime/anywhere access to education. As a culturally diverse developing country, where people live far apart in remote areas and are scattered all over the land, it is a challenge for Namibia to provide quality, accessible education to all. With OER, education can meet the needs of a variety of learners; access is increased and the cost of education is lowered, thus overcoming the twin challenges of illiteracy and poverty.

In the Namibian context, the terms "open education," "distance learning" and "lifelong learning" are all used interchangeably and refer to education with a certain degree of openness. Other scholars argue that "open education is to deliver knowledge to the general public, without the limit of time and space" (Xue Ximin, 1995, cited in Wang & Zhao, 2011, p. 10). The first OER in Namibia were developed through the OER4OS Project, and we can say with certainty that they are very important to Namibia's education system: they increase the availability of learning materials, and the online resources add value to existing resources and promote interactive and collaborative learning. The development of OER is complementary to NAMCOL's vision of providing wider access to quality educational resources for many Namibians.

We expect some ambiguity to hover around the definition of "open" as the OER community is in its relative infancy. Working out what "openness" will come to represent is a challenge for the future. According to Wilson (2012), allowing modification, reusing and resharing, and using Creative Commons licensing means that material in the repository will become a much more useful set of resources.

Subjects selected and the curriculum issues

In Namibia, curriculum development is the responsibility of the National Institute of Education Development (NIED), which falls under the Ministry of Education. Conventional and open schools, such as NAMCOL, follow the same curriculum. Thus, learners who did not master the secondary-level competencies in conventional schools are given a chance to do so at NAMCOL through an open mode of learning. NAMCOL developed ODL study guides to enable learners to conduct self-directed study. It was crucial for this project to involve NIED in order to ensure that curriculum issues were addressed and its needs met. The NIED representative in each team ensured that the materials developed followed the prescribed Namibian curriculum. However, the participating countries also had to exchange syllabi in order to incorporate relevant content from other countries, so this was something else to consider. The project initially aimed to develop OER in five Grade 10 subjects: English, Entrepreneurship, Life Science, Physical Science and Geography. The Geography units had some copyright issues, and so have still to be finalised. The subjects were selected based on the availability of both content and subject experts, especially at NAMCOL as the leading institution. NAMCOL programme developers served as project team leaders, and the existing NAMCOL ODL materials in the selected subjects were used as the base for the OER content.

Instructional design and professional development

Technology played an integral part in the OER4OS Project. It was a requirement that all participants be able to access technology. However, most teachers in

Namibia are technologically challenged. Therefore, the priority was to select secondary school teachers who had the relevant subject expertise and who were conversant with the current syllabi. Their knowledge of ODL material development was a secondary consideration.

Knowing that Namibian teachers have neither access to computers at schools nor access to the Internet after work hours, NAMCOL decided to purchase laptops with Internet 3G devices for the participants. The challenge of inadequate technical skills remained, however. Another challenge arose from the use of the COL instructional design template, which was designed for both the materials development and the learning management system (Moodle) used to host the materials. Teachers, especially those who had Microsoft Vista programmes on their computers, found it difficult to copy content and insert icons into the COL template. Moodle was also a new platform for everyone. As the teachers struggled to learn basic computer skills, they had to adapt their new skills immediately to manage the COL template and the Moodle platform. The project aimed to develop teachers' competencies and skills in the effective use of technology in classrooms, so training became a priority. Unfortunately, in Namibia, the use of Basecamp presented a challenge as it took time to upload or download materials on Basecamp due to limited bandwidth. Following consultation with COL and the consultants, the teachers later opted to use other methods of communication such as email, Dropbox and Google Docs.

Perspectives and Key Lessons Learned

Professional development

The project provided an enriching teaching and learning environment for all the participants. During the training workshops, the teams came together to share ideas and discuss challenges.

> "Using first-hand experience and knowledge from teachers was a very rich exercise … to share ideas and transfer that knowledge into study materials for our distance learners. I got acquainted with the usage of new technology in teaching and learning. I also got an opportunity to transfer my prior experience and knowledge of producing print study material into producing online courses." (Saara Mungungu, English team leader)

The teams divided their work among themselves in terms of supplying content and designing assessment activities. The teachers' role was mainly to supply the programme developer, who was also the team leader, with content and assessment activities for the different topics. The team leader organised the content in Moodle by sequencing it, and ensured that assessment activities and external links were functional. The NIED official played the role of a content editor. Between workshops, the teachers worked on their own, using the laptops and Internet devices they received for the project. That was when they were forced to learn the hard way — that is, they tried to figure out things by themselves. The Poodle platform (see Chapter 1) was also introduced to allow teachers to work offline.

> "I have benefited greatly from the training as I acquired new skills and gained knowledge that I am using today and will continue to use in the days to come." (Imogene Hilukiluah, English teacher)

Developing open educational resources is a community activity. Within this community, the majority of the teachers learned how to work together and how to share.

> "I found that having an email address opened many doors for me. Now, the first thing I do in the morning is to check my mail. It is just so much easier to communicate with friends and colleagues. It saves me a lot of time, since I do not have to spend hours on the phone or drive around delivering documents. I can simply mail them. I only now realise what I had missed out [on]." (Corne Botes, English teacher)

The teachers were also introduced to Gagne's Nine Events of Instruction, used to inform the instructional design approach for OER development. This greatly enhanced their ODL material development skills. In addition, the COL template that was used reinforced Gagne's theory that

> the instructor determines the objectives of the instruction. These objectives must then be categorized into one of the five domains of learning outcomes. Each of the objectives must be stated in performance terms using one of the standard verbs (i.e. states, discriminates, classifies, etc.) associated with the particular learning outcome. The instructor then uses the conditions of learning for the particular learning outcome to determine the conditions necessary for learning. And finally, the events of instruction necessary to promote the internal process of learning are chosen and put into the lesson plan. The events in essence become the framework for the lesson plan or steps of instruction. (Corry, 1996, p. 540)

There were many challenges, which was only to be expected. The project was time-consuming for the teachers, as they had to take time out from their busy schedules as full-time teachers to ensure punctual delivery of material. Time constraints were a challenge as teachers had to supply the content while also preparing their regular lessons.

> "Apart from the technological challenges we had to face, I would say the most difficult challenge for me was to find and make the necessary time to work on the project and to finish the work on time. I was constantly rushing against time, trying to fit in everything in an already hectic schedule. During our workshops I could also gather that my colleagues experienced the same dilemma, especially during our second workshop which was held towards the end of 2010 when we were dealing with internal examinations, marking external examinations or dealing with other end-of-the-year duties. I then decided to set up a work schedule in order to finish all my different duties in time. I realised that I would have to prioritise — I would first finish the most important tasks. I tried to finish one thing before moving on to the next, I worked longer hours and soon I was back on schedule." (Corne Botes, English teacher)

Teachers lost interest at some points because the project ran over such a long time period, and hence continuous motivation was necessary. As happens with pilot projects, every so often there would be changes to how things were to be done. This caused frustration among the teachers and some felt like giving up at times, but with the support of the NAMCOL team leaders, perseverance won the day. In

most cases, teachers needed to come to the NAMCOL centre after school hours for technical support from their colleagues.

> "The wonderful support received from colleagues was also crucial. I did not start developing my online lessons directly after the workshop since I had to complete my duties at school first. When I started working on my lessons I discovered, to my horror, that I had forgotten some of the things that we had learned during the workshop. I then arranged a meeting with the programme developer who helped me to refresh my memory. I also contacted her regularly if there was something I struggled with. I realised that teamwork is very important when working on a project such as this one." (Corne Botes, English teacher)

For various reasons, some participants ended up carrying most of the workload. In some cases, two or more teachers in a team had to drop out due to pressure and had to be replaced in the middle of the project.

> "Not all members of teams gave their full cooperation in completion of tasks because of other commitments at their fulltime jobs. As a team leader, in most cases I had to complete work alone in order to meet the deadline." (Audrey Poulton, Physical Science team leader)

Importance of ICT in the development of OER

The importance of technology in the development of OER cannot be overemphasised. The pace of change brought about by new technologies has had a significant effect on the way people learn and teach today. New and emerging technologies challenge the traditional process of teaching and learning as well as the way education is managed. In order to provide access to a variety of learning resources and immediacy to information — anytime/anywhere learning, collaborative learning — it is necessary to stay abreast of technology. According to Wang and Zhao (2011, p. 33), OER are electronic resources based on the use of ICT. Their design, production, dissemination and sharing are supported by new technologies and the ICT infrastructure directly affects the status of their application and development.

During the OER4OS Project, teachers received both basic and advanced computer training so they could develop materials online. The first requirement was for each teacher to open an email account. That enabled them to collaborate and communicate with the rest of the team members.

> "At the beginning of 2009, when I was approached to become part of the project, I did not really grasp what was expected of me and I was a bit hesitant since I already had a very full programme. At that stage I did not even have an email address and I had never sent or received any mail! I was scared of the unknown, but also very thankful for the opportunity to enhance my technological skills. I do not feel like I am the only one out there without an email address." (Corne Botes, English teacher)

As the teachers developed the OER, they began to develop advanced computer skills.

> "I have a passion for technology. The OER project accorded me with maximum exposure to technology and I am very grateful for that. Many lessons were learned via training and by developing material

online. Time-management was a lesson well learned; being able to send and receive emails and being part of forum discussions, taught me valuable lessons. I still cherish it till today. I am part of the bigger world out there and no more isolated in my classroom." (Imogene Hilukiluah, English teacher)

However, according to research, "despite the fact that there is a wealth of free tools and resources available which can be used to support teaching and learning, in reality technologies are not used extensively" (Botes & Ferreira, 2011, p. 2). Teachers were introduced to the use of various open source software such as Photofilter, Audacity and Windows Movie Maker to develop multimedia content. Teachers could successfully use the software during the training session when they were in groups, but by the time they had gone back to their respective schools they had reverted to their old ways. In addition, the online Moodle training was arranged for teachers prior to the commencement of the development process. Unfortunately, many teachers could not register for the course due to connectivity problems.

The project changed how the teachers worked. During the project they could use the Internet to find information about their subject; they developed an interest in using email to collaborate with other team members, something they had never experienced before; and in most cases they could also use videos from YouTube and embed them in the courses to enhance interactivity. Teachers who participated in the project received training in the following technological aspects of content development:

- Using Microsoft Word at an advanced level
- Creating PowerPoint presentations
- Using Photofilter to edit pictures
- Using Audacity to record and to edit audio files
- Using Xtranormal and Voki to present content in the form of video and audio respectively
- Uploading and embedding videos from YouTube
- Converting PowerPoint into flash files
- Uploading content to the Moodle platform

Teachers were also introduced to the use of social media such as Skype, Facebook, OpenSchoolingConnect, Twitter and Elluminate.

