

Framework for development of OER-based learning materials

URL	http://weko.wou.edu.my/?action=repository_uri&item_id=400
-----	---





FRAMEWORK FOR DEVELOPMENT OF OER-BASED LEARNING MATERIALS

Sheng-Hung, Chung and Ean-Teng, Khor
School of Science and Technology, Wawasan Open University
shchung@wou.edu.my

Abstract

This paper describes the framework for development of OER-based learning materials in creation and assurance of the learning content; exploring OER repositories; assessments review and establishment of collective feedback sessions at Wawasan Open University (WOU). The considerations of the learning design for the computing courses with engagement of learning experiences and feedbacks from different stakeholders are taken into considerations as one of the major components in the OER-based course development phases. The course development stages (Creation Phase, Evaluation Phase and Production Phase) and the production of interim reports associated with each course units are presented in this paper. Virtual workshops initiated through live broadcast in collective feedback sessions comprising the evaluation of assessments by different subject experts and students are presented in this study. The developments of two OER-based courses are presented in this paper namely TCC121/05 Programming Fundamentals with Java and TCC241/05 Database Programming. The walkthrough of available OER resources and repositories which teachers, facilitators and learners can employ into their learning materials mainly Rice Connexions and MIT OCW are highlighted in this approach.

Keywords: Course Development, OER repositories, Quality Assurance

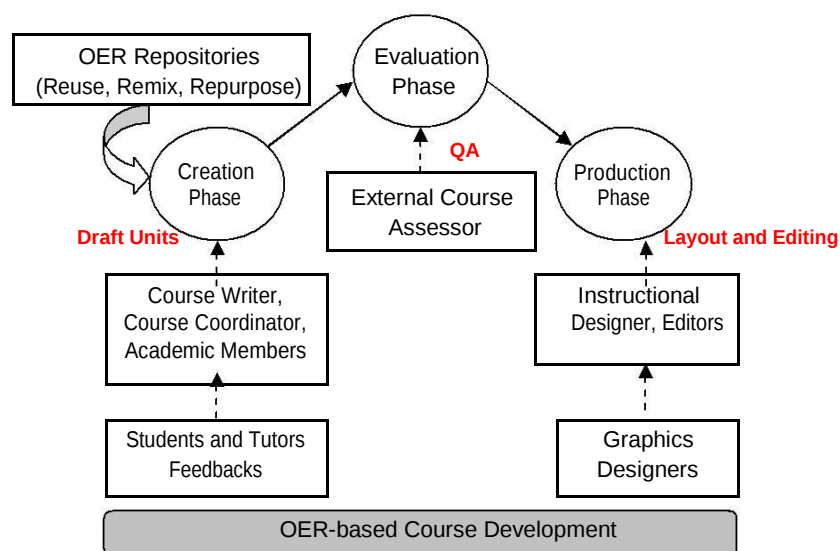
1. Introduction

A growing number of users are creating and sharing their resources posted on websites, YouTube, Wikibooks, Bookboon, open access directories and other Open Educational Resources (OER) repositories. OER repositories consists of teaching, learning and research resources (Atkins, 2007) that resides in the public domain with intellectual property license that permits free-use or repurpose by others to support access to knowledge. The development of digital materials movement has encouraged users to re-use, revise, remix and redistribute resources (Hilton, 2010) through appropriate tools and made available through creative common licensing for example Rice Connexions (CNX), a collection of online digital resources developed and contributed by learners and available under Creative Commons (CC) license that permits commercial use.

The use of OER repositories has driven the development of OER-based courses for ODL learners at Wawasan Open University (WOU). The repositories are introduced to the course team members who comprised of Course Team Coordinator, Academic Members, Course Writers, Instructional Designers, Editor and External Course Assessor for searching, creating and customizing learning contents including content modules, articles, books and journals. The implementation for the OER-based course

development for WOU computing courses are: TCC121/05 Programming Fundamentals with Java and TCC241/05 Database Programming.

