

Open Educational Resources and Cost Savings Efforts: Lessons from WOU

Prakash V. Arumugam

Senior Lecturer, Wawasan Open University, Malaysia. prakashva@wou.edu.my

Abstract

As is the case with many open universities, Wawasan Open University relies on course development of custom-designed course materials with self-instructional properties using commissioned writers. These course materials are usually developed as adaption of textbooks or licensed course materials from other institutions. This eventually took a toll on the finances of the university as it was becoming costly to develop course materials using this model. As it is, proponents of open educational resources (OER) claim that significant cost savings are possible when OER replaces traditional course development collaterals. With the increasing costs of content creation, there was a need to re-evaluate the course development model that WOU employs as well as define a more prudent financial management approach in dealing with escalating costs of course material development and delivery.

In the last four years, attempts were made to replace textbooks and licensed coursewares with OER in the course development process to minimise the cost of the development of course materials and make them more accessible to all. There were obvious challenges as the acceptance among academics were low in the use of OER for course development or revision purposes. This paper is an account of the experiences of the School of Business and Administration in their efforts to re-develop (revise) all the courses, on offer, by using OER. There were two significant contributions of this effort; a refinement of the course development model used in the university as well as the tremendous savings in the cost of course development. This little project saved the university a total of RM1.4 million (approximately US\$350000) by mid-2016.

Keywords: open educational resources, distance learning, cost savings, course development.

Introduction

Wawasan Open University (WOU), being one of the youngest and smallest open and distance learning (ODL) institutions in Asia, has always held its belief that education should be accessible to all. With that in mind, any hindrance to access need to be ironed out so that learners are not disadvantaged in any way.

One of the many challenges that WOU faces is the escalating cost of educational resources and course development. A lot of resources go into creating course materials for needs of learners in delivering quality education to the masses. Course content comes from textbooks or references that need to be purchased, writers need to be paid, graphic designers and editors don't come cheap, and instructional designers are not easy to come by.

It is now becoming quite obvious that Open Education Resources (OER) is available at zero cost and under open copyright licenses or in the public domain which offers an alternative to traditional textbooks and resources. As is the case, one of the most often cited benefits of using OER is that it bears no cost (Millard, 2014). This is not entirely true. Though OER is free, the adaptation work that is needed may involve costs.

Background of Course Development in WOU

For a university that was set-up in 2006 and started recruiting students in 2007, the course modules had to be quickly developed without any compromise in the quality of the curriculum. To facilitate this, course materials were developed using a wrap-around a textbook method, adaptation of proprietary course materials (licensed) from other institutions or creation of stand-alone course materials. In some instances, both the wrap-around and licensed material were combined which doubled the cost.

Wrap-around a textbook requires the writers to write the course content with references to the textbook. The advantage of this method is that the need to use multiple reference books becomes unnecessary, quickening the development process. However, the downside is that the course guide and the textbook must be used together for it to be effective. The cost of a textbook can be quite expensive depending on the nature of the subject and the location of the publisher. As part of the student-centered service, WOU took it upon itself to purchase the textbooks and provide it to the students for free.

Adaptation of proprietary materials was a lot easier as the curriculum and content usually follow the mainstream needs of the course. The only additional effort from the adapter would be the localization of the content to meet regional needs. Creating a stand-alone course material takes a little bit more effort as the material does not make any reference to textbooks or references. Occasionally, textbooks are provided as supplementary to the stand-alone module. Unfortunately, this is also time consuming as it usually takes anywhere from 12 to 18 months to complete the entire course development process.

In the last four years, the model of course development has been improved and revised to fit the changing distance learning environment. OER which have begun to play a more significant role in ensuring resources are readily available are being utilized in the development of courses and programs. Not only OER are used in the development, but they are also included in the delivery of the courses in the form of videos, podcasts, and supplementary materials. It was noted that these additional resources do improve the comprehension of learners in meeting the learning outcomes of the courses (Arumugam, 2015).

Objectives of the Study

The intent of this paper is twofold: (i) to share the experiences of the School of Business and Administration of Wawasan Open University in developing/revising courses by using open educational resources and (ii) to realign the course development/revision process which contributed to the cost-saving efforts of the university. The costs demonstrated here would only cover the savings from January 2014 semester until July 2015 semester (4 semesters) for a single course.

It is to be noted that the currency of knowledge that is implemented in WOU is five years. Every five years, the faculty members would start revising the content of their respective courses. This is a university-wide exercise in tandem with the ever-changing creation of knowledge and befitting the needs of society and the industry.

This study was carried out to look at the possibility of revising the current courses using a more economically feasible method. At the moment both course development and course revision carry the same process, the need to re-design the course development/revision model arises.