The skills acquired during this project can be used to benefit other learners if teachers continue to use those skills when they prepare their lessons, thereby improving the learning environment in schools. As indicated earlier, it was necessary to buy laptops for each participant. The teachers benefited hugely from this as they could continue to use the laptops to facilitate the use of technology in their classrooms on a daily basis.

In terms of quality control, the following steps were followed:

1. Creation of content by teachers
2. Content editing by NIED official
3. Language editing by language specialist

4. Instructional design by NAMCOL PD (team leaders)

5. Proofreading by steering committee members

6. External evaluation by COL consultants

7. Addressing comments from consultants by team members

8. Submitting the final drafts to COL

The quality assurance process followed in the NAMCOL Programme and Material Development (PMD) division was applied to the OER development process. The quality assurance process started with the design of the course blueprint. Each team was asked to draw up a course blueprint in which all the units and outcomes were clearly defined. The teams used syllabi from other participating countries to include globally relevant content in their course outlines. Once the blueprint had been approved by the consultant, each team completed a draft unit to be reviewed and approved by the consultant before the actual development of the print-based materials could start. Upon completion of the print-based content, an external evaluation was conducted to ensure that pedagogical requirements had been met. This process, especially the external evaluation, created a lot of frustration among the teams. Most of the work had to be redone in accordance with the external evaluators' recommendations. The teachers felt that this could have been done earlier in the process instead of being the final step. The quality assurance steps were repeated after the new changes were made, and the final quality evaluation was conducted after the online conversion was completed. The physical distance between the teams and the quality control personnel also presented a problem. In most cases, programme developers took it upon themselves to incorporate changes in the online version as it was not easy to get the teachers to understand all the suggested changes and then insert them in Moodle.

Managing the Process

The timeline for the project was developed by the country steering committee (SC), which consisted of the head and management of the institutions involved, that is, NAMCOL and NIED. The participants were not involved in decisions about timelines. This created a challenge as most of the due dates were unrealistic and hence could not be met. In addition, the timelines did not consider either the challenges faced by the teachers or the time required for the quality assurance processes. The steering committee was also responsible for proofreading the final draft of print materials and signing off on them before they were sent to the consultant. At an institutional level, the NAMCOL management had an overall responsibility to spearhead the process, ensuring that development schedules were followed and due dates were met. COL continuously motivated the teams through emails, Skype and teleconferences. These governance structures added value to the whole process and created a community in which the teams worked well.

> "The production of online courses was very challenging, for me as a team leader and a PD, since it was done during the normal working time for the availability of internet at [my] office. This made it difficult for me to attend to my other duties." (Saara Mungungu, English team leader)

Namibia's timeline for the development of OER

Activities/output	Indicators	Baselines	Completion dates	Responsible persons
Identification of participants	Country uses Steering Committee (SC) criteria	25 participants	November 2008	Country Management Committee (CMC)
Selection of a consultant	Criteria of SC	Consultant approved by COL	01 December 2008	CMC/COL
Briefing the Ministry of Education (MoE)	Support from MoE	20 MoE staff	December 2008	MoE Representatives
Establishment of Basecamp for CMC/subject teams	Email details to COL	32 participants	January 2009	CMC
Memorandum of agreement	MoA signed	MIE & NAMCOL	January 2009	COL/CMC
Screening survey of participants' skills	Tools completed	25 participants	January 2009	COL
First in-country capacity-building workshop	Teachers acquired basic technical and pedagogical skills to create print-based OER	2-week workshop for 25 participants	1st to 2nd week of February 2009	Consultant/COL
Development of course blueprints (CBP)	Blueprints drafted and consolidated	5 CBPs	30 April 2009	Subject teams/Consultant/CMC
Post CBP draft on Basecamp for CMC approval	Blueprints approved			
Development of print-based OER	Print-based OER developed in 5 subjects	25 participants	June 2009	Subject teams/Consultant
Second in-country capacity-building workshop	Teachers acquired technical and pedagogical skills for creating online (Moodle) and multimedia content	Two-week workshop	1st to 2nd week of September 2009	Consultant/COL
Editing of print-based OER and sign-off of multimedia	Multimedia developed and signed off	Multimedia for 5 courses	November 2009	Subject teams/Consultant
Sign-off of print-based OER by subject teams	5 print-based subjects signed off (phase 1 completed)	Print-based materials for 5 courses	November 2009	Subject teams/Consultant
Submission of OER, print-based with multimedia, to COL	Print-based courses submitted via Dropbox	5 courses submitted	December 2009	Subject teams
Evaluation of print-based OER by external evaluators	OER evaluated	Evaluation reports	January 2010	
Conversion of print-based materials to online format	Print-based materials converted to online format	OER on Moodle	May 2010	Subject teams/Consultant
Submission of OER online to COL				
	Online materials submitted	4 online courses (Geography not finalised)	June 2010	Subject teams/Consultant
Launching of NAMCOL OER	4 materials launched	OER in 4 courses launched in Namibia	March 2012	NAMCOL

Cost, effectiveness and sustainability of OER

One challenge around OER is that OER repositories can be costly both to develop and to maintain. With the OER4OS Project, a lot of money was spent on capacity-building of teachers. The developers received financial compensation in recognition of the long hours and extra effort they put in. This project benefited from additional funding from the Hewlett Foundation, but this type of funding cannot be provided indefinitely. Eventually other forms of support will need to be found.

Traditional textbooks are expensive and need to be handled with care, but digital resources are inexpensive and do not need any physical care. Institutions can duplicate them as study materials for learners to engage in active study, which in return promotes more intensive learning. For an ODL institution such as NAMCOL, which spends a huge amount of money on transporting materials to learners all over the country, OER will mean a very significant reduction in the storage and transport budgets. OER are free, which reduces the cost per learner. The inclusion of multimedia such as video and audio files in the courses makes learning more interesting and engaging, and further increases effectiveness. In other words, although the development and capacity-building may be expensive and costly, the return on investment for OER is higher than we find for traditional textbooks and study guides.

This brings us to the issue of sustainability. Wiley explains the notion of OER sustainability as "an open educational resources project's ongoing ability to meet its goals" (2007, p. 7). Downes (2006) goes a step further and suggests that producers and consumers of OER take ownership: "the sustainability of OERs requires that we think of OERs as only part of a larger picture, one that includes volunteers and incentives, community and partnerships, co-production and sharing, distributed management and control." The sustainability of the OER produced as part of this project depends on more users and producers being able to access them. This will create cross-subject communities and new networks. Clear policy guidelines and strategy documents, as well as continuous capacity-building of content creators should be part of the OER sustainability plan for any institution.

NAMCOL's and the Namibian teachers' contributions to the OER community have increased the public profiles of the associated institutions. Teachers share and adapt OER as they wish, thus encouraging pedagogical innovation. Collaboration increases the quality of OER because expertise can be shared and knowledge is enhanced.

NAMCOL is continuing to develop single OER items such as videos and radio lessons under a Creative Commons (CC) licence. These items can be shared and adapted freely by any user. NAMCOL's participation in the project inspired the institution to adopt an OER policy that can guide the development of OER in the future.

Conclusion

Educational resources are important in any society, as they provide a platform for expanding access to learning opportunities (Namwandi, 2012). According to Dr Namwandi, the need for the development of OER was partly identified at the 2011

National Educational Conference, and the conference resolutions provided a clear strategic road map for the realisation of educational excellence for Namibia.

OER is one example of the rapidly changing trends in education throughout the world. In Namibia, OER could play a major role in increasing equity in education as learners from all parts of the country would have access to education of the same quality. However, the availability of ICT needs to be addressed to ensure that learners and teachers are not only made aware of OER but also have access to it.

The OER4OS Project allowed the teachers involved to make the most of their creative skills. The teachers could also see the importance of sharing digital resources and working together. It is evident that once proper monitoring and evaluation systems are introduced, OER will be a successful addition to education resources in Namibia. Going forward, content and approaches will need to remain fresh and be updated regularly so that information is current and accurate.

Some of the potential benefits of OER are (see D'Antoni & Savage, 2009):

- They enhance the public image and reputation of an institution and so attract new students.

- They improve the student recruitment process by helping students find the right programmes.

- They provide a resource for students and faculty that supports both learning and collaboration.

- They help attract alumni as lifelong learners.

- They help to develop and maintain connections with colleagues around the world.

- They serve as a record of teaching innovations and allow others to build upon and expand that knowledge.

The Namibian teachers who participated in the project enjoyed becoming part of a learning network with the participants from the other countries. NAMCOL as an institution is enjoying positive publicity as more learners and teachers gain access to the online OER content. As for the future, teachers see OER as the long-term solution to the textbook problem in Namibian schools. Currently, in some subjects, one textbook is shared by two or three learners. This prevents learners from taking textbooks home for self-directed study. Namibian teachers depend on the prescribed textbooks to prepare their teaching notes, which limits the scope of knowledge being shared. OER provide an opportunity for teachers to develop and build up their own content banks for their subjects by remixing OER produced by others. NAMCOL also regards OER as a way of improving learner support services by providing a diversity of resources, reducing costs and increasing access and flexibility for learners. In order to sustain the OER, however, the materials will need to be frequently updated and revised to keep them relevant and to accommodate curriculum changes.

The project can serve as a vehicle to foster government commitment to the principles underpinning the 2012 OER Paris Declaration (UNESCO, 2012), which includes both the open licensing of all publicly funded institution materials and also government commitment to supporting institutions financially.

There is a need for a roadmap on how to use OER developed in other countries effectively and without duplicating earlier efforts. Institutions such as NAMCOL must develop policies regarding the use of OER in content development in order to cut development costs. The most cost-effective way to invest in materials design and development is to incorporate the effective adaptation and use of OER, because that builds on what already exists elsewhere. It takes advantage of pooled alternative resources to meet accessibility obligations, and removes the costs of copyright negotiation and clearance. D'Antoni and Savage state that:

> Openness is the breath of life for education and research. Resources created by educators and researchers should be open for anyone to use and reuse. Ultimately this argument resonates with the Universal Declaration of Human Rights, which states: "Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages" (United Nations, 1948, Art. 26, para. 1). (D'Antoni & Savage, 2009, p. 138)

The issue of openness in the Namibian context can be argued in terms of the accessibility of the OER to the teaching and learning community as these materials are in digital format and can only be accessed via the Internet. The provision of Internet connectivity remains a great challenge in many areas in Namibia, and this currently limits the use of OER in its most powerful capacity for educational improvement.