2. OER-Based Course Development Cycle



Course Development Team:

Course Team Coordinator, Academic Members, Course Writers, Instructional Designer, Graphics Designer, Learning and Library Services Representatives, External Course Assessor

Figure 1: Development Phases of OER-based Learning Materials

The development of OER-based learning materials as practiced in WOU includes creation phase, evaluation phase and production phase is depicted in Figure 1. The development phase of OER-based learning materials in this approach is initiated with the creation of Course Syllabus, Course Development Timeline and Course Blue Print by Course Team Coordinator and respective Course Writers. The details of interim reports and production documents in the course development cycle are illustrated in Table 1.

Table 1. Production of Interim Reports and Documents for Course Development Cycle

OER-based related production documents	Course Development Team (comprises of different stakeholders for specific course)
Course Syllabus, Course Development Timeline	Course Writers, Course Team Coordinator
Course Blue Print	Minutes Meeting (Course Team Coordinator, Course Writers, Academic Members, Instructional Designers) Course Team Report ECA Reports
Course Guide	Minutes Meeting (Course Team Coordinator, Course Writers, Academic Members, Instructional Designers) Course Team Report ECA Reports
Course Units write up	Minutes Meeting (Course Team Coordinator, Course Writers, Academic Members, Instructional Designers, Graphics Designers, Learning and Library Services Members) Course Team Report ECA Reports

Assessments (TMAs, Examinations)	Minutes Meeting (Course Team Coordinator, Course Writers, Academic Members, Instructional Designers) Course Team Report ECA Reports
Completed Course Units (Recommendations, Actions Taken)	Final ECA Report (Final Evaluation Report)

The course units for each course unit are written based on the reuse, adaptation and remixing of OERs under a CC BY-SA 3.0 license. The course team reports are generated during the writing stages and meetings are held for discussion and evaluation concerning important course specific matters. The course development of the course units are then assessed through evaluation of ECA (SOP for Course Development, 2010) producing interim reports (1 report per course unit) before sending in for in-house production phase. The Course Development Report (CDR) is produced at the end of the production phase that includes level of study and the assessment strategy for each course unit.

3. Evaluation and Quality Assurance via Collective Feedback Sessions

The assurance is made aware throughout course development phases associated with the OER-based course materials with inclusion of course writer's guidelines, academic members inputs, ECA's role and guidelines, tutors and students' feedbacks were incorporated into the development and revision approach.

The discussions in the collective feedback sessions held during the course development focused on the 'how to develop' and usage of OER particularly in Java and Database programming related areas. Virtual Workshop Sessions engaged using the virtual domain via WizIQ are held with guidance and step-by-step OER creation sessions for the OER content, intellectual property issues, resources that can be reuse, remix and repurpose can be accessed in the following sessions links:

Collective Feedback Sessions		
OER Creation Initiative Discussion	http://www.wiziq.com/online-class/645825-creation-assurance-repurpose-and-sharing-of-oer	Members attended: Coordinator, Course Writers, Library members
OER Repositories Walkthrough	http://www.wiziq.com/online-class/644140-basic-guide-of-oer-and-oer-repositories	Members attended: Coordinator, Academic members, Instructional Designers.
Assessment Discussion and Review of feedbacks	http://www.wiziq.com/online-class/636868-java-programming-assessment-discussion	Members attended: Coordinator, Course Writers
Exploring Open Educational Resources – Review of Assessments	http://www.wiziq.com/online-class/640403-review-of-assessments-ipohro-student	Members attended: Coordinator, students
OER Collective Feedback Session	http://www.wiziq.com/online-class/647666-oer-creation-cars-collective-feedback-session	Members attended: Coordinator, Academic members, Library members, Instructional Designers, Students