Review of Relevant Literature

Most research and studies related to cost savings focus on the impact of OER in saving textbook costs. According to Allen (2010), OER provide substantial cost savings to students without negatively impacting student learning. Obviously, other researchers tend to agree to Allen (2010). For example, Connexions have shown remarkable potential to harness technology and OER to reduce textbook costs for students (Baker, et al., 2009). Two universities in Africa and North America managed to contain educational costs in the health sciences at both universities without compromising quality by combining OER expertise across institutions (Donkor and Tagoe, 2010).

Not many researchers pay attention to the needs of distance learning institutions which depend a lot on self-instructional course modules developed to meet the needs of distance learners who study remotely. Ravid et al. (2008) identified how Wiki textbooks could assist student learning both by employing digital technologies and lowering costs. Needless to say, though one can depend on non-traditional courseware such as open textbooks, there is still a need to customise these books to achieve the desired learning outcomes of the respective courses.

Proponents of OER are well aware that by sharing and reusing, one can cut the costs of content development significantly, thereby making better use of available resources (Wyles, 2007). The quality of resources would also improve as opposed to creating something from scratch. Additionally, the openness of the resource means that it is now possible to offer it to more users, thereby significantly reducing the unit costs (Butcher and Hoosen, 2012; Hilton and Wiley, 2011).

In the pursuit of reducing costs, some places have introduced a regional level project such as the State of Washington's community and technical colleges which have created an open course library intended to help lower educational costs for students throughout the state (Caswell, 2012). To reiterate, most studies have shown that student learning is not negatively impacted when OER are substituted for traditional learning materials (Wiley et al., 2012). This benefit of OER would be left for a different discussion.

Some studies have indicated that a growing number of OER are becoming available for use in the classroom (McKerlich, et al., 2013) although these do not involve any form of adaptation work which is different from the model which WOU uses. The adaptation of OER incurs minimal additional costs as all adaptation of the original resource is expected and allowed, befitting the OER philosophy. This means that the end price for learners of an updated OER is negligible (Senack, 2014)

Researchers and practitioners have invested significant financial and intellectual resources into developing and distributing OER (Fleming & Massey, 2007; Baker, et al., 2009). At the moment, WOU is relying on existing OER in the market, though the OER Policy of the University clearly allows for the creation of OER for sharing (Kaushik, M, 2016). This makes OER the most effective way to keep educational content up to date (Sliwowski and Grodecka, 2013).

The re-use and re-mixing of OER takes time and effort in any institution. The upside is that it decreases the amount of time and money spent on course development, while also increasing the overall quality of coursework, as it allows teachers and learners to reuse and remix content (Hysten, et. al., 2012).

Methodology

This paper is not to be seen as an empirical treatise on the course development and cost savings efforts within the OER environment. This paper merely outlines the efforts taken thus far by the university and the effects of these actions. This is descriptive in nature and employs a case study methodology that looked at the case of one course that was revised using OER. Therefore, the methodology section is divided into two sections which look at the course development/revision model and the costs involved in course revision.

The author analyzed the course development process by looking at the various components of the process. The critical aspect of the analysis involves evaluating the roles played by different stakeholders and the significance of these roles in ensuring a quality-assured course development process. The evaluation resulted in a revised course development model which re-designed the roles of these stakeholders so that quality is maintained, but the cost is minimized.

For the second part, the author evaluated the costs of revising a typical course by looking at all the items that go into the course revision process. Some of the items involved external parties (or resources) who (which) have to be paid on prevailing market rates, and some are internal costs that have been included in the operating cost of the university. The number of students enrolled in the respective courses is also an indicator of the effectiveness of the cost saving efforts.