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Developing OER: The Perspective of the Teachers from Seychelles

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Abstract

In March 2009, a group of Science and Personal and Social Education teachers in Seychelles collaborated with the Commonwealth of Learning (COL) to develop high-quality open educational resources (OER) for open schooling. Secondary schooling in Seychelles is both free and compulsory (up to age 16), and Seychelles' involvement in COL's Open Educational Resources for Open Schools (OER4OS) Project was mainly to address secondary-school teacher shortages. OER have great potential to complement conventional secondary schooling and provide a second chance to mature students and inmates. The perspectives of the master teachers on this journey reveal their commitment and dedication to the project despite the challenges they faced. With occasional opportunities to reflect on their own practices as teachers, this journey has led to both professional and personal growth. The participants concluded that although the potential benefit to Seychelles is immense, the infrastructure to fully implement the OER still needs to be put in place. The master teachers are willing to share their newly acquired expertise in OER development and to cascade those skills into other subject areas. The road ahead therefore looks very promising — OER can be sustained in Seychelles.

Overview of the OER4OS Project in Seychelles

The Republic of Seychelles has almost 91,000 citizens. The three main islands are Mahe, Praslin and La Digue, and the three official languages are Creole, English and French.[1]

Primary and secondary education is provided by 35 state schools (25 primary and ten secondary) and three private schools on the three main islands. The state

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[1] See www.nation.sc and www.nbs.gov.sc

schools offer a cost-free comprehensive education to all Seychellois children: six years of primary and four years of secondary education are compulsory; the fifth year of secondary school is optional. Virtually all children attend crèche (kindergarten/preschool) for two years, although this is optional. Seven institutions offer tertiary education. The sole university, the University of Seychelles (UniSey), was officially inaugurated in 2010.

Open schooling is a relatively recent education option for Seychelles. It dates back only to 2008, when Sir John Daniel, former President and Chief Executive Officer of the Commonwealth of Learning (COL), approved Seychelles' involvement in the Open Educational Resources for Open Schools (OER4OS) Project following a request from Mr Bernard Shamlaye, a former minister for Education and, at time of writing, the Seychelles Ambassador in France. In the absence of an open schooling institution, the project is managed by the Ministry of Education (MoE).

All secondary-school-age children have access to secondary education in the ten regional state secondary schools situated on the country's three main islands. The MoE provides free transportation for students who have to travel more than three kilometres, or to another district, to attend secondary school. However, like so many other countries, Seychelles is facing a shortage of qualified teachers, especially in Science and Mathematics. The OER4OS Project offered a way to address teacher shortages, as OER can be used in the absence of a teacher (A. Souffe, personal communication, 2 March 2009) — which would make secondary education accessible to mature students — and they can also complement secondary education in a conventional school setting.

In 2012, Seychelles hosted the third Commonwealth Open School Association (COMOSA) Annual General Meeting. On 2 March 2012, the OER4OS and Implementation of the Virtual University for Small States of the Commonwealth (VUSSC) Programmes and Transnational Qualifications Framework (TQF) programmes were launched at the UniSey School of Education (SOE). The Coordinated Science Team Leader had the privilege of delivering a speech about Seychelles' experience of developing OER for conventional schools. We thank Frances Ferreira (COL Education Specialist) for her excellent management of the process and for giving us the opportunity to participate (Cerf, Moyenne and Cachée,[2] informal conversation).

Open schooling and the use of OER are becoming increasingly common solutions for governments as they attempt to meet the increasing demands for secondary education. The MoE hoped that participation in the OER4OS Project would help Seychelles to:

- address the teacher shortages at secondary level by putting in place self-learning materials requiring less face-to-face intervention;

- enrich conventional school teaching by bringing more interactive and high-quality print-based, multimedia and even online materials into the classrooms; and

- provide a second chance for mature students and inmates to gain a secondary-level education so that they can effectively contribute to their personal development and Seychelles' development.

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[2] Pseudonyms. See page 101.

The OER4OS Project resulted in the participating countries developing OER in a total of 20 secondary school subjects (COL, 2012a; COL, 2012b). Seychelles was responsible for two of those: Life Skills and Coordinated Science Grade 10. Grade 10 is equivalent to Secondary Four (S4) and Secondary Five (S5) levels.

The Coordinated Science Grade 10 course, which covers Biology, Chemistry and Physics, is based on the Cambridge International General Certificate of Secondary Education (IGCSE) syllabus offered to S4 and S5 students. Upon completion of the course, students can sit the Cambridge International Examination. The IGCSE syllabus consists of 52 topics and each topic is being developed into an OER unit. The initial aim was to develop 18 units (three units by each of the six participants). However, one participant struggled to use ICT and two other participants had particularly heavy workloads, and so only 12 print-based units (four Biology, three Chemistry and five Physics units) were completed in time for publication.

The Coordinated Science Grade 10 course is for students who have completed Secondary Three (Grade 9) Science (Seychelles National Curriculum) or who wish to resit their IGCSE examination or upgrade their knowledge of science.

The Life Skills course was developed using the Personal and Social Education (PSE) curriculum contents offered to S4 and S5 students. It consists of the six units developed and published in print format. Each member of the Life Skills team was to develop one unit; a sample unit was developed by the whole team. However, halfway through the project, three members terminated their employment with the MoE. Consequently, the completion of the six units was left to the two remaining participants.

The Coordinated Science Grade 10 and Life Skills courses are to be used by students both within and outside the conventional school setting. Within the conventional school setting, the OER can be used by:

- S4 and S5 students in the absence of a teacher: with the embedded teacher's voice, the clear explanations with talk-through examples, the activities and feedback, the OER are great "substitute teachers" for the students.

- S4 and S5 students in or outside the classroom to supplement the conventional teaching they receive and so enhance their understanding.

- S4 and S5 teachers as teaching resources for ideas, activities, assessment tasks and explanations that could complement their classroom teaching.

Outside the conventional school setting, the OER will provide a second chance to learn for:

- mature students (youths and adults) who wish to resume their studies or upgrade their knowledge to advance their career, and

- inmates who wish to catch up with their studies so that at the end of their sentence they can pursue further education if they wish to.

The OER are currently being piloted in two secondary schools and at the SOE as a complementary resource for students and teachers (A. Souffe, personal communication, 12 February 2013). This exercise was initiated by the master teachers who participated in the project. While no formal system is in place to fully implement the use of the OER within and outside the conventional school setting, the future looks promising, since an OER-awareness workshop has

been scheduled for the second trimester. Moreover, negotiation is also taking place between members of the CMC and the Director of the Adult Learning and Distance Education Centre (a private institution) to use the OER with inmates and mature students.

The Seychelles project team comprised five Personal and Social Education teachers and six Science teachers (two of whom were members of the steering committee). The relevant ICT training was provided through face-to-face and online workshops. The face-to-face workshops were held both locally and outside of Seychelles. All but one participant had full access to a computer — computer access was a requirement — but six of the participants did not have Internet access.

The first two-week face-to-face workshop introduced participants to Basecamp (a project management system), Skype, Audacity, PhotoFiltre and other digital video and audio recording applications. Participants watched demonstrations and practised using these resources. They also learned about open schools, OER and copyright, especially the Creative Commons Attribution-Share-Alike (CC-BY-SA) licence. After two weeks, each subject team had produced a blueprint and a sample unit.

Two more workshops were organised to further the participants' skills and knowledge. Two representatives from each country attended a face-to-face workshop in Namibia to introduce the Moodle Course Management System as the online Moodle workshop was not effective, and the consultant attended a workshop designed to provide additional support to the subject teams following SAIDE's evaluation of the sample unit. The use of social networks like Facebook and Twitter was also introduced during the project. The consultant provided ongoing online support and guidance.

Some participants were invited to participate in ICT-related workshops held outside Seychelles. Two Life Skills participants, including the Team Leader, attended Training of Master Teachers on the Use of Moodle, a two-week workshop in Namibia in October 2010. The Coordinated Science Team Leader attended Towards a Gender Sensitive ICT Strategy, a three-day workshop held in Maputo in July 2011. Both team leaders also attended the Monitoring and Evaluation for Open Schools — Africa Region workshop held in August 2010 at the Namibian College of Open Learning.

The print-based OER were developed using the COL open and distance learning (ODL) template. The high-quality print-based materials are self-contained. Instructional strategies (such as constructivist and cognitive methods) that will motivate and scaffold the students' learning were employed; and the teacher's voice has been embedded in the text of all the materials, engaging students with clear explanations, talking them through examples and self-mark activities, and providing them with feedback.

Just as high-quality education remains the top priority of many governments, including that of Seychelles, high-quality material remains COL's top priority for any and all OER. COL rates the "depth, style and quality of information" in OER as higher than that in traditional textbooks because of the collaboration and the opportunity for frequent updates (COL, 2010, p. 9), and its intent is that it should stay that way.

The quality of the OER was monitored by different parties. Quality control started with the consultant's review of the drafts to assess the learning design and pedagogy aspect. Early in the process, a unit was sent to COL to be evaluated by the South African Institute for Distance Education (SAIDE). Subject teams then held meetings to scrutinise the subject content and overall standard of the completed units and to ensure that SAIDE's recommendations had been fully addressed. After this stage, the team leaders looked at the units to ensure everything was consistent (organisation, formatting, etc.) for all units and all subjects, and then sent them to the Country Management Committee (CMC) to be signed off. The subject team leaders attended CMC quality control meetings for their respective subjects and modified the material as necessary. COL's editors carried out quality control checks on signed-off units. The editors' reports were sent to the teams through the CMC, any necessary adjustments were made and the final units were returned to COL in preparation for publication.

Perspectives and Key Lessons Learned

> Once you have travelled, the voyage never ends, but is played out over and over again in the quietest chambers. The mind can never break off from the journey. (Pat Conroy)

True enough. The journey is certainly still vivid in the minds of the five project participants who offer their perspectives in this section. Their views were collected mainly through a questionnaire, but observations and opinions expressed through informal conversation have also been included. In the interests of anonymity, unless the distinction between the two subjects is crucial, the perspectives of the Life Skills and Coordinated Science respondents are presented collectively using pseudonyms referring to five of Seychelles' Marine Park Islands (Long, Round, Moyenne, Cerf and Cachée). The participants' perspectives give their thoughts on professional development, instructional design and management of the process within the context of the project.

Professional development

The participants unanimously agreed that the OER4OS Project helped them develop both professionally and personally. As practising teachers, all the participants asserted that the project gave them the opportunity to reflect on and enhance their subject knowledge.