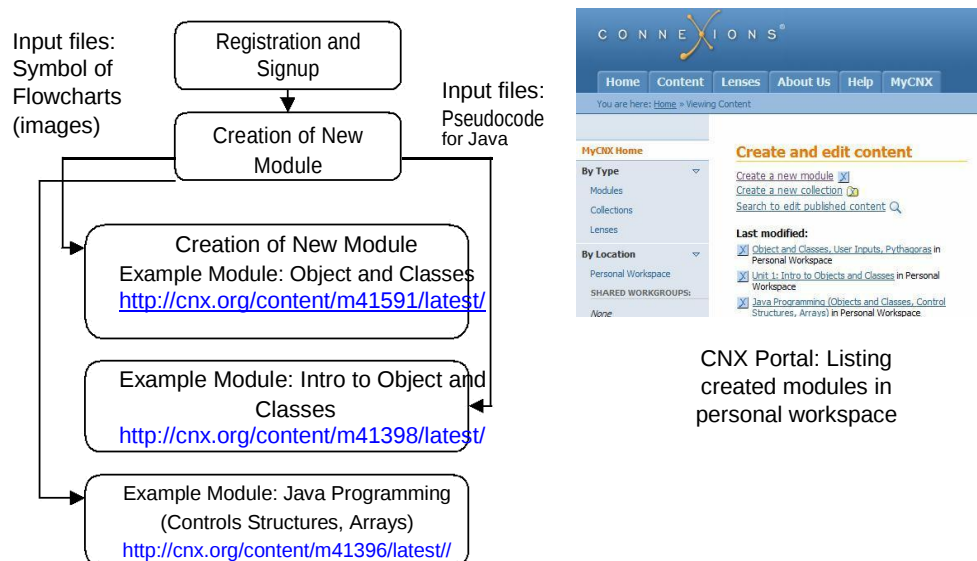


Figure 2: Walkthrough of Module Creation in CNX (Module 1: image files, Module 2: Pseudocode for Java, Module 3: image files)

The study of adapting and remixing individual modules into courses (example illustrated using CNX) is presented in Figure 2. The creation of two modules illustrated in Figure 2 covers Module 1: Object and Classes (with image containing Symbols of Flowcharts), Module 2: Intro to Object and Classes (Pseudocode for Java) and Module 3: Java Programming (Control Structures, Arrays). The examples for the modules created consist of self-contained metadata which allows the users to choose varieties of language used and the subject categories. The creation module enable users to import CNXML documents (Words files, OpenOffice files, LaTeX, multimedia assets) and select specific elements of the module to edit.

The modules created through the Collective Feedback Sessions are:

Module 1: Object and Classes	http://cnx.org/content/m41591/latest/
Module 2: Intro to Object and Classes	http://cnx.org/content/m41398/latest/
Module 3: Java Programming (Control Structures, Arrays)	http://cnx.org/content/m41396/latest/

The Open Courseware approach adopted by MIT (Massachusetts Institute of Technology) is opening up educational contents to the world in OER movement. MIT OCW has created a sharing educational resource utilizing learning objects such as lecture notes, assignments and solutions, online textbooks, projects and examples, exams and solutions, image galleries, streaming multimedia content and participation of study groups to be accessed worldwide.

MIT OCW Learning Objects				
Lecture notes	Online Textbooks	Project and Examples	Image Galleries	Study Groups
Assignments and Solutions	Exams and Solutions	Multimedia content	OCW scholar	

The learning objects published by MIT OCW in different department can be accessed via

<http://ocw.mit.edu/courses/> with the Creative Common license (BY-NC-SA)

4. Conclusion

In conclusion, this paper presents the development and inclusion of OER resources in WOU learning materials. The course development cycle includes the interaction among students and tutors with feedbacks sessions and learning experiences of courses units' content. The OER-based course development framework serves as guideline and validation of academic descriptors for course specialists in initiating and supporting the creation of OER-based learning materials with three different stages (creation phase, evaluation phase and production phase). The features of OER repositories: CNX and MIT OCW (as supplement references) can be adapted to aid in course development process.

References

Atkins, Daniel E.; John Seely Brown, Allen L. Hammond (2007). "A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities". Menlo Park, CA: The William and Flora Hewlett Foundation, 4.

Hilton, J., Wiley, D., Stein, J., and Johnson, A. (2010) "The four R's of openness and ALMS Analysis: Frameworks for Open Educational Resources." Open Learning: The Journal of Open and Distance Learning. 25 (1): 37-44. (Taylor & Francis Version, Open-Repository Version).

William and Flora Hewlett Foundation, Maxfield Foundation, Connexions Consortium, CNX, <http://cnx.org/> (accessed on July 2012)

Massachusetts Institute of Technology, MIT OpenCourseWare, <http://ocw.mit.edu/index.htm> (accessed on July 2012)

WiziQ Inc, AuthorGEN Technologies, <http://www.wiziq.com/> (accessed on July 2012)

Standard Operating Procedure for Course Development, Wawasan Open University, January, 2010