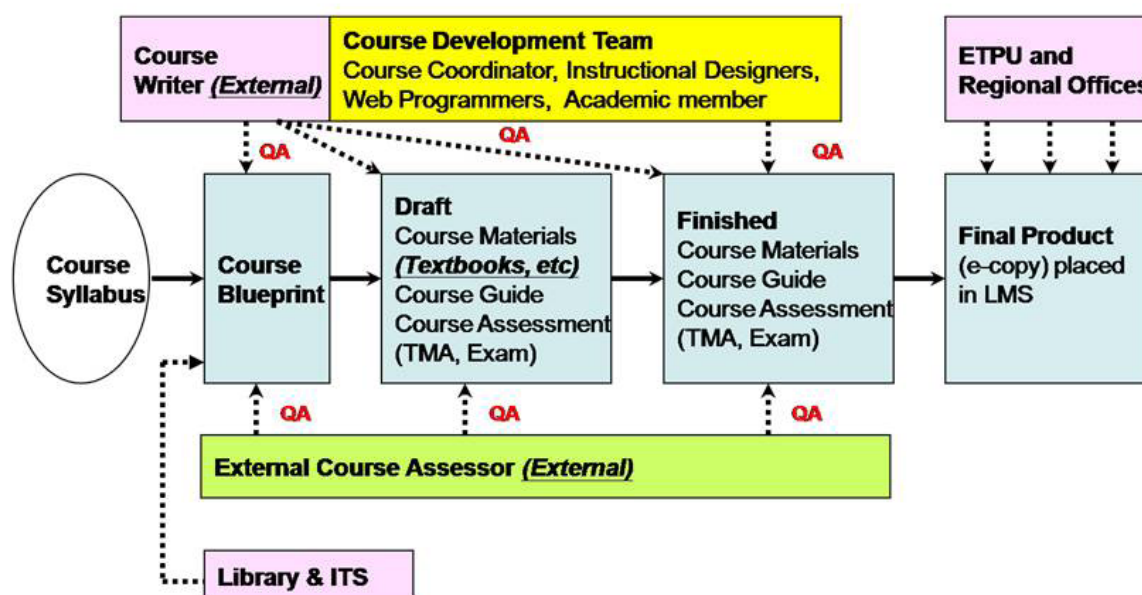
Discussions and Recommendations

The premise behind this paper was to provide an overview of the cost saving effort in WOU with regards to course development/revision by re-aligning the model. In doing so, there were significant savings in terms of resource creation as well as a more defined course development/revision model. In the context of this paper, a particular course was used as a backdrop to the elaboration: Microeconomics. This course was used because it was the first course in the School of Business and Administration that went through an OER-based course development as part of the revision of the course. All the numbers that were used throughout this paper are actual figures that WOU has used for the revision/development effort. Subsequent discussion will be separated into these two areas: course development model and cost savings.

Course Development / Revision Model (current)

Figure 1 shows the course development process that the university currently employs towards using educational resources in the delivery of course content to the students. The same model is also used in revising the courses when the content gets obsolete. There are several key stakeholders involved in the entire process, starting from the Course Coordinator who prepares the course syllabus to the Educational Technology and Publishing Unit which publishes the finished product.

Figure 1. Course Development / Revision Model (Original)



The team usually commissions a course writer (from outside the university) to write the course content. The writer, in most circumstances, is a senior academic from another institution who has the necessary profile (e.g. academic qualifications, work experience, and research background). The course development team comprises internal staff employed by the university on a full-time basis. Should there be a need for an external language editor or graphic designer, the university will appoint one on a project basis.

Apart from that, the resources needed for the content to be created would also have to be factored in. In WOU, most of the resources come from published textbooks (print form), articles (journals and magazines) and the mass media (news reports). These involve costs as copyright fees would have to be paid for many of the resources. OER can help counter the rising costs of higher education by sharing investment for development of educational resources and content and allowing others to adapt these to their needs (Mackintosh, 2007).

As part of quality assurance efforts, a peer review system is put in place. An external course assessor (ECA) is appointed to assess the course content from the beginning of the process until the end product is ready. The ECA would comment on everything from the course blueprint to each unit (module) of the course, and one final report is given on the entire course material upon completion. The external course assessor is appointed based on the seniority in academia as well as the experience in the course content. At a minimum, the ECA must carry an associate professor title.

Course Development / Revision Costs (current model)

Analyzing the costs in the context of this paper was a tricky situation. There are no quick formulae that could be used to calculate the cost savings of creating educational content. There are too many variables involved in the process, and all contribute one way or another to the costs of course development.

To add clarity to the elaboration here, the author used an example of a course that saw significant savings when the revision process was switched from the traditional to the revised course revision model. Microeconomics is a basic major course in the Bachelor of Business programs offered by the School of Business and Administration (SBA). The course is offered in both (January and July) semesters. This course is taken by all students of SBA, and it is the first course in the stable of SBA courses that used OER as its main source.

Bear in mind that this course used both the wrap-around technique and adaptation of other resources in the original development in 2006. For this course, the main resource used was the course module, Introduction to Economics, licensed from Open University of Hong Kong (OUHK) and the Gregory Mankiw's Principles of Economics (4th Edition) as the main textbook. Though the course content and syllabus generally followed OUHK's module, a lot of Malaysian examples were added in our effort to localise the content. Table 1 shows the costs that would be incurred if the course was revised using the current model.