> "It has provided the opportunity to improve on personal skills in ICT and materials design and upgrade one's subject of specialisation." (Moyenne)

> "I have become more knowledgeable in my subject area with regards to content, activities, teacher's voice and use of ICT, as quality time was spent on the development of the units." (Cerf)

This view is corroborated by the other members who explained that they developed a new and more thorough understanding of numerous concepts that they had previously taken for granted. They explained that at times they had to go to the root of certain concepts to provide succinct yet sufficient information to the students — which meant they had to look closely at their own understanding of the concepts.

All the participants viewed the project as a process of continuous professional development. The Seychelles-based face-to-face workshops offered ample opportunities for hands-on experiences.

> "Good opportunities. Time was given to do as you learn. The end product becomes a product of ownership." (Moyenne)

The participants learned a lot during the workshops, but felt that the first workshop was too packed with information.

> "There was a lot to learn in the first workshop on top of the development of a blueprint and a sample unit and the preparation of a milestone." (Long)

Groups focusing on OER and open schools were set up on social networks, such as Facebook and Twitter, for online discussion and support. Unfortunately, due to time constraints, heavy workloads and unreliable Internet access, it was not easy to participate in these (Cerf, Moyenne and Cachée).

The professional development benefits of participating in this project were many and varied. Participants unanimously agreed that their team-working skills had improved significantly. Round and Cachée noted that their leadership qualities and skills had been enhanced — their ability to organise and chair meetings improved, and they found they were increasingly able to keep the team motivated, for example. Round also reported acquiring "experience in organising and managing international meetings/workshops and drawing up and managing a budget." For Round, who holds a master's degree in Distance Education (DE), the project was "a golden opportunity to share and apply [his/her] knowledge and skills."

The opportunity to attend workshops and/or conferences overseas helped the participants to develop their confidence in participating in and contributing to different working groups. It also led to their making friends and professional contacts, which will enable networking at different levels (Round, Cerf and Cachée). The participants asserted that they were treated as equals at all times and consequently felt confident about interacting with leaders in open school and OER development. This also led to their acquiring new knowledge and skills, and developing a positive attitude towards OER.

However, the open school culture is still in its early stages in Seychelles, even though the public has been introduced to the idea of open schooling through the media (Round, Cerf, Long and Cachée).

> "The several instances of media coverage have sensitised teachers and the public in general of the benefits of the OER and how they are going to benefit our citizens." (Round)

Greater media coverage of the launching of the OER4OS had been expected, but the launch was overshadowed by the implementation of the VUSSC programmes and the TQF, as well as several other events that merited media attention (Cerf and Cachée). However, those who attended the launch are still talking about the three-minute speeches by five OER4OS representatives — they made a real impact on the audience.

Furthermore, the seed of self-directed study through print-based material had already been sown by the success of more than 100 primary teachers who completed their teaching diploma through DE (between 2006 and 2010). They

used print-based ODL materials with a similar instructional design to that of the OER for open schools.

Instructional design

Working with the COL ODL template was an enriching experience for all the participants. SAIDE used a number of resources to guide their evaluation process (for example, the resources on the pedagogy of OER and the application of Bloom's Taxonomy of Educational Objectives), and the teachers had an opportunity to examine those resources during a post-evaluation workshop that guided them through the evaluation. These resources have proven very useful not only for the OER but also in the master teachers' daily duties.

Most, but not all, of the participants were acquainted with different ICT. The ICT experience elicited mixed emotions. Some participants saw it as a journey of enhancement and discovery — an opportunity to practise and share ICT skills, knowledge and experiences while learning new ones. Others found the journey demanding and challenging but also a golden opportunity to learn. For one participant, though, it was mission impossible.

> "We learned about different software like Audacity and PhotoFiltre and how to use different tools. We learned to use Basecamp and Skype. It was easy for some, for others quite challenging. We did our best, even the participant who could not catch up." (Long)

> "I have developed my photography skills[, and] use the Internet and other platforms for collaboration/networking and uploading course materials. . . . At first the use of ICT was very demanding and challenging but [it] has now proved to be beneficial in my everyday duties." (Round)

Working with Moodle was interesting and enriching — but also challenging and frustrating, and made worse by unreliable Internet access. The participants agreed that the most challenging and frustrating aspect was transferring the contents of the units from their print-based form to Moodle, as they had to make significant changes to the format of most of the content. Cerf reported that the additional Moodle training held in Namibia fell short of the expected aims and needs of the participants. However, they did learn to use new software like Poodle and Picasa.

All the participants noted an improvement in their ICT skills and knowledge, all of which has cascaded into their teaching practice.

> "I have learned how to use ICT in my teaching to create different activities and resources which will facilitate learning." (Long)

Some respondents noted that the knowledge and skills they learned will be beneficial in related or similar projects (Long, Cerf and Cachée). In addition, four participants affirmed that they are now better prepared to accept criticism, work in teams and collaborate nationally and internationally (Round, Long, Cerf and Cachée).

The quality control process was methodical, and was carried out by different internal and external bodies, such as the consultant, the team leader, the CMC, SAIDE evaluators and subject editors (Round, Long, Cerf and Cachée). This rigorous process ensured that high-quality OER were produced. The respondents felt that most of the feedback was constructive and encouraging, although it

has to be said that it was overwhelmingly negative. Although crucial, the unit evaluation feedback from SAIDE was very demoralising, especially for the unit developer. The COL representatives and the consultant felt the need to arrange a teleconference to support and encourage us after we received the SAIDE feedback. That was a big help. With encouragement and perseverance, we reviewed and improved all the units. The negative criticism also made the participants reflect on the type of feedback they give to their students and alerted them to the value of constructive feedback (Long and Cachée).

Some units were also piloted as a further quality control. One participant used drafts of some units with his/her classes while two others tried out their units on eligible members of their families.

> "When I was developing the units, I gave them to my kids to try out. I was very pleased with their feedback and compliments regarding the teacher's voice. They claimed that when they read the units, it was as if a teacher was talking to them." (Moyenne, informal conversation)

> "I have used the units with [my daughter] and her friends to help them with [the subject]. They like the way the information is given, the clear examples and practice exercises." (Round, informal conversation)

We learned much about ICT and quality control during this project. The first lesson that we learned about ICT is that unreliable Internet access can hinder the development of OER considerably, especially for online materials using Moodle. Second, for a demanding and challenging project such as this, all the participants should have a certain level of ICT skills to build on so that no one feels inadequate.

Three lessons could be drawn from the quality control processes. First, constructive criticism can lead to improvement. As Round put it, "critical and constructive criticisms help to improve on the quality of work." Second, the sample unit should have been reviewed immediately after the first workshop, which was the initial plan. Timely feedback would have highlighted the master teachers' weaknesses early during the process so that the time spent on reviewing several units for the same errors/deficiencies could have been invested in the development of other units. Finally, as educators we need to ensure that the feedback we provide to students is encouraging and constructive.

There is no doubt that through their participation in the project, the participants have become well versed in new technology and new software applications. They have developed new knowledge and skills, all while expanding their existing knowledge and skills. Some progressed faster than others, but in the end most of the participants felt confident and competent enough to share their knowledge and skills with other teachers. They will help to spread the word about the benefits of OER and open schooling. Round expects that "the tools [will] be used [to put] course materials for the conventional system online."

Management of the process

Although the master teachers were committed and optimistic, the time frame was totally unrealistic. This view resonated throughout the project. The participants said that the OER4OS Project was much more demanding than they expected.

> "The nature and complexity of the project were beyond my expectation and that of other members as well as that of the international partners." (Round)

Managing time outside the workshops was particularly challenging, as the participants had to juxtapose their professional duties/responsibilities with the development of OER (Moyenne, Cerf, Long and Cachée). The respondents all noted that because different versions of the ODL template were used, after the first workshop a considerable amount of time was spent on transferring the content from one version of the template to another. Time was also wasted on transferring the contents of the blueprint from the template (as originally requested) to a plain Word document.

Consequently, all the participants made many sacrifices and invested many hours in the project; it became a central part of our lives. Occasionally, the Science team met to review units after their regular working hours, working until very late into the evening. All the participants revealed that many weekends were consumed by OER development, but luckily their family members were very accommodating and encouraging. Some families became very closely involved. For example:

> "Many of my weekends were spent working on the OER, [many] sacrifices were made to complete certain tasks. Fortunately, my family was very supportive and saw this as a privilege — an opportunity for further development and recognition. They even, as if they were acting on [the] CMC's and COL's behalf, enquired about the progress of the OER if they did not hear about it for a few days to ensure that there was no procrastination." (Cachée)

The teams agreed that adapting or modifying other OER could have speeded the development process. However, all the units were written from scratch due to Internet difficulties and copyright issues.

As educators, we are conscious that copying the work of others without acknowledgement is a serious offence, but at the beginning of the project we did not, as a group, fully understand the seriousness of copyright infringement and the different kinds of publication licences available. Initially, the issue of copyright created much fear and led to the participants creating their own resources (diagrams, pictures, etc.) from scratch. Round explained that "it forced me to come up with my own resources, [to apply] my innovative skills."

After recognising that it was safest to use and acknowledge resources licensed under Creative Commons licences (specifically, the CC-BY-SA licence), some participants felt confident enough to work with published materials. However, everybody still developed their units from scratch because of unreliable Internet access and their desire to produce original materials (Cerf and Cachée). This was very time-consuming (Long, Cerf and Cachée). Having gone through this process, we are now much wiser.

The participants agree that the personal investment in the project was very high. In addition to the many hours invested, participants also invested financially — despite help from COL — especially in regards to Internet usage at home. To be able to work with the Moodle platform, some participants had to upgrade their existing Internet connection, which was more expensive and stretched their monthly budget. While the financial contribution from COL was appreciated and efficiently managed, the participants felt that funding was not enough to cover Internet access and other expenses.

> "Immediate cost was high . . . I used my own transport to take colleagues home late in the night, used my phone and Internet facilities at home . . . in spite of COL's financial contributions for Internet." (Round)

> "Maybe more funds should have been allocated so as to help with the smooth running of the project. Since the fund was limited it was impossible to assist all participants with the Internet installation expenses. So, it was difficult to work on the project at home." (Long)

Nevertheless, there are no regrets. The participants believe that the OER they developed will have long-lasting personal benefits for them as well as long-term financial benefits not only for the participating countries but for the rest of the world.

> "In the long run it is going to be beneficial for many students the world over and the benefits I have gained (knowledge, skills and collaborative partners) outweigh the cost/the initial personal investment." (Round)

We must express our thanks to the project manager and conveners who responded promptly and were very supportive and efficient in terms of providing justifiable financial assistance within their means.

Collaboration was a key aspect of the project. There is consensus that there was great collaboration within each subject team and between the two subject teams. The participants said that they were all very supportive of one another, providing help and guidance where possible (Round, Cerf, Long and Cachée). It was observed that one team member in particular was always being called upon for assistance. That person took on an unofficial role as local consultant — even the official consultant relied on that person to assist the other members (Long and Cachée).

The support received from COL, the consultant and the MoE has also been acknowledged. However, it was felt that the MoE could have collaborated more.

> "The Ministry [MoE] could have negotiated with the schools for the release of teachers so that quality time could have been spent on the project in order to meet deadlines." (Long)

The participants acknowledged that it would have been beneficial to collaborate with teams from the other participating countries, but this was not a practical option, partly because of Internet access difficulties. Internet unavailability was a recurring issue throughout the project.

The evaluation of the project was systematic and crucial. Most of the evaluation tasks were very demanding and time-consuming, but four master teachers (three of the five Coordinated Science and one of the two Life Skills teachers) remained

committed to the process. The others were unable to participate fully primarily because of unreliable Internet access and the demands of their everyday work.

Undoubtedly, the

> "external evaluators' feedback enabled [us] to compare [our] performance with the other participating countries." (Round)

In many evaluation reports we learned that the master teachers from Seychelles were more or less on par with master teachers from countries that had at least some experience with open schools and OER. The master teachers from Seychelles even made the most significant progress in COL's Post Project Assessment Task with an average rating of around 85 per cent (SAIDE, 2011). This great achievement reflects our mastery of the OER and DE concepts and our thoroughness in completing tasks. It also boosts our confidence that we can share our acquired knowledge and skills.

But, as most of the respondents observed, not much has been done to make the most of the participants' new knowledge and to implement the OER they produced. It is believed that this lack of progress may be due to the recent education reform[3] and the lack of a department within the MoE to manage the implementation of the OER and co-ordinate further development (Cerf and Cachée). Until Seychelles has enough qualified secondary school teachers, there will always be a need for OER in the conventional school setting. Round explained that the Coordinated Science OER "are being piloted at the SOE and two secondary schools. There is a plan [to use the two courses] on a larger scale with prison inmates and students who have not completed formal schooling." If this plan materialises, it will be very beneficial to Seychelles.

Conclusion

The future of OER in Seychelles is promising. First, as mentioned earlier, Seychelles' involvement and commitment to the OER4OS Project is mainly motivated by a need to address teacher shortages and complement teaching in the conventional secondary school setting. Most of the 17 courses available can be adapted for use at both S4 and S5 levels, and some can be used in tertiary institutions. For example, the Spanish course and Geography Grade 12 can be used by students at the Seychelles Tourism Academy and School of Advanced Level Studies respectively. Second, the courses could be used outside the conventional school system to provide a second chance for people in a variety of circumstances: those wishing to upgrade their skills or education, inmates, school dropouts and those residing on outer islands.

Undoubtedly, our journey had its challenges. The most common challenges for the Seychellois master teachers arose from the nature of the project, working with the COL template, Internet facilities and time constraints. Various versions of the ODL template to be used for the OER were circulated, meaning that it took some time before we were confident about which version to use and about which format the blueprint should be written in. However, the perseverance and dedication of each master teacher, with encouragement from the consultant, brought success.

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[3] See http://planipolis.iiep.unesco.org/upload/Seychelles/Seychelles_Education_Reform_Action_Plan_2009-2010.pdf

The participants' worst and most persistent adversary throughout the project was time. While the MoE sought a one-day release per week to work on the project, some participants could not be released and the deadlines did not take into account the amount of work involved (Long, Cerf and Cachée). It has been proposed that any future project of this kind should be given a longer time frame (Long and Cerf). Another persistent challenge was Internet unavailability and unreliability. Not much could be done to resolve this problem, but team members who had Internet access at home took the responsibility of uploading documents on Basecamp (Round, Long, Cerf, Moyenne and Cachée).

All the respondents agreed that the COL template proved to be a major problem for a few team members. While more adept team members provided several training sessions, it was finally agreed that to move forward, it would be best for members who were struggling to give their work to the more able members and have them apply the template. Having said that, it was also agreed that they should keep practising to improve their skills.

Despite the challenges, this project, if fully exploited, will have invaluable benefits for Seychelles. The immediate benefit is that Seychelles now has a pool of confident and competent OER developers ready to share their knowledge and skills with other educators. Through the MoE, Seychelles now has access to 17 courses that could be used both within and outside the conventional school setting. Seychelles could therefore ensure that second chances are available to inmates and school dropouts so that they too can eventually contribute to the development of Seychelles. COL's trust and faith in the master teachers was justified; the capacity and commitment of Seychelles' teachers have been proven. And the participants have earned a sense of pride. Seychelles is a small island state, so its involvement — and success — in such a project is a significant achievement and should have been better acknowledged locally.

Our participation in the project has had a remarkable impact on teachers and learners. The learners in the pilot groups are accessing high-quality Coordinated Science OER to complement and enhance their understanding of their classroom learning. They are also benefiting from more student-centred approaches, hands-on activities and constructive feedback. It is anticipated that when the OER are fully implemented, the students within and outside the conventional school system will be able to access the content of the different courses wherever they are and at a time convenient to them — exactly as expected. School dropouts (for example, girls who drop out because of pregnancy) and inmates will have a second chance to pursue their secondary education and embark on a career path. The group work in some units will also provide opportunities for collaboration and team work among the learners, preparing them for the world of work.

The master teachers are more reflective and creative in their teaching as the project provided opportunities for them to question their own practices. They are now making conscious efforts to incorporate ICT in their teaching, mainly through the use of PowerPoint presentations and videos. They are also spending more time on the Internet to search sites for open source materials and resources with a CC-BY-SA licence to use in their teaching. They are more skilled at working in teams and collaborating. The most important outcome, however, is that the master teachers are sharing those skills and knowledge with their colleagues in their school or institution, albeit informally.

The project may have ended, but there are opportunities for future collaboration. For example, the master teachers could formally train other local teachers to develop the remaining units of the Coordinated Science Course as well as units in other subject areas. Since a network of collaborative partners and platforms has been established, the onus remains on individual master teachers to take the initiative to connect and collaborate. A few master teachers could be trained further as potential consultants for similar projects in the future — within and outside Seychelles.

The perspectives of the master teachers have shown that the journey was an enriching and fulfilling experience for all who have travelled thus far. The personal, professional, national and global benefits of developing OER significantly outweigh the challenges, sacrifices and investments that were such a part of the OER4OS Project. With collaboration, the journey will go on; the future of OER in Seychelles looks promising despite the delayed implementation. We are very grateful to the Commonwealth of Learning, the William and Flora Hewlett Foundation, the Ministry of Education and our respective institutions for this golden opportunity to help educate the world.

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Developing OER: The Perspective of the Teachers from Zambia

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Abstract

This chapter discusses the perspective of teachers from Zambia who participated in the Open Educational Resources for Open Schooling (OER4OS) Project. People in Zambia drop out of mainstream education for several reasons, and it is important that they are not forgotten. In order to have an educated citizenry, Zambia's government is making every possible effort to provide education to everyone, regardless of age or circumstances. The Zambian government has therefore welcomed the OER initiative, as well as other initiatives, to help achieve the Millennium Development Goals set out in Educating Our Future – National Policy on Education.

This chapter begins with an overview of the OER4OS Project in Zambia. It gives a brief background to the country and introduces the Zambia College of Distance Education (ZACODE). It discusses the scope of the OER4OS Project in Zambia as well as its objectives, and discusses the use of ICT and quality control strategies in curriculum development and instructional design.

It then focuses on the perspectives of the participants and the key lessons learned. It specifically looks at building capacity of teachers, the impact on learners, what was learned and how the skills learned are being put to use. Lastly, it discusses the management process, looking at timelines, costs, copyright issues, collaboration, evaluation and sustainability going forward.

In the conclusion, the future of the OER in the education delivery system in Zambia is discussed. The impact of participation on building capacity of learners and teachers, the challenges faced and how they were addressed, benefits of the project to the country and opportunities for future collaboration are also reviewed.

Overview of the Open Educational Resources for Open Schools Project in Zambia

Country background

Zambia has a population of approximately 14 million people, and more than 70 tribes. English is used as the official language. Once a British protectorate, Zambia became independent on 24 October 1964. During the early years of independence, there was much emphasis on building infrastructure and on meeting health and education needs. Zambia's formal education system has what is known as a 7–5–4 structure: seven years of primary education (four years of lower and three years of upper primary), five years of secondary education (two years of junior and three years of senior secondary) and four years of university to first degree level. The transition from lower to higher educational levels is determined by national competitive examinations at the end of Grades 7, 9 and 12.

Children between the ages of three and six can attend preschool (early childhood education). However, only a small minority of Zambia's children benefit from education at this level because there are relatively few preschools. The majority of preschools are privately owned and operated, although some are run by local government councils.

Educating Our Future (Ministry of Education, 1996), the national policy on education, attaches great importance to education for all. Some people are shut out of the formal education system for reasons as varied as a lack of money (they cannot pay user fees), long distances to nearby schools or sickness, among others. If we have open educational resources (OER) at the secondary school level, such people could continue with their education.

In 2006, the Ministry of Education gave the Zambia College of Distance Education (ZACODE) the mandate to provide alternative education programmes. The programmes cover Grades 8 to 12, and are in the form of self-instructional study materials (modules) written by ZACODE lecturers. The college caters to those left out of the formal education system countrywide, regardless of age, geographical location or cultural background.

The Ministry of Education worked with the Commonwealth of Learning (COL) to train nine ZACODE lecturers and six serving secondary school teachers in the development of the OER.

Zambia College of Distance Education (ZACODE)

The Zambia College of Distance Education (ZACODE), formerly called the National Correspondence College, is owned by the government of the Republic of Zambia and is run by the Directorate of Open and Distance Education in the Ministry of Education, Science, Vocational Training and Early Education.

ZACODE is among the pioneer institutions of distance education. It opened on 8 May 1964 as a correspondence unit of the Evelyn Hone College in Lusaka. In November 1965, the unit moved to Luanshya, a district in the Copperbelt Province. In 1976, its name changed to National Correspondence College, and in 2000, it became the Zambia College of Distance Education. Despite the moves and the name changes, it honoured its mission at all times.

The mission of the college is to increase access to education by providing quality interactive learning materials that should contribute to an improved quality of life for Zambians. The college offers both junior and senior secondary school courses by distance learning in six basic subjects at each level. A learner obtains a junior secondary school certificate upon completion of the junior secondary school level and a school certificate upon completion of the senior secondary school level.

The Open Educational Resources for Open Schools Project in Zambia

Through its participation in the Open Educational Resources for Open Schools (OER4OS) Project, Zambia developed OER for Grade 11 in Mathematics, Science and Commerce. ZACODE had already developed distance education study materials for Grade 10 by the time the OER4OS Project was scheduled to begin, so the college thought it wise to start developing Grade 11 study materials.

The objectives of the OER4OS Project in Zambia were as follows:

- Capacity-building of teachers
- Improving access to education for learners in Zambia and other Commonwealth countries
- Improving the use of ICTs in education provision and delivery
- Reaching out to many learners disadvantaged by age, geographic location, financial constraints and other factors
- Working towards achieving the Millennium Development Goals according to the National Policy on Education.

The OER that Zambia has developed so far target Grade 11 learners countrywide, from those who want to improve their school certificate marks to those who dropped out of the formal school system due to social, economic or other problems. The courses are based on the Zambian Grade 11 syllabus, which is developed by the Curriculum Development Centre. All learners are free to use the OER, regardless of age, geographic location, culture, financial situation, religion or physical ability.

Zambia is moving away from the old culture which kept women in the kitchen and gave men every opportunity to receive a formal education. Now, both males and females have equal opportunities to be educated. The use of OER will help a great deal as we try to leave this culture of inequality behind.

It is also important to note the versatility of these materials. OER can be converted to any format to suit the environment within which they will be used. They can be in print form or can be converted onto platforms that allow online access for learners who have the privilege of Internet access.

Use of ICTs

The development of OER has enhanced teachers' use of ICTs. ZACODE has now begun the process of moving its print-based materials onto the Moodle platform. This was made possible through the training sessions that were offered during the OER4OS Project.

The teachers are able to use different online communication methods. They can embed graphic designs or pictures into the study materials without difficulty. They are able to research their material and explore the Internet for free pictures and other resources.

The participants learned how to use the Basecamp platform to submit their work to the consultant, although at times they had challenges accessing it. In such cases, work was submitted by email.

The project also gave the teachers an opportunity to learn to use different communication systems such as Skype and email. Most communication was to be done via email. It is interesting to note that during the OER training, most of the participating teachers created email accounts for the first time. They also learned how to upload and download files. Through the use of ICTs, participants learned when and where to use the different authoring tools that make the development of learning materials easier and faster, especially for Moodle.

All the participants are now able to use the authoring tools effectively, which has greatly improved their editing and production skills.

Quality of OER

Quality control during the development of the print-based OER was done by the consultant, who monitored every stage of the materials' development. The participants worked closely with the consultant, submitting their drafts and getting feedback.

The team members and the consultant were constantly in touch. Numerous mechanisms were put in place to ensure quality control:

- The consultant thoroughly checked the draft units submitted and provided feedback. Participants learned to use this feedback to perfect their work, and found it very useful in the development of the learning materials.

- Course blueprints were developed, which gave the participants a roadmap to follow.

- The team members, in their groups, also ensured consistency and uniformity in their work. They learned how to use a checklist, which is a very important tool containing all the necessary aspects of a well-written unit. The checklist was consulted after every unit was developed to ensure that nothing was forgotten.

- A country management committee (CMC) approved the work done at different stages of the project.

The team members were free to call upon the consultant at any time to discuss their work either individually or as a team. They communicated with the consultant through face-to-face meetings, SMS, emails and teleconferencing. They also worked tirelessly in their subject teams, ensuring consistency and uniformity in all the units they produced.

Instructional design template

The OER were developed in accordance with the template provided by COL. The recommendations in the SAIDE midterm evaluation reports for other countries

— Zambia joined later than other countries — were useful for developing the content. The consultant overseeing the development and instructional design took the time to take the participants through a COL template, explaining every aspect of it. The team looked at the template in general and learned how to work with many general design elements: adding a course title and icons; dealing with copyright and acknowledgements; writing course content; writing a course overview; and deciding on course outcomes, time frames, assignments and assessments.

The template was then broken down to be used for individual unit development. The participants learned about additional detailed design elements: coming up with a unit title; writing unit introductions and outcomes; identifying and presenting terminology; developing topic headings, topic summaries and unit summaries; and drafting clear and effective unit assignments and assessments.

The above elements were taught through practical application: each course team chose a topic from their course and used it to develop a unit in a practice session. These were called sample units. It was in the sample units that the participants learned how to incorporate all the aspects required by the template.

All the participants were eager to learn how to use the template. A few challenges were encountered initially in its use and in the use of the different icons, but these challenges were overcome with time and patience.

Following the training on using the instructional design template, participants learned about developing a course blueprint and were further trained in the design and development of print-based OER. They learned how to use the Moodle platform where the print-based materials were eventually destined to be posted.

The participants also learned a writing style that emphasised interactive language in the context of different teaching and learning approaches. This led to variation in the presentation of activities, assignments and assessments.

Perspectives and Key Lessons Learned

Building capacity

Capacity-building for teachers in OER started with training in print-based materials in October 2009. This intensive training period oriented the teachers in the development of the OER. In the first training session, the teachers were taken through the COL template and introduced to the Basecamp platform, where they were expected to post all their work. This gave some teachers their first encounter with computers. Difficult as it looked in the initial stages, it was worth the effort. Today, Zambia can boast that it has its first group of teachers highly trained in OER development.

In July 2012, the teachers were taken through Moodle training and learned how to upload the print-based materials onto the Moodle platform. They learned to use different authoring tools as well as how to embed pictures and videos in the study materials.

Participant training in the development of OER and how to use the Moodle platform was done face-to-face through workshops and reviews of written drafts,

as well as through group interaction and discussions. Hands-on sessions enabled participants to practise what they were learning and to become familiar with the authoring tools. In this way, the participants improved their knowledge of print-based OER and perfected their material designing and writing skills. Participants were able to produce better learning materials and acquired more ICT skills in graphic design, embedding pictures and downloading videos. They also mastered exploring the Internet to research and find resources that would be useful in developing the study materials.

Impact on learners

OER will foster a culture of independence among learners as they access and use the OER at their convenience. Many out-of-school learners will seize the opportunity to learn on their own since these are self-instructional study materials. The OER will also eliminate barriers and obstacles to education — such as the cost of learning materials — thereby bringing equity to all social groupings. They will also lead to an increase in the use of ICTs or technology in the classroom, since computers will be used more frequently.

What was learned?

Although some participants found the project challenging, especially since some were using computers for the first time, they were always eager to learn new things. Sometimes they learned the hard way: they would type their work and forget to save it, and the next time they wanted to work on it, they could not find it on their computer and they had to start all over again! Still, they never gave up until they learned what to do.

Their first encounter with the Internet was not easy for some participants. It was the scariest experience for them. Learning how to sign in and what to do next was a great challenge, but it was also interesting. And it was the first time that some participants had come across the terms "uploading" and "downloading" of documents. It was interesting to hear how they mixed up the two. Some thought the two words meant the same thing. However, through much practice involving uploading and downloading of documents, everyone learned the difference between the two words.

The most challenging part for most participants was the uploading of their work on Basecamp. It took time for them to learn how to do it and, most of all, to understand what Basecamp was meant for. In the initial stages, for example, one participant posted a personal message to the consultant on Basecamp, not realising that it would be seen by everyone and not only by the consultant. It was a very good lesson for participants who now understood that Basecamp was only meant for their academic work, and that email was the better option for more personal messages.

Accessing Basecamp also challenged most participants in the initial stages. This was seen by the frequency with which they visited the platform. However, through much learning and practice, they became conversant with what Basecamp was meant for and how to access it.

Some participants found it difficult to access sites from which they could download pictures to embed in their material.

> "In my subject area, there are not many pictures to download."

This was a result of the participant not knowing how to access the sites. The process of downloading was also a challenge, and often some participants needed to work with colleagues who were more conversant with the technology to address this.

Most of all, though, the participants shared their expertise. This was the most rewarding aspect of the project for everyone. In no time, everyone was able to get things done the right way — and that was what was behind the success of the OER4OS Project.

How the tools are being put to use

Thanks to COL, which provided a consultant to train the participants in how to put print-based materials on Moodle, ZACODE has been able to start making its print-based materials available on the Moodle platform. This means that Zambia will continue to develop and use the OER in the future now that it has people trained in the process.

Both the pedagogical knowledge and the instructional design skills that the participants acquired during the development of the OER are being incorporated effectively in the ZACODE materials. The different authoring tools they learned to use are also being used effectively.

Management of the process

Timelines

Work was submitted to the consultant according to an agreed schedule. The schedules were developed by both the consultant and the participants and covered the submission, review and sign-off of draft units. Course blueprints as well as the developed units had to be signed off. Meeting deadlines, however, was not always easy as the participants were full-time teachers and were expected to carry out their normal duties in addition to working on the OER4OS Project. It was quite difficult to find time to write the OER. Most participants did so during their spare time when they also needed to rest and attend to their personal responsibilities.

Lack of Internet connectivity also contributed to participants not sending work on schedule. They were given modems, but they still had to buy airtime in order to access the Internet and send the work. Sometimes the participants would use an Internet café, but that was also expensive.

Participants were provided with Internet services during their training workshops, but this was also limited as it was not provided at other times during the project and was available only during the day.

Costs, copyright, collaboration, evaluation and scalability going forward

The OER4OS Project was sponsored by COL, and most of the costs were borne by COL. These included participants' hotel accommodation during training workshops, per diem allowances, transport costs, honorariums for the material development and other incidental expenses. The Ministry of Education also

covered some expenses but individual participants still incurred some costs, especially for Internet access.

Any work that was not the developer's own had to be reviewed for copyright issues. Copyright issues were addressed by acknowledging the sources of information and permissions of use, and including this information in references. Participants learned about Creative Commons licences in the initial stages of the print-based OER training and made considerable use of Creative Commons–licensed material to avoid copyright complications. They were also encouraged to be creative and come up with their own material.

Collaboration was quite high among groups and between group members. Participants worked together to move forward as a team by sharing knowledge and submitting work on time. Despite being far away, the ever-encouraging consultant found time to talk with participants through teleconferences organised by COL. Similarly, course teams also had opportunities to talk to COL and discuss the progress of the project and the challenges they were facing. Participants also communicated with the consultant through Basecamp, the platform they used to submit their work and receive feedback.

COL and the Ministry of Education gave the team all the support and guidance they needed, and showed keen interest in the work being done. They gave the team words of encouragement that helped immensely, even when things seemed difficult.

Challenges

Participants faced various challenges during the development of the OER. They lacked technical support, for example. Some laptops developed faults and there was no support at hand to address them. Although the Ministry of Education tried to help identify some of the faults during training workshops, some laptops still could not be repaired. Participants had no support at their stations, either, which meant that those whose laptops were damaged had to look for an alternative. Usually they shared laptops with their team members, which delayed the development process for all.

Lack of Internet connectivity was the biggest challenge, though. ZACODE lacked Internet connectivity when the print-based OER were being developed, and some of the secondary schools where some of the participants came from also lacked Internet connectivity. Recognising this challenge, the Ministry of Education bought modems for all participants. However, the participants still needed airtime to access the Internet using the modems. They bought the airtime themselves, as noted above, but this proved to be very expensive, as they needed to use the Internet frequently for research purposes and to submit their work. They often made use of an Internet café, but they were also required to pay for the service there.

The participants had limited time to write since all are full-time working teachers. At times, ZACODE would bring the participants together to enable them to do the writing in one place, interact with their team members and consult with each other. A lot of the work was also done during workshops when participants were together in one place. This was done to speed up the materials development process and to increase efficiency.

Despite these challenges, the participants never faltered as they worked in their course teams to ensure that the deadlines were met and the project was a success. Most of all, the teachers acquired knowledge that the country will make use of for many years to come.

Evaluation

The evaluation compared the work planned with the work achieved. We learned that our success sprang from our strong teamwork and co-operation. There was an increased work ethic among the team members, who worked tirelessly with very minimal supervision. This improved work culture improved participants' academic interaction and content development skills, and sharpened their ICT skills.

The project was largely successful, and the Zambian participants were empowered by their acquired knowledge, which will be used to help Zambia achieve its objectives in education. The work that is being done at ZACODE is more evidence of success. Work in progress shows that the skills learned during the OER training are being put to good use.

It is envisaged that the OER project will be extended to all the other subjects in the Zambian syllabi. Access to materials will be extended to learners who are in conventional schools as well as the out-of-school population. The process should be sustainable as long as there are continued capacity-building activities for teachers.

Sustainability and scalability going forward

It is envisaged that the OER project will be extended to cover all the other subjects in the Zambian syllabi. Learners who are in conventional schools as well as the out-of-school population will have access to the materials. As long as there are continued capacity-building activities for teachers, OER should have a sustainable future in Zambia.

Conclusion

The Educating Our Future – National Policy on Education emphasises education as being a right for every Zambian. It states:

> Every individual in Zambia has the right to education. Hence it is a matter of fairness or justice that access to and participation and benefit in the education system is available to all. Measures to promote equality will include allocating resources to those in greatest need, providing appropriate support systems, and changing the tangible and intangible qualities of the system itself to cater for the diverse educational needs and interest of the population. (Ministry of Education, 1996, p. 3)

In this respect, OER are a welcome measure to help in education delivery within Zambia. It is anticipated that, through the use of OER, both teachers' and learners' ICT skills will be improved. In turn, this will enable both teachers and learners to easily access the available learning materials in most parts of the country. Learners

will acquire knowledge that will enable them to gain entry into institutions of higher learning or, if they are employed, to improve their grades in order to get a promotion at their workplace.

Thanks to the OER4OS Project, Zambia now has teachers skilled in the development of OER. These teachers can assist in the training of other teachers, which will ultimately increase the number of trained personnel who can assist in the development of OER in other courses. The trained teachers will then help increase the effective use of ICTs in the classroom. Therefore, both learners and teachers will acquire or improve ICT skills.

Zambia will have an educated citizenry, as many people will be able to access the OER, especially when OER for more subjects are developed. The OER will bring us closer to achieving the Millennium Development Goals.

In the future, it would be useful for Zambia to arrange exchange visits with other countries that have developed OER in order to learn about their impact on teachers and learners in other contexts. Those involved could then share their experiences and exchange ideas with participants from other countries.

Meanwhile, the trained developers can also evaluate OER projects within Zambia. We now have a good working relationship with COL, which will make opportunities for future collaboration easy. If COL can continue to provide direction and support for Zambia, the progress we made during the OER4OS Project will help us develop a greater capacity in future endeavours.

The Zambian OER4OS participants would like to acknowledge the contribution of the late Mr Muyatwa, Director of the Directorate of Open and Distance Education (DODE), under which ZACODE falls, without whom this project would not have been possible.

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Conclusion: Breaking Down Barriers with OER for Open Schools

Cindy Gauthier and Frances Ferreira

Introduction

This book is the culmination of a long and arduous journey taken by many committed educators in open schooling. For the participants from the six countries who embarked on the Open Educational Resources for Open Schools (OER4OS) Project, the amount of work and effort required to complete the project far exceeded what anyone involved could have expected. And yet, the sense of being involved in an important educational initiative was never lost during the difficult or challenging times. Some objectives and timelines had to be adjusted along the way, but the country teams pressed on towards their goals. As a result, the OER4OS participants succeeded in creating 20 OER secondary-level courses that have since been made available for anyone to use in whatever way they choose.

The OER4OS Project and Global Education Development

The OER4OS project helps to break down barriers that have to date prevented access to secondary-level education in the participating countries. Even though the steps taken may seem small in the greater context of world education, the development of OER still holds the promise of helping to provide education for all. Whether such a promise can ever be fully realised on a global scale is impossible to predict, as there are still many significant obstacles to the creation and use of OER.

The experiences of the project participants shed considerable light on some of these obstacles, which can be organised into three primary categories:

1. **Processes**

   Throughout the OER4OS Project, breakdowns in the processes led to problems and setbacks. These can be subdivided into:

   - organisational processes (for example, timelines, recruitment of participants);
   - pedagogical processes (for example, content selection, presentation and production);
   - technical processes (for example, training and resource acquisition); and
   - governmental processes (for example, leadership and facilitation).

   In Botswana, team members consisted of field teachers and BOCODOL staff. Mismatches in experience as well as different levels of support, time allowed away from classroom duties and financial compensation for participants reflect all aspects of the **process** challenges identified above. Namibia's primary setbacks were rooted in the area of copyright and quality assurance processes and timelines, which are also **process** challenges.

2. **Resources**

   Resources are both human and technical. In terms of human resources, difficulties arose from the participants' different skill levels, commitment, availability and qualifications. In terms of technical resources, the availability of hardware and software created obstacles. Accessibility, dependability and connectivity affected the effectiveness of both types of resources.

   For example, Trinidad and Tobago experienced human resource difficulties: participants were challenged by time demands, clarity of expectations, pace of project work, etc. Lesotho experienced difficulties in technical resources, with hardware failures, bandwidth and access issues and delays in remediation of problems.

3. **Communications**

   Communications are also both human and technical. Obstacles arose as a result of constraints on collaboration, necessary interactions with project members (both face-to-face and online) and peer conflicts or misunderstandings. The use of information communication technologies (such as Basecamp, email, Skype, etc.) contributed to the technical obstacles to the communications process.

   Zambia turned to email when Basecamp became impossible to use for communications. In addition, the communications through the internal levels (from the Country Management Committee to the participants) was limited. Seychelles describes the challenge of understanding "the nature of the project," something that took considerable back-and-forth communications at all levels.

The obstacles summarised above are by no means a definitive or comprehensive list. However, as an overview, the list does demonstrate the inherent complexity of developing OER across geographic, political, economic and educational borders. The ability to identify and address potential barriers at the outset of an OER

project would be ideal, but not all obstacles can be proactively anticipated. This is particularly true of projects that rely on innovative technology being used in new ways. However, the ability to minimise the impact of obstacles that emerge during an OER project would lead to improved efficiencies, experiences and outcomes. In the OER4OS Project, an integral part of the project was the use of a monitoring and evaluation process. It helped us to identify obstacles along the way, but was also flexible enough to deal with the fact that developing OER is a cyclic process of assessment, analysis, review and correction.

OER4OS: Turning Challenges into Benefits

In reviewing the three categories above, it is interesting to note that all the elements listed could be seen as either challenges or benefits. In reviewing the country chapters, the participants have occasionally referred to certain elements as having been both a challenge and a benefit. The importance of transforming challenges into benefits cannot be overstated. Turning things around in this way is ultimately in the hands of those who lead the project, but every participating member bears some responsibility for making the best of things. There is a need to adopt a positive attitude to embracing possibility and to getting on with the work at hand as best as possible in the prevailing circumstances. In education, work that depends on resources might never even be started if all problems had to be resolved first. That said, failure to address common challenges, or to work through challenges as they arise, can result in deeper issues, such as the demoralisation of project participants.

When challenges are addressed, however, not only those who are involved in the project but also those who will ultimately use the OER created will benefit significantly. During the OER4OS Project, the monitoring and evaluation process ensured that interventions occurred when and where they were needed. Those involved in the project noted that when their needs were met, they felt more fully supported in their efforts.

Beyond the work of the project itself, the greatest benefit of OER is the provision of accessible, affordable, current and adaptable materials for learners. Through collaboration and remixing, these resources continue to evolve and be shared, thus establishing a currency and relevance that is virtually unmatched in any other kind of educational resource system. While the accuracy of content information has been one major concern raised about OER, recent research has shown that the content holds up well in comparison to formal publications (Wiley, 2013). Furthermore, in this era of rapidly expanding information in which we live, content that cannot be kept current (that is, static publications) will be at risk of much greater information inaccuracy than OER.

And yet, OER is neither a panacea nor a quick route to solving global education access and equity. Quality and organisational concerns plague the openness and usefulness of the work: there is no set design, no set pedagogical approach, no firm design strategy that governs whatever is produced and no singular means of locating OER that have been produced. While these weaknesses frequently underpinned some of the challenges experienced by the participants in the OER4OS Project, it can be argued that the lack of one specific set of processes is precisely what allows OER its tremendous potential and benefits. The inclusion of

so many approaches creates the depth in OER, particularly since the resources are intended for sampling and repurposing as users see fit.

During the OER4OS Project, many of these uncertainties about quality and organisation affected the timelines and schedules. When more time than expected is used, it is easy to jump to the conclusion that the process is flawed. This is not necessarily the case. In fact, some of the challenges were simply a manifestation of the complexity that comes with having many ways of achieving many different outcomes. Two key examples of this are described below.

Quality

Quality of OER is a work in progress. Quality is also interpreted differently by those who are developing OER. In one context, quality might be determined by meeting curricular objectives; in another context, it might be determined by the inclusion of certain design elements that support a variety of learning styles; in yet another context, it might be determined by learner achievement data. With so many definitions, criteria and standards are difficult to navigate. The pursuit of quality can lead to many challenges for the development teams. And while we wrestle with how to define quality, the Internet is being swamped by OER that display little consideration for instructional design or emerging practices in education. Further complicating matters, OER are being shared in numerous forms and locations, and consequently are not being found or successfully accessed or used by the intended beneficiaries. The implication for educators and learners is twofold: they will not necessarily have the skills to sift through OER and differentiate between the good and the bad, and they may not find the resources they seek.

Some leaders in the OER movement believe that quality should be measured by how effective they are from the learner's perspective. Wiley writes, "for educational materials, the degree to which they support learning is the only meaning of quality we should care about" (2013). In other words, quality should not be determined by the appearance of the resource, or by the professional status afforded through traditional publishing copyright. This is an important shift in thinking about quality as it gets right to the primary purpose of OER, which is ultimately to serve learning and learners. Nonetheless, difficult questions remain. Can those who have not had exposure to information, who have not learned to discern authenticity of information or who have not acquired basic digital literacies recognise quality in OER? Can we say that an OER is not of good quality for learning when other factors may have thwarted its effective access or use? And perhaps the most controversial question: Does the quality of a resource even matter if learning occurs?

Quality is a highly subjective domain. Much work remains to be done to determine what quality looks like in OER, particularly when we acknowledge how bias affects our impressions and experiences and when we consider the evaluation of OER from the perspective of learning over production. It may never be possible to specifically measure the extent to which quality affects learner success. It may only be possible to know broadly that it does and to strive to provide the best resources possible, whatever the outcomes, given the great divergence that emerges with collaboration.

Collaboration

Collaboration breathes life into OER. Without collaboration, resources are more likely to become dated, plagued with errors and limited in terms of interest, adoption and reuse. In addition, collaboration might be seen as sharing that does not follow a linear path (that is, where work is passed from one person to the next, and so forth down the production line to completion). It is therefore another complex and dynamic element that may create challenges. However, it can be a rewarding process as each contribution adds value and creates an enhanced product.

It is well known that collaboration takes more work than solitary ventures. Again, if measured only by the amount of time taken, it might only be seen as a challenge. However, collaboration also yields significant benefits that are not realised until later. Perhaps the greatest benefit is the sense of ownership that comes from teamwork. This is not ownership in terms of possession and copyright, but ownership in terms of valuable contributions made by those who work directly with learners. True collaboration proves that the sum of one plus one can be 100. It also provides a safety net and support structure for a task that can be lonely. At the closing of one of the capacity-building workshops in Botswana, Sir John Daniel, the former President and CEO of COL, described the limitations of solitary work and the benefits of collaboration that had been experienced in Botswana:

> The distinguished distance education researcher Tony Bates calls this [solitary work] the "Lone Ranger" approach. It doesn't take us very far because it probably decreases the overall efficiency and productivity of the educational enterprise rather than giving us the economies of scale that should accompany the use of technology.
>
> You are leapfrogging the Lone Ranger approach in several ways. First, you are using a team approach to course development, both locally here in Botswana and by joining forces with five other countries to produce a full curriculum at the upper secondary level. Second, by making your courses available as open educational resources you are ensuring the possibility of their use at scale. Third, by building in quizzes, online forums and other means of learning with which pupils can engage directly, you are scaling up your own impact as master teachers. (Daniels, 2009)

One of the greatest examples of OER where collaboration is a fundamental sustaining element is WikiEducator.[1] This online resource was founded by Wayne Mackintosh, who currently holds the UNESCO-COL Chair in OER at Otago Polytechnic in New Zealand, and is based on the premise that educators need a means to share in an environment that lends itself to ease of contribution and use. The true power of collaboration is unleashed when we use common tools and content licences that stimulate sharing and fair use. Open source software and Creative Commons licensing options provide the means to do this. However, it takes time to understand how to use these tools.

Anyone who has ever written anything requiring a citation understands that proper attribution of the information source is necessary. Further complicating

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[1] http://wikieducator.org/Main_Page

matters, obtaining permission to use an existing work for digital or print publication may range from absolutely impossible to completely open. Whatever the case, an author must still attribute sources and clear copyright. This can be a daunting task for anyone who is not familiar with the various types of copyright, ownership and attribution. When pressed for time, a hard-working writer might decide to omit the information and source altogether, or to create an original work from scratch. The time lost will meet or exceed the time that remixing requires, but the choice to produce original work is frequently made to eliminate the frustrating complexities of copyright and permissions. An OER developer's decision to "write from scratch" because it is less time-consuming and less complicated is a clear sign that an understanding of Creative Commons licensing and how to access resources is critical for OER development.

The Future of OER for Open Schooling

Capacity-building

Capacity-building requires the development of human resources and OER, and the establishment of a system to encourage the extension and expansion of both. Capacity-building is still vulnerable to breakdown in numerous places: the recruitment of suitable teachers for OER work; the ongoing professional development and training needed to create and sustain development using ICT; technology access, infrastructures and support; and the ability to afford and provide dedicated time so that development may be treated as a priority. The greatest vulnerability still lies with those in decision-making positions. Capacity-building begins with a commitment to the development of people and resources. It requires considerable investment yet provides little obvious or immediate financial gain.

As can be seen from the chapters submitted by the participating countries, individuals and institutions must have the requisite capacity for OER to be developed. It is important to ensure that the necessary capacity-building foundation is laid before embarking on developing OER.

One of the advantages of developing OER is that a lot of time is saved compared to when content is developed from scratch. However, a lack of capacity among participating individuals may delay the process. This was indicated in the chapters.

Another dimension of capacity is that institutions need to ensure an institutional policy is adopted for OER. Once institutions appreciate the value of OER and its effect on their services, the use of OER will be much more easily introduced. As open schools begin to develop and use their own OER, others will follow suit. This scaling of resources is what the OER4OS initiative hoped to set in motion. By developing OER based on local curricula, it was envisaged that the OER would be used to broaden access to an affordable education for boys, girls, men and women, both locally and beyond.

Curation

Wiktionary defines curation as "The act of curating, of organizing and maintaining a collection of artworks or artifacts" (2013). It is possible to consider curation from two perspectives: (1) as a means for controlling a collection of resources or (2) as a means of opening access to a collection of resources. As the volume of OER increases on the Internet, its curation becomes an increasingly important topic.

Some organisations select and offer OER based on suitability, relevance and predetermined quality standards. This is a controlled form of curation. The immediate advantage of this approach is that it sorts, selects and consolidates bodies of work while providing a single destination for users to access the resources. Curation helps to facilitate access by getting around the problem of OER not being found by the intended audiences. As McGreal suggests (2013), excellent resources that cannot be found are as useless as no resources at all. "The discoverability of an OER is an important aspect of how 'open' it really is" (Hilton, Wiley, Stein, & Johnson, 2011).

Learning Object Repositories (LOR) have been created along both closed and open models. An open LOR can be used to provide searchable databases of OER. Yet the effectiveness of many LOR in facilitating access has been disappointing. In order for an LOR to be effective, contributors must be able to use metadata. In other words, the contributors must be able to accurately tag OER so that retrieval will be possible. Similarly, those searching for resources must know how to use the LOR to conduct searches. Most educators have little or no experience with these information management skills and very little time or inclination to learn them. It is also another layer of technological mastery to add to the production of OER.

In a completely open model of curation, facilitation would be limited to the processes pertaining to access and not to the content or quality of the resources shared.

Connectivity

Throughout this project, connectivity was an ongoing concern. Most of the participating countries described some kind of challenge with inconsistent, unreliable, inconvenient or expensive Internet access. The different perspectives presented in the chapters demonstrate how each country dealt with and overcame these challenges.

Connectivity does not have to be a barrier, as options are always available. Those engaged in innovation can keep abreast of global developments through improvisation and creative problem-solving. Participants in this initiative were frequently called upon to seek alternative approaches when faced with unexpected connectivity issues. As an example, the OER4OS Project introduced participants to Poodle, a platform that allows users to work offline. Some countries found this extremely helpful for carrying on with project work when the Internet was unavailable. It is one example of how barriers around connectivity were addressed with a little improvisation.

It is essential that institutions have an ICT and OER strategy to provide a blueprint for OER development and address possible connectivity barriers. Furthermore, the strategy needs to ensure that the OER activities will be sustained in the years

that follow. Since the launch of the OER4OS Project, the Commonwealth of Learning has introduced the Classroom Without Walls initiative (COL, 2013). This innovation is intended to address the "unconnected teacher and learners" dilemma, a challenge identified during the course of this project and in other projects undertaken by the Commonwealth of Learning and partner countries.

Conclusion

As is the nature of educational projects, immediate gains are realised and recommendations for next steps appear in final evaluations and reports. In sharing the stories of their countries' experiences, the participants are hopeful that others will follow in their footsteps, learn from their experiences and benefit from their contributions.

But while experience is a great teacher, it is difficult to see the long-term gains that may be realised long after a project has ended. The impact of the OERS4OS Project on future projects cannot be fully known at this stage. The value of this book lies in the candid accounts of the project participants. Their stories may encourage others to take the next steps in developing OER, and at the same time, create an awareness of the challenges that are certain to arise going forward.

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OPEN SCHOOLING WITH OPEN EDUCATIONAL RESOURCES: OPENING DOORS, CREATING OPPORTUNITIES

Open educational resources (OER) offer a practical, workable solution to the challenges of educating outlying populations. Not being subject to traditional licensing restrictions, OER can be used, reused and adapted to suit the needs of a wide variety of learners and teachers in both conventional and open schools.

One of the priorities of the Commonwealth of Learning (COL) is to promote capacity-building in open schools in developing nations to bring educational opportunities to prospective learners, regardless of their circumstances. With this in mind, COL partnered with the William and Flora Hewlett Foundation to embark on the Open Educational Resources for Open Schools (OER4OS) Project.

Six countries — Botswana, Lesotho, Namibia, Seychelles, Trinidad and Tobago and Zambia — participated in this ambitious, ground-breaking project to train educators to create a bank of OER that could be used in both conventional and open schools by both school-age children and adult learners. Each country based its OER on its country curricula, but built in enough cultural and pedagogical flexibility to allow the OER to be used and adapted by other countries — epitomising the essence of OER. In addition, the training equipped the participants with the knowledge and skills to train current and future colleagues, thus contributing to the sustainability of the OER.

The project presented many challenges — technical, personal and logistical — for the participants and these are discussed openly and honestly in the country reports. It also brought a real sense of professional and personal achievement, and those who participated can be proud of their contribution to the development of OER for open and distance education. If we can continue to develop and maintain OER, we can continue to educate and to open doors.

This book is an important landmark in how OER can be developed and embedded in local contexts, using indigenous capacities and available technologies. Most discussions have focused on OER in higher education, whereas this book provides us with valuable insights into how OER can be harnessed for the rapidly expanding secondary education sector.