Table 1. Costs of Course Development

Items	Costs (RM)
Course Writer	10000
Textbook	59 per student
Licensing fee	40 per student
Graphic Designer	1750
External Course Assessor	1500

Note: USD1 = RM4.00 (approximately)

Based on the information in Table 1, the cost of course revision for Microeconomics would include a non-recurring cost and recurring cost. The computation is reflected in Table 2 which is based on a total of 847 students who have enrolled in this course from January 2014 until July 2015 semester. It is crucial for WOU to keep its costs low so that it does not compromise the founding philosophy of the university which is to make education accessible to all. Any form of an increase in expenditure would only translate to increased tuition fees which the university tries to avoid at all costs.

Obviously, the course writing, graphic designing, and external course assessor payments are non-recurring as it is based on the development stages of the course.

As the course is presented/delivered from semester to semester, the recurring costs kick in. As seen in Table 1, the royalty payment for the licensed material would be paid per student as long as we use the course content. The accompanying textbook would also be bought for every student in every semester as long as the book is referenced. Table 2 showcases the costs over a span of 4 semesters when all these costs are considered.

Table 2. Costs of Revision (Microeconomics)

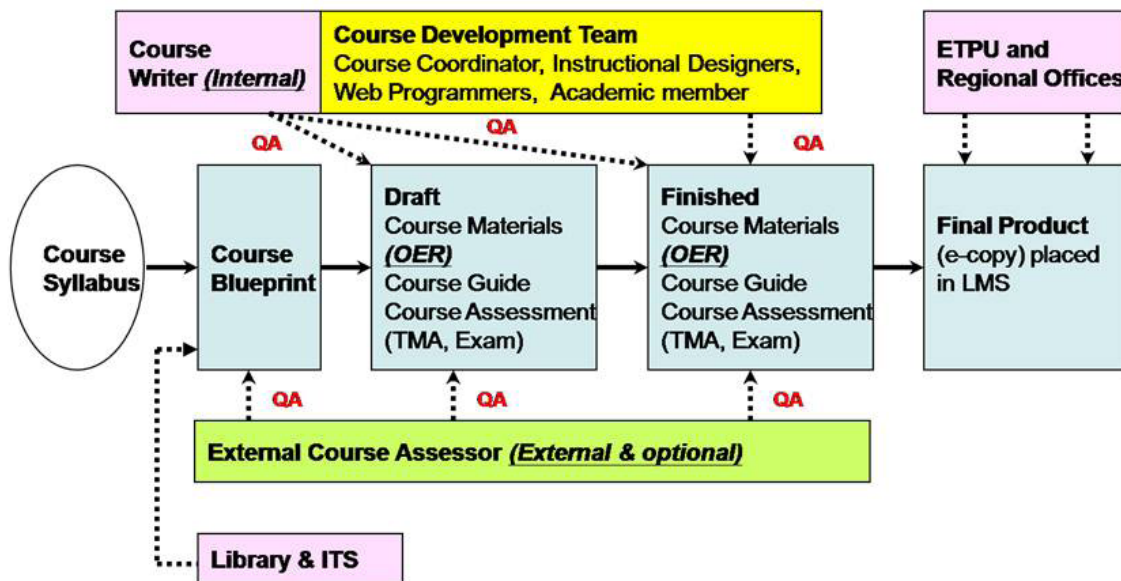
	Non-recurring costs (RM)	Recurring costs (RM)				Total
		Jan 2014	Jul 2014	Jan 2015	Jul 2015	
Course Writer	10000					10000
Textbook		10915	13334	14219	11505	49973
Licensing fee		7400	9040	9640	7800	33880
Graphic Designer	1750					1750
External Course Assessor	1500					1500
Total	13250	18315	22374	23857	19305	97103
		83853				

The total costs to revise and deliver this course based on the current model would be RM97103 (RM13250 + RM83853). Bear in mind that this is only for four semesters of delivery. The recurring costs of RM83853 would be similar for another four semesters and as long as this model is followed. When the time comes for subsequent revision exercise of the content to take place, the non-recurring costs will kick in, and another full-fledged course development process would follow suit.

Course Development / Revision Model (revised)

As the cost of course development can be high as the university would have to pay for the services of the writer, the resources, and the external course assessor, the entire process would have to be reviewed to enhance to the cost-effectiveness of the process without comprising on the quality of the end product.

Figure 2. Course Development Model (Revised)



In that context, the course development framework was revised to internalise many of the functions of members of the team which in turn minimizes the cost. The writer is now a full-time academic of the university which negates the need to pay for an external writer. The benefits are twofold here: the cost savings and the capacity enhancement of the academics.

The content of the course is now taken from OER and incorporated within the course material. There are plenty of e-books and free content available on the Internet or OER repositories that are licensed under a specific Creative Commons licensing. WOU's Policy on Open License stipulates that content created using a specific license must be made available using the same license. For example, when the OER used carried the Creative Commons Attribution + Non-commercial + Share-Alike (CC-BY-NC-SA) license, the revised and reused material must also carry the same license. Incidentally, this is also the licensing that WOU uses for all its OER collaterals. This minimized the cost in sourcing for content as there is no need to purchase textbooks or pay fees for copyrighted materials.

There shall be a library assistant who will assist the course development team to source for relevant and appropriate OERs. The sourcing is not done only for the development stage but also including resources needed for the delivery of the courses.

The need to employ an ECA has been put to question as some faculty members feel that if the OER material comes from a legitimate source with its own quality assurance, it should be trustworthy enough for use. The writer or the faculty would make a decision on whether the ECA is necessary, dependent on how much course adaptation activity needs to take place. As a rule, the university's policy is to appoint an ECA if the revision process involves more than 30% change in the content of the courses being developed or revised. For all intent and purposes, this aspect would not be debated here.

Course Development / Revision Costs (revised model)

The escalating costs of textbooks and course development were the main motivations behind the cost saving efforts of WOU. Hence, the way forward was to re-evaluate the course development model that we have employed to something that is more supportive of the cost reduction agenda of the institution. Based on the improved course development model, the revised cost of course development is now depicted in Table 3.

Table 3. Costs of Course Revision (OER Microeconomics)

Items	Costs (RM)
Course Writer	Nil
Internal academic (time spent)	4987.5
Textbook	Nil
Licensing fee	Nil
Graphic Designer	500
External Course Assessor	1500
Total	6987.5

Note: USD1 = RM4.00 (approximately)

There is no need to use a course writer as the internal academic would play that role. There shall be no textbook provided free, and the need to pay licensing fee has been removed. As the OER used contains enough graphics that are pertinent to the curriculum, the Graphic Designer did not need to do extensive re-designing. At this juncture it is important to note that OERs are usually available online in soft copies, making it easier to manipulate. This helped in reducing the cost.

For the development of this course, the faculty felt that ECA would still play a crucial role in tandem with WOU's commitment to delivering quality educational resources. The only additional cost is the time spent by the full-time academic in remixing and repurposing the content of the OER to meet the requirements of the curriculum. This came to about 115 hours of course development time over a period of one year.

There were no recurring costs in the revised model as only non-recurring costs were recorded here. All non-recurring costs were abolished with the move to a better model. Therefore, for this particular course, there were a textbook savings of RM49973 and savings on the licensing fee of RM33880. Though the additional time spent worth RM4987.5 could be factored in, this item does not have any accounting contributions to the cost saving efforts. Therefore, the real cost of the course revision was only RM2000 for a course which attracts approximately 200 students per semester.

This little endeavor has saved the university approximately RM1 million as of the end of 2015 through the efforts of the School of Business and Administration alone. This project is still an on-going project where the university would see savings exceeding RM1.5 million by the end of this year (2016).

Conclusions

It would seem that the use of OER in the development and delivery of courses have as much positive impact as with traditional resources. The additional benefit of OER is the lowering of the cost associated with the development of the courses. OER is also crucial at the delivery stage of the courses as other types of resources could be included, especially videos and podcasts.

There is no doubt that the costs of the course development can be significantly reduced in line with the philosophies of open distance learning institutions which is making education accessible to all. Using OER definitely, fits into the philosophy of ensuring the costs of course and program development are kept low so that tuition fees would not increase.

In the case of WOU, there was a significant reduction in costs when the faculty members moved from the traditional course revision process to one that uses OERs as well as internalizing the responsibility of the revision process rather than outsourcing them. The cost savings thus far hover at RM1 million and the university is expected to save another half a million when the entire process is completed.

Nonetheless, costs are not the only issue that makes using OER such an easy option to accept. Users of OER are faced with the challenges associated with determining the quality of the resources used. Though there are frameworks and rubrics available, none have captured the myriad of issues that come together with seemingly sub-standard content created. Many content creators tend to hold back on their contribution to OER as it is a source of income for some. Therefore there should be efforts made to create a quality assurance framework that can be readily implemented by all.

Most research on learner experience has focused on analyzing OER textbooks and its effects on learning. There are very few, if any, studies that have gathered feedback from students on their achievement of improved learning experience using fully localized OER. Impact studies on the effective use of OER and whether it has helped in improving the learning capabilities of learners must be done in the future to evaluate the sustainability and viability of OER in the educational environment.